Abstract book

13th Student Congress of Neuroscience - NeuRi 2024
Rijeka – Rab
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IMPRESSUM

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Bobana Samardžija - Sampled Smirks: Unraveling Protein Aggregation in Mental Health, Budapest Style

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2. Mohammad Shahadat Hossain, Bobana Samardžija, Maja Juković, Nicholas J. Bradshaw: Mechanisms of CRMP1 protein aggregation in major mental illness

3. Tin Jagoić, Anton Bilić, Maša Biberić, Siniša Zrna, Lara Valenčić Seršić, Janja Tarčuković, Kristina Grabušić: Cerebrospinal fluid after traumatic brain injury contains Growth Associated Protein 43 as extracellular vesicle cargo
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2. Barbara Jalšenjak, Džana Bjelić, Regina Sjauš, Anja Golubić, Nataša Klepac: Iodine-131 metaiodobenzylguanidine myocardial scintigraphy in a patient with multiple system atrophy
3. Mirko Klarić, Anamarija Madunić, Antonio Marić, Ana Bilić-Pavlinović, Marina Boban: Behavioral Variant Frontotemporal Lobar Degeneration: A Comprehensive Case Analysis
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2. Maro Bjelica, Petar Brlas, Borna Bregović, Hana Ćurtović, Tina Čukman, Darija Mahović Lakušić: Red Ear Syndrome: Case Report and Therapeutic Management in Clinical Practice
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2. Erna Džinić, Azra Grebo, Melika Džeko, mentor: Almir Džurlić MD, PhD: Microsurgical resection of Dumbbell shaped schwannoma in upper cervical spine - case report
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2. Marta Pešut1, Iva Strelec1, Mario Hero1,2, Vladimira Vuletić: Outcome of DuoDopa pump therapy in a patient with advanced Parkinson's disease – case report

3. Dominik Piršljin, Karla Pavlović, Patrik Torbarina, Andrea Šimić Klarić MD, PhD (mentor): Challenges in Diagnosis and Treatment of Spastic Paraplegia
4. Dora Franciska Tuđman Šuk, Pia Kosanović, Srđana Telarović: From symptoms to diagnosing Wilson's disease: a 20 year journey

Student session 7

1. Ana Bilić-Pavlinović, Antonio Marić, Mirko Klarić, Zrinka Madunić, Ante Subašić: Neurosurgical access to non-traumatic acute spontaneous subdural hematoma (ASDH) of arterial origin
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3. Gracia Grabarić, Sergej Mihailovič Marasanov, Jakob Nemir: Managing Essential Tremor: Evaluating the Role of Gamma Knife Thalamotomy for Refractory Tremor
4. Karlo Tikvicki, Loren Serdarević, Ivan Raguž, Krešimir Saša Đurić: Spontaneous intracranial hypotension

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1. Marcela Babić, Lucija Škiljan, Srđana Telarović: Effect of levodopa-entacapone-carbidopa intestinal gel infusion on advanced Parkinson's disease
2. Borna Barić, Petar Brlas, Tina Čukman, Srđana Telarović, MD, PhD: Iatrogenic extrapyramidal syndrome and cognitive deterioration associated with the use of duloxetine
3. Borna Bregović, Petar Brlas, Maro Bjelica, Tina Čukman, Hana Ćurtović, Lucija Dobrić, Regina Sjauš, Nataša Klepac PhD., M.D.: Early-Onset Alzheimer's: Exploring Diagnostic Strategies and Treatment Outcomes
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6. Lucija Didović, Lana Kavur, Marjan Kulaš, Ivan Samardžić Ilić (mentor): The importance of lorazepam in the treatment of catatonia
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10. Lucija Grbić, Pia Barač, Darko Orešković, Tonko Marinović, Andrea Blažević: Reciprocal impact: how malignant brain tumors and sleep quality influence each other
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14. Antea Kršek, Albert Haller, Lara Batičić, Dean Girotto: Surgical and Intensive Care Coordination in a Penetrating Cranial and Brain Trauma
15. Mario Lazaneo, Katarina Bogdanović, Valentino Rački, MD, PhD, Assoc. prof. Vladimira Vuletić, MD, PhD: CD20 immunotherapy as a first line treatment for multiple sclerosis with commorbidity of schizophrenia
16. Mehdić Haris, Grbić Nevena, Bašić Kes Vanja: Positive impact of high intensity physical activity on multiple sclerosis – case report
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22. Ida Štimac, Anja Babić (mentor), Vladimira Vuletić (mentor): Spontaneous recanalization of internal carotid artery occlusion
23. Branimir Šušak, Ivna Tomaš, Patrik Torbarina, Marta Klarić, Stela Bukvić (mentor), Iva Mihaljević (mentor): Structual Brain Changes Linked to Substance Abuse in a Young Patient
24. Ivna Tomaš, Branimir Šušak, Patrik Torbarina, Marina Boban (mentor): Cortical Infarct in a Young Patient Caused by Patent Foramen Ovale and/or Hypercoagulability
25. Anton Turić, Lucija Grbić, Petra Valković Zujić: Recurrent Squamous Cell Carcinoma of the Lower Lip with Perineural Spread: A Case Report
26. Tena Zovkić, Laura Ivanović Martić, Mirela Okolić, Marta Poje, Dorian Garac, Andrijana Šantić: Achievement Of Better Emotional Life Through Post – traumatic Growth: A Case Report

16:30 - 17:00 Closing ceremony

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WELCOME NOTE

Dear colleagues,

It is an honor to write these words for the last time in the role of the President of NeuRi. NeuRi has become a real neuroscientific institution for students, and I can not be more proud of that. My mission was to offer students a way to improve their scientific writing and presenting skills. Each year participants surprise me with their will to learn. Learning and improvement are what is motivating us to keep organizing NeuRi events.

Special thanks goes to everyone standing behind the scenes of this project, from organizing, and scientific committees, to our sponsors, and everyone else who made this possible overcoming countless obstacles on the road. We have proven that NeuRi is here to stay and help mold future scientists.

My work here is done, and once more I want to thank everyone whom I've met during my NeuRi journey. This will be an unforgettable part of my life.

I hope as always, that through this year's program, you will wander, learn and challenge yourself to think outside the box because you are the future of neuroscience.

On behalf of the Organizing and Scientific Board -

Welcome to NeuRi 2024!

Jona Kužnik Pokorn
President of NeuRi 2024
Rijeka, April 2024

FRIDAY 19.04.
Plenary lecture 1

How advanced in vitro models help us to elucidate normal and pathological events in the nervous tissue

Prof. Dinko Mitrecic, MD, PhD
Department of Histology & Embryology
Department of Regenerative Neuroscience
Laboratory for Stem Cells
Croatian Institute for Brain Research
School of Medicine University of Zagreb

Faced with a burden of diseases of the nervous system, modern medicine still searches for approaches which might result in development of new therapeutic strategies. Here we present research strategies arising from technology of stem cells upgraded to the advanced models comprising 3D cultures of human brain tissue in the form of brain organoids. By applying protocols invented or significantly upgraded by our own group we developed in vitro models which include cells of the nervous tissue (neurons, astrocytes) in various stages of their maturity. Moreover, by long term growing (up to 150 days) of brain organoids during which cytoarchitectonic of all 6 layers of neocortex develops, our activities are based on detection of events present both in normal, but as well in disturbed brain cortical structures. Here we present a brief overview of application of advanced models of the nervous tissue with the goal to detect phenomena present after hypoxic/ischemic incident. One of the elements we focused on was how lack of oxygen in immature cells of the brain cortex influences integrity of mitochondria, leading to mitophagy and various types of cell death. Moreover, we used brain organoid models to decipher cellular and molecular phenomena present in the Down`s Syndrome and in the Alzheimer`s disease. This allowed us to detect genes involved in both detrimental processes in the cortical tissue (e.g. DYRK1A, involved in cellular aging) or genes which bring cell-protective effects (e.g. BACE2, anti-amyloidogenic action).

Plenary lecture 2

Single-center experience in robotic-guided pedicle screw implantation

M. Pojskic, M. Bopp, C. Nimsky, B. Saß

Objectives: The aim of this study is to present experience in initiation of robotic-guided spine surgery with thoracolumbar pedicle screw placement using Brainlab's Cirq® surgeon-controlled robotic arm (BrainLab, Munich, Germany) in a single center in the first three years. Methods: All patients who underwent robotic-assisted implantation of pedicle screws in the thoracolumbar spine at our Department were included in the study. Pedicle screw accuracy was assessed using Gertzbein-Robbins scale (GRS).Results: A team of two surgeons conducted 74 surgeries in 73 patients (41 female, median age 69.8 ± 9.9 years) with robot-assisted pedicle screw placement. Indications included degenerative spine disease (n=19 patients), spondylodiscitis (n=20), metastases (n=21), primary spinal tumors (n=2) and fracture (n=12). 47 surgeries were performed in open and 27 in percutaneous technique. Workflow included intraoperative computed tomography (iCT) imaging with automatic registration, fusion with preoperative imaging and review of the preplanned screw trajectories, robotic-assisted insertion of K-wires, followed by a fluoroscopy-assisted insertion of pedicle screws (first 12 surgeries) or insertion of navigated screws (latter surgeries), with control iCT scan. Total number of screws was 487. Mean robotic time was 32.4 ±17.3 minutes. Mean time per screw was 3.4 ± 5.2 min. Mean robotic time and mean time per screw improved over time. 1.6% (8 screws) were revised during the same procedure (Gertzbein-Robbins grading D/E).Conclusions: Robotic-guided pedicle screw implantation has shown high accuracy which was constant over time. Total robotic time and time per screw improved over time, which shows a learning curve.

SATURDAY 20.04.
Plenary lecture 3

Loneliness - can we resist the evolutionary need to seek companionship?

Vesna Šendula-Jengić MD PHD, Ena Paparić MD
County Hospital Insula, Rab, Croatia

Evolutionary, our connection with others provided security, enabled the survival of the individual and extension of the humans. Technology, social networks and constant online interaction should make us feel more connected, but are these connections enough? Loneliness is psychological state in which there is a difference between aimed quantity and quality of social connection and accomplished one.

There are several studies addressing loneliness and its effects on human body. Terms solitude or social isolation are often inaccurately used as synonyms for loneliness, but loneliness is associated with perception of social isolation, more than with isolation itself. Loneliness can be acute or chronic. According to data, the frequency of chronic loneliness varies from 10 to 30% in the general population, but the prevalence is higher among those suffering from mental illness compared to the general population. Chronic loneliness acts as a stressor on the body, leading to numerous changes through the neuroendocrine, immune and metabolic systems. It is assumed that the main mechanism is excessive activation of the hypothalamic-pituitary-adrenal (HPA) system resulting in elevated cortisol levels. Lonely individuals have higher cortisol concentration in plasma, saliva and urine combined with changes in circadian rhythm of cortisol secretion. Loneliness is associated with altered brain activity as lonely individuals show changes in the DMN (default mode network) and reduced volume of grey and white matter in the insula and prefrontal cortex. Regarding mental illness, meta-analyses suggest that there is a significant association between loneliness and depression with suggested reciprocal relationship. A correlation was found between loneliness and anxiety. Data suggests an association between loneliness and psychosis, it has not been sufficiently investigated whether loneliness has an influence on the onset of a psychotic symptoms.

Although mechanisms of action have not yet been sufficiently researched, it is seen that some mental illnesses can be associated with loneliness. Raising awareness about chronic loneliness and its role as a stressor on the body is crucial in future since lonely individuals are more likely to diminish health-promoting behaviour.

Keywords
Loneliness, social connection, mental illness

Plenary lecture 4

Sampled Smirks: Unraveling Protein Aggregation in Mental Health, Budapest Style

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Chronic mental illnesses (CMIs) like major depressive disorder and schizophrenia significantly impair patients' lives, yet their biological underpinnings remain poorly understood due to genetic diversity. Disrupted proteostasis is gaining attention, with proteins like CRMP1, DISC1, NPAS3, and TRIOBP-1 forming aggregates in psychiatric patients' brains.

We isolated insoluble protein fractions from post-mortem brain samples of CMIs patients, Alzheimer's patients, suicide victims, and controls, obtaining multiple brain regions for many patients. After anonymization, we purified insoluble proteins and identified aggregation indicators via Western blot. Co-aggregation was explored by pairwise protein expression analysis in SH-SY5Y neuroblastoma cells, followed by immunofluorescence microscopy.

Results reveal multiple insoluble proteins in many brains, suggesting multi-protein aggregation. In one schizophrenia patient, varying levels of insoluble DISC1 were observed across brain regions. Cell culture experiments showed consistent co-aggregation of DISC1 with CRMP1 and full-length TRIOBP-1.

In conclusion, our findings suggest heterogeneous protein aggregation in schizophrenia across the brain, possibly evolving over time akin to neurodegenerative disorders. Shared underlying factors drive parallel aggregation, with specific protein pairs forming co-aggregates. Further studies, including replication and exploration in additional brain regions, are imperative for understanding these mechanisms.

Keywords
Protein aggregation; suicide; major depressive disorder; DISC1

Acknowledgements
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Workshop 1

Basics of surgical suturing

(Student Section for Neurosurgery and Albert Haller, MD, neurosurgery intern)

Surgical suturing is an essential skill for every doctor, regardless of the specialization. During the medical faculty there is always a lack of practical skills, especially in the field of surgery. This is opportunity to sharpen your skills in basic surgical suturing on real specimens, led by experienced doctors. This amazing opportunity is limited to 30 participants in two groups.

Workshop 2

Traumatic brain injury-a practical aproach

(Ivan Vuksan, MD and Tena Rošić Mirić, MD)

Traumatic brain injury is the most common cause od death and disability in young people. Patients with severe traumatic brain injury (TBI) have a significant risk od hypotension, hypoxemia and brain swelling which are considered a secondary brain injury. If theese sequele are not prevented or treated properly, they can exacerbate brain damage and increase the risk of death. Major improvments in outcome can be achieved for such patients before they reach hospital. In our workshop we will be focusing on set of skills that are crucial in managment od traumatic brain injury and those are assesing the Glasgow coma scale, securing the airway and quick ineterpretation od head CT scan. The workshop will take place on manikins simulating the real scenarios that you may encounter one day in a clinical practice.

Workshop 3

Demystifying neuroradiology

(Domagoj Kihas, MD, radiology intern, Magdalena Milić, Lara Oštro and Iva Dodig)

In this workshop we will try to teach you how to “read” CT scans in neuro-emergencies through 5 case reports. Workshop is organised by Student Section for Radiology of SZ MEDRI and Student Section for Neurology SZ MEDRI.

FRIDAY 19.04.

Poster Session 1

Non-cooperation of a patient diagnosed with schizophrenia and the role of a family medicine doctor

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Introduction

Schizophrenia is characterized as an exceptionally diverse group of mental disorders featuring cognitive, behavioral, and emotional dysfunction. Patients may experience positive psychotic episodes, including hallucinations and delusions, along with negative symptoms like a loss of will. The treatment goal is the realistic achievement of the patient's functional recovery.

Case Report

We will present a case involving a fifty-two-year-old female patient diagnosed with schizophrenia four years ago and prescribed oral therapy, which she consistently failed to take. Concerns regarding her noncompliance, frequent hallucinations, and missed appointments with the psychiatrist prompted the patient's mother to contact the family physician on multiple occasions. A social worker's report reached the family physician following a police report due to aggression towards her mother and disturbances reported by neighbors, particularly during the night. A consultation with the patient was then requested. During this consultation the patient admitted to not taking her prescribed medication, claiming she did not perceive a need for it, even though she regularly ordered them by phone. Shortly after, the patient was involuntarily hospitalized at the University Hospital Centre Sisters of Mercy due to property damage during the night, prompting her mother to call emergency services and the police. The patient entered remission after receiving appropriate medical care and willingly agreed to undergo treatment. The treatment plan included intramuscular administration of paliperidone palmitate by the family physician every four weeks.

Discussion/Conclusion

The treatment of patients with a diagnosis of schizophrenia demands coordination between family physicians, psychiatrists, and social workers. Early intervention, continuous monitoring, encouragement of therapy adherence, and treatment adjustment to the patient's individual needs are essential to prevent possible escalation of the situation and ensure the patient's functional recovery. The case presented highlights the significant role of family physicians in the routine monthly intramuscular administration of antipsychotics, the main factor contributing significantly to successful disease control.

Key words

Compliance; Hallucinations; Medication Adherence; Paliperidone Palmitate; Schizophrenia

Clinical Challenges in Pantothenate Kinase-Associated Neurodegeneration (PKAN): A Case Report

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Introduction

Pantothenate kinase-associated neurodegeneration (PKAN) is a type of neurodegeneration with brain iron accumulation (NBIA), a rare inherited neurodegenerative condition typically emerging during childhood. It is marked by progressive nervous system degeneration with extrapyramidal, corticospinal signs and cognitive regression.

Case Report

We present a 12-year-old female who presented with an inability to abduct and extend the thumb of her right hand. Eight months earlier, she began experiencing initial symptoms of writing difficulty. While initially mild, these symptoms later advanced to the extent that she was unable to perform a pincer grasp. She reported an absence of pain, paresthesia or sensory loss. In the neurological examination, mild ptosis, difficulty walking on heels, impaired squatting, and restricted right hand and foot dorsiflexion, along with the inability to abduct the thumb and other fingers, were observed. Extensive examinations, including a brain magnetic resonance imaging (MRI) that revealed „the tiger's eye sign"– symmetric bilateral low T2 signal in the globus pallidus (due to abnormal accumulation of iron) with central high signal (due to gliosis and spongiosis), led to the diagnosis of PKAN, which was confirmed with genetic analysis. During the course of the disease, she manifested generalized dystonia with choreiform movements. Clonazepam and baclofen were introduced. Deferiprone, an iron chelator, was without notable improvement. After 4 years, she was readmitted to the hospital due to worsening disease symptoms, characterized by opisthotonic arching, massive dystonic movements of the arms, head, and trunk, with left torticollis and severely impaired walking corresponding to the dystonic storm. She partially improved after applying botulinum toxin to the most affected muscles. Finally, deep brain stimulation (DBS) was performed. Unfortunately, the condition only partially improved; she could walk but could not independently feed herself or perform personal hygiene tasks.

Discussion/Conclusion

This case underscores the clinical challenges of managing PKAN. Despite multimodal interventions, including botulinum toxin injections and DBS, the patient's condition deteriorated. Further research is imperative to address the complexities of PKAN and improve patient outcomes.

Keywords

Botulinum Toxin; Deep Brain Stimulation; Dystonia; Pantothenate Kinase-Associated Neurodegeneration;

Psychogenic nonepileptic seizures in patient with borderline personality disorder

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Introduction
Psychogenic nonepileptic seizures (PNES) are events clinically reminiscent of epileptic seizures, without excessive synchronous cortical electroencephalographic activity typical of epilepsy. The aim of this case report is to aid timely diagnosis of this disorder because of its potentially dangerous mistreatment.

Case Report
A 21 year-old female patient with borderline personality disorder (BPD), was admitted to the ER after repeatedly exhibiting seizure-like movements. The patient reports sporadically experiencing similar events for the past 4 years at that point, particularly after stressful circumstances. She described them as tics affecting different body parts, accompanied by chest pain, dyspnoea and occasional urinary incontinence. She was unaware of her surroundings during these episodes, but remembered them happening. After initial evaluation, she was admitted to the department of neurology and subjected to electroencephalography (EEG)-video monitoring for 3 days. Immediately after beginning the monitoring, the motoric phenomena had begun, including back and forth head tilting, grimacing and pelvic movement that had lasted 7 minutes, while having her eyes closed and being unresponsive. However, they weren't accompanied by typical EEG abnormalities found in epilepsy. She went through subsequent neuropsychological evaluation, which had found attention and memory deficits, as well as emotional disturbances she wasn't able to verbalize accurately. As BPD has multifactorial aetiology and played a significant role in formation of PNES, she was released from the hospital and advised to continue treatment through a nuanced approach consisting of individual psychotherapy and psychopharmaceuticals like antipsychotics, SSRI-s and benzodiazepines.

Discussion/Conclusion
PNES is a condition which leads to frequent misdiagnosis and inadequate treatment of patients with antiseizure therapy, which could potentially lead to irreversible adverse effects. A possible solution could be developing clear diagnostic criteria based on patient history, allowing for better selection of patients requiring EEG-video monitoring. Currently, there is no standardized treatment protocol, but efficient treatment of underlying causes of PNES, such as BPD, could improve quality of life and cognitive function in patients.

Keywords:
Borderline personality disorder, Dissociative Disorders, Electroencephalography, Neuropsychological tests, Psychogenic Nonepileptic Seizures

Frontotemporal degeneration

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Introduction
Frontotemporal degeneration describes a group of conditions caused by gradual decline of nerve cells in the frontal or temporal lobes of the brain. This deterioration results in impaired functioning within these brain areas, leading to a range of symptoms including changes in behavior, personality, and/or challenges in language production or comprehension.

Case report
A 68-year-old female presented with mild cognitive dysfunctions, predominantly affecting memory and attention, persisting over the past two years. She attributed these issues to the recent passing of her husband, who succumbed to Parkinson's disease eight months ago. Additionally, she experienced speech difficulties characterized by word-finding challenges and struggles with pronouncing longer words, despite maintaining spatial orientation.

She underwent neuropsychological testing which revealed anxious and depressive symptoms at a neurotic level in the domain of mourning, accompanied by initial cognitive deficits. Cognitive evoked potential assessments revealed regular P300 wave latency values, suggesting intact short-term auditory memory function. Speech therapy assessments revealed nominal aphasia, occasional speech fluency disruption and unsuccessful repetition of more than two terms, accompanied by dysgrammatisms and substitutions. These difficulties primarily arised from heightend emotional arousal and reactivity and did not indicate a need for speech therapy rehabilitation. Brain perfusion scintigraphy revealed hypoperfusion in the left temporal and parietal lobes, indicative of diffuse brain parenchymal atrophy. Positron Emission Tomography/Computed Tomography scans further confirmed cortical hypometabolism in the left temporal lobe, with milder involvement of the right temporal polar regions, while preserving parietal lobe metabolism.

Discussion/Conclusion
Frontotemporal degeneration has a significant impact on an individual's life, often resulting in challenges with social interactions and relationships. Therefore, It is crucial to recognize the symptoms and provide appropriate support and therapy to improve their quality of life and manage symptoms that affect daily functioning.

Keywords
aphasia, atrophy, attention, cognitive dysfunction, evoked potentials

Neuroleptic Malignant Syndrome

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Introduction
Neuroleptic Malignant Syndrome (NMS) is a potentially life-threatening reaction in response to certain neuroleptic medications with dopamine receptor-blocking properties or the rapid withdrawal of dopaminergic medications, particularly antipsychotic medications. It is diagnosed based on the presence of the triad of fever, muscle rigidity, and altered mental status.

Case Report
A 66-year-old patient, with underlying schizophrenia, presented to the psychiatric hospital due to the deterioration of his mental state, where he was treated with clozapine, risperidone, and diazepam. However, a week later, he required intensive care due to worsening somatic symptoms, fever, hypoxemia, and dyspnea. On physical examination, the patient was conscious but somnolent, with dysarthria, fever (38.5°C), tachycardia, and tachypnea. Acute intracranial events were ruled out via CT imaging. The initial laboratory results indicated elevated serum creatine kinase, elevated transaminases (AST, ALT) and CRP. Diagnosis of NMS was confirmed based on the fever, mental state deterioration, laboratory results like high creatine kinase and a history of treatment with antipsychotics. Psychiatric medications were immediately halted, and the patient received continuous intravenous sedation with midazolam. Additionally, supportive measures were initiated, including intravenous administration of isotonic crystalloid solution and antipyretics. After five days of stabilization, with improved mental status, antipsychotics (clozapine 25mg) and sedatives (diazepam 10mg) were cautiously reintroduced under psychiatric consultation. The patient returned to the psychiatric clinic for further management.

Discussion/Conclusion
Neuroleptic malignant syndrome represents a medical emergency associated with the use of antipsychotics, which is why it's important to monitor patients who are consuming antipsychotics, to enable early diagnosis and facilitate appropriate treatment. Incidence rates of NMS range from 0.02-3% among patients taking antipsychotics with mortality rates between 5-20 %, which is why early diagnosis is important for reducing morbidity and mortality.

Keywords:
antipsychotics; diazepam; dopamine antagonists; Neuroleptic malignant syndrome; schizophrenia;

Neurological consequences related to vitamin B12 deficiency: A case report

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Introduction
Vitamin B12 is indispensable for maintaining optimal bodily function, owing to its involvement in fundamental physiological mechanisms. Its deficiency can lead to a spectrum of diverse health issues. The purpose of this case is to present the neurological manifestations of vitamin B12 deficiency and emphasize the importance of adequate and timely supplementation.

Case Report
A 59-year-old female patient presented for urgent neurological evaluation due to progressive and severe walking difficulties which persisted for two months. She felt like her feet would burst and that her legs were wooden. After a detailed examination and diagnostic procedure, alternative etiologies were systematically ruled out and suspicion of vitamin B12 deficiency was raised. The suspicion arose due to the patient's 30-year vegetarianism without B12 supplementation until symptom onset. The patient commenced supplementation with a vitamin B complex, self-initiated, four weeks before the neurologist's evaluation. Therefore, laboratory value of vitamin B12 level was normal(536 pmol/L)[RI:138-652]. The patient was then referred for an MRI.

Brain MRI showed bilateral areas in the posterior internal capsule and globus pallidus with reduced signal intensity in T2 and FLAIR images, without post-contrast enhancement or restriction. Cervical spine MRI revealed hyperintense areas in the posterior spinal cord on STIR images, with an inverted V sign observed at the C4/C5 level. These findings were consistent with vitamin B12 deficiency.

The patient was prescribed intramuscular vitamin B12 therapy-1000 mcg twice monthly for 2 months, and then 1000 mcg once monthly. She was also referred for physical therapy. After physical therapy and regular supplementation, at the last examination, the patient reported partial improvement and walked better. After three decades without B12 supplements, the permanent consequences significantly reduced chances of achieving full recovery, with uncertain further improvement.

Discussion/Conclusion
Vitamins are essential substances that are required for proper physiological function, and their deficiency should be considered in the differential diagnosis. In this case, vitamin B12 deficiency resulted in neurological symptoms and diminished quality of life. Early recognition is crucial for managing progression and optimizing patient outcomes.

Keywords
vitamin B12; neurological examination; MRI scan; vitamin B complex; intramuscular injection

Progressive brain arteriovenous malformation

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Introduction

Arteriovenous malformations (AVMs) are congenital lesions composed of dysplastic vessels (nidus) fed by arteries and drained by veins without intervening capillaries. The most common presenting symptom is a brain hemorrhage due to the rupture of AVM. Potential additional symptoms include neurological deficits, seizures, and headaches. While intervention for ruptured AVMs is justified, the management of unruptured AVMs remains controversial.

Case Report

A 21-year-old female was admitted to the hospital for assessment and consideration of further treatment for symptomatic AVM. On physical examination, the neurological status showed a preexisting right hemiparesis, amaurosis of the right eye, and impaired visual function of the left eye. The first symptoms appeared 13 years earlier when a discreet tremor of the right hand was noticed. Magnetic Resonance Imaging (MRI) revealed a complex AVM in the left thalamus. Cerebral Digital Subtraction Angiography (DSA) showed a nidus filled by lenticostriate arteries and branches of the anterior choroidal artery and posterior communicating artery. Venous drainage occurred through thalamostriate and internal cerebral veins toward the straight sinus, and through cortical veins toward the superior sagittal sinus. The overall diameter of the nidus was about 4 cm with several smaller intranidal aneurysms (Spetzler-Martin grade IV). Follow-up cerebral DSA showed an increase in the AVM, with a significant progression in the size of aneurysms on the venous aspect of the malformation. Due to clinical and significant morphological progression, endovascular treatment is considered.

Discussion/Conclusion

The therapeutic options for patients with AVMs include surgical resection, stereotactic radiosurgery, embolization, or a combination of these modalities. Medical management alone remains superior to interventional therapy for the prevention of death or symptomatic stroke in patients with unruptured brain AVMs, especially in those who have Spetzler-Martin grade III or higher. Further studies need to identify risk factors to stratify patients who would benefit the most from the interventional treatment.

Escaping psychosis through psychoactive substance abuse or descending into deeper psychosis and forensic treatment?

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Introduction

Organic psychosis (schizophrenia-like) disorder has organic etiology (brain trauma; epilepsy; metabolic, inflammatory, circulatory causes; various drugs) in which the clinical picture is dominated by persistent or recurring delusions that may or may not be accompanied by hallucinations. The cases of this etiology often occur in the field of forensic psychiatry.

Case Report

A man born in 1996 was first hospitalized in June 2015 for expressing homicidal intentions towards his mother and physical attacks on his stepfather. He was born as the only child in a dysfunctional family, which fell apart in his early childhood. Until the age of 12, he lived with his grandparents, and later with his father, who had legal problems. He has a very strained relationship (without contact) with his mother, who suffers from psychosis. As a child, he underwent psychological treatment for stuttering. He has suffered from epilepsy since childhood. He failed to complete his high school education, and during that period he started consuming alcohol, amphetamines, cocaine, and other psychoactive substances to reduce his anxiety, fears, and hallucinations. Over the past two years, he has expressed feeling of someone watching him through the keyhole, being filmed at home and being tracked through his mobile phone. In July 2023, he set an unknown car on fire and threatened to kill his stepfather. Due to therapeutical non-compliance and frequent drug use, short-term hospitalizations led to no success. He encounters legal issues, and due to the danger of committing the same or even more severe criminal acts, he is involuntarily administered to the psychiatric hospital following the court decision. Treatment plan includes antipsychotics, antiepileptics as well as psychotherapy. Reduction of psychotic symptoms was achieved.

Conclusion

Individuals suffering from psychotic disorders often seek salvation in psychoactive substance abuse, which only pushes them deeper into the illness. Emotional and social support from family and friends, unquestionably lacking in the presented case, remains the most crucial factor in treating these patients.

Keywords

Epilepsy; Forensic Psychiatry; Hallucinations; Hospitalization; Psychotic Disorders

Autoimmune encephalitis: A Case Report

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Introduction
Autoimmune encephalitis is an immune-mediated condition that induces brain inflammation and is one of the most common causes of non-infectious encephalitis, caused by autoimmune disease or as a part of paraneoplastic syndrome. Common symptoms include memory loss, psychosis, altered mental status, or seizures. Diagnosing autoimmune encephalitis can be difficult as the average onset of symptoms to diagnosis often takes a few weeks to three months.

Case Report
A 54-year-old male was admitted to the Department of Neurology due to cognitive and behavioral difficulties in the past month. After admission a neuropsychological evaluation was done. The results showed a clear cognitive dysfunctionality, presented in verbal and mnestic aspects, visually perceptive organization, and constructive abilities. Because of the difficulties the patient was immediately treated with corticosteroids, which were quickly replaced with immunoglobulin and sedation therapy due to the agitated and paranoid state of the patient. Brain magnetic resonance imaging (MRI) displayed no specific abnormalities, while an electroencephalogram (EEG) showed some encephalopathic changes. Computed Tomography (CT) of the thorax, abdomen and pelvis displayed nonspecific lung nodules, left adrenal gland hyperplasia, enlarged prostate and osteolytic lesions of the iliac bone. Further processing included microbiological examination which showed negative results for Tick borne encephalitis virus, West Nile virus and Usutu virus. Later, autoimmune, and paraneoplastic antibodies were also done, and both tests gave a negative result. During hospitalization the patient was cardiopulmonary compensated, afebrile, and showed an improvement in cognitive and psychological states.

Conclusion
Although differential autoimmune encephalitis antibodies were negative, the patient was diagnosed with autoimmune encephalitis since he responded well to immunoglobulin therapy and the processing excluded infective and paraneoplastic etiology. Considering that the diagnosis of autoimmune encephalitis can be challenging due to the variability of symptoms and the time of their development, it is necessary to include multiple tools in the search and pay special attention to clinical judgment. Early treatment and not requiring ICU admission usually leads to a good outcome. However, if left untreated or treated too late, it can lead to serious complications.

Keywords
autoimmune encephalitis, corticosteroids, inflammation, seizures

Arachnoid cyst compression on the trigeminal nerve

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Introduction
Arachnoid cysts are rare, benign intracranial lesions characterized by localized intraarachnoid accumulation of cerebrospinal fluid. They make up approximately 1% of all intracranial lesions. They can cause a variety of symptoms, making diagnosis challenging.

The article aims to present a rare benign intracranial entity, with non-specific clinical implications that can go unnoticed, and its diagnostic procedures.

Case Report
A 75-year-old patient with known progressive hearing loss for the past sixteen years, presented in 2017 with intense rotational vertigo, nystagmus, and hyperacoustic phenomena after exposure to external noise. He received treatment at the emergency department of the Clinical Hospital "Sveti Duh", where he was given thiethylpreazine malate and diazepam, which led to improvement. The patient was under regular monitoring by neurologists and otorhinolaryngologists. In 2019, the patient's condition worsened, as he began experiencing tinnitus and cranial pressure. To manage these symptoms, the patient was prescribed betahistine and clonazepam, which proved to be effective.

For two years, the patient has been experiencing worsening symptoms that occur at night. To diagnose the condition, magnetic resonance imaging (MRI) of the temporal bones and pontocerebellar angles was performed with and without a contrast agent. The results showed an arachnoid cyst, which was causing compression on the root entry zone of the trigeminal nerve and up to its entrance into Meckel's cave.

After a thorough review of the results, a neurologist took over and offered treatment options to improve the patient's quality of life considering that his neurological disorder affects everyday functioning.

Discussion/Conclusion
It is crucial to properly diagnose and treat arachnoid cysts because they can lead to a range of symptoms that can significantly affect a person's overall well-being. According to medical literature, these cysts account for just over 1% of cases. In a unique case, trigeminal nerve compression caused rotational vertigo and hyperacusis instead of trigeminal neuralgia. This highlights the importance of a thorough evaluation and specialized care when managing complex neurological conditions like arachnoid cysts, especially when symptoms differ from the typical presentation.

Keywords:
Arachnoid cyst, magnetic resonance imaging, tinnitus, trigeminal nerve, vertigo

Unruptured carotid-ophthalmic artery aneurysm manifesting as complete third nerve palsy – case report

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Introduction

Intracranial aneurysms are local expansions of cerebral arteries that occur due to a structural defect of the arterial wall. The aim of this case report is to emphasize the importance of digital subtraction angiography (DSA) being the most relevant diagnostic method of aneurysm detection.

Case Report

A 50-year-old female patient presented to the Emergency Department complaining of diplopia, blurred vision and severe pain in the right eye and right forehead. At admission, the neurological exam revealed complete third nerve palsy. The ophthalmologist exam ruled out ocular pathology. Brain computed tomography (CT) and CT angiography revealed no recent lesions and no aneurysms. Neurosonological imaging hasn't been made. The patient was hospitalized at the Clinic of Neurology in Rijeka for further examination. During hospitalization, the patient underwent a brain magnetic resonance imaging (MRI) venography and brain MRI that detected an aneurysm of the right arteria carotis interna (ACI), not clarifying the symptoms. For this reason, it was crucial to extend the diagnostic processing by DSA which showed bilateral aneurysms of ACI, one located in the ophthalmic segment of the right ACI, considered the cause of the clinical picture. The patient was transferred to Rebro Hospital in Zagreb for further surgical treatment. At the first postoperative follow-up, an improvement of the clinical picture in terms of exophthalmos regression and partial oculomotor function recovery was noted.

Discussion/Conclusion

Unruptured aneurysms can present with a range of symptoms depending on their localization. The presented case demonstrates that DSA should undoubtedly be considered an optimal method of aneurysm detection.

Keywords:

Aneurysm; complete third nerve palsy; exophthalmos; diplopia; digital subtraction angiography (DSA)

Cervical dystonia: the truth behind the myth

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Introduction

Cervical dystonia (CD) is a neurological movement disorder characterized by continuous contractions of neck and head muscles, often leading to abnormal positions of the neck or tremor while severely affecting the quality of life of these patients. Previously clouded by the stigma of underlying or suspecting psychiatric illness, it has just recently caught the attention of neurological experts both in treatment and diagnostic possibilities. This report will describe how CD and botulinum neurotoxin (BoNT) therapy affects the mental and physical state of patients.

Case Report

At the Department of Neurology, three female patients were admitted to receive local intramuscular BoNT treatment for CD to reduce dystonic posture and movement. They have all been chosen randomly with given written consent and were free of prior psychiatric ailments and therapy. The severity of dystonia was evaluated by Tsui score (scale that assesses the amplitude and duration of involuntary neck movements), while in order to accurately assess mood disorders, all patients have taken the Beck Anxiety Inventory (BAI) and Beck Depression Inventory (BDI) prior to and after the treatment. Three weeks later, follow-up control of the patients showed significant improvement of CD severity as well as improvement of psychiatric symptoms.

Conclusion

These case reports support medical research and newfound theories regarding CD: the disease more commonly affects women who more often express psychiatric symptoms, while there is no correlation between the severity of illness and psychiatric symptoms themselves. This suggests underlying mood disorders to be an intrinsic part of CD rather than the consequence of its severity. BAI and BDI questionnaires should be routinely done to detect mood disorders in this group of patients and by doing so improve their quality of life. All of the patient outcomes were uniform, without any major differences.

Keywords:

dystonia, cervical dystonia, neurology, botulinum toxin

Ischemic stroke revealing underlying myocarditis: a case report

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Introduction

Stroke is a major cause of mortality and disability, especially devastating for the young population. Stroke in young adults requires a comprehensive diagnostic approach given the broad spectrum of possible causes, with cardioembolism accounting for the majority of identified etiologies. As intracardiac thrombi formation can be linked to a recent infection, it is crucial to obtain a detailed history preceding the cerebrovascular event.

Case report

A 29-year-old male presented to the Emergency Department with sudden onset right-sided weakness and slurred speech. The patient's mother reported recent coughing and vomiting.

The examination revealed right hemiplegia, central facial palsy, severe motor dysphasia and a positive Babinski sign. The initial National Institutes of Health Stroke Scale score (NIHSS) was 19. The electrocardiogram showed an atrial flutter. Neuroimaging (CT angiography and CT perfusion) revealed occlusion of the left internal carotid artery and the middle cerebral artery. The patient underwent thrombolysis, followed by a successful mechanical thrombectomy.

Due to hemodynamic instability, a cardiac workup was conducted, establishing a non-ischemic dilated cardiomyopathy. He was admitted to the Department of Cardiology, where optimal therapy was given and further diagnostic follow-up was performed. For now, genetic and immunological causes were ruled out. Given the high risk of another thromboembolic incident, anticoagulant therapy was prescribed. After physical therapy, the patient was left with minimal neurological deficit. Several months following the discharge, he suffered two episodes of acute pericarditis requiring hospitalization.

Discussion

In this case, the probable cause of the stroke is thrombus formation due to acute dilated cardiomyopathy and atrial fibrillation that developed as a consequence of myocarditis.

Myocarditis was likely caused by a previous respiratory or gastrointestinal infection.

We hypothesize that the patient has a predisposition for developing significant myocardial injury triggered by pathogenic agents, but additional diagnostic testing is required to determine a definitive cause. Overall, it is important to identify the underlying causes to prevent stroke reocurrence.

Key words

atrial fibrillation, dilated cardiomyopathy, myocarditis, pericarditis, stroke

Small bite, big problem- neuroborreliosis

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Introduction

Neuroborreliosis is an infection of the central and peripheral nervous system. It is caused by the spirochete bacterium Borrelia burgdorferi (Bb), which is transmitted to humans through a bite of infected tick of the Ixodes genus. In the initial stage of the disease, symptoms are manifested as erythema migrans, accompanied by possible muscle pain and fever.

Case Report

A 24-year-old previously healthy male soldier presented with a 3- weeks history of horizontal double vision (diplopia), occasional headache, dizziness and wrist arthralgia without fever, was hospitalized at the Department of Infectology. A month and a half prior to the hospitalization he had a skin lesion on his right forearm that spontaneously regressed within a few days. He showed a photo of his skin lesion (circular, expanding rash with target-like appearance). At the admission, physical examination, routine laboratory tests and a head MRI were normal. Based on anamnestic and epidemiological data, neuroborreliosis was suspected. Cerebrospinal fluid (CSF) analysis revealed a 88% of lymphocytes and moderate proteinorrhagia. CSF and serum samples were collected and tested for the presence of Borrelia antibodies. The definitive diagnosis of neuroborreliosis was confirmed on the basis of neurological symptoms, lymphocytic pleocytosis in the CSF and confirmed intrathecal production of antiborrelial antibodies. The patient was treated with ceftriaxone for 21 days and he has fully recovered.

Discussion/Conclusion

The most important thing is to recognize the local stage of the disease (erythema mygrans) and start antimicrobial therapy to prevent the spread of the disease. Unfortunately, even 20-50% of patients do not develop the local stage of the disease, or when the local stage develops, it's passes spontaneously without any therapy. In this report we present a case of proven neuroborreliosis resulting from non-treatment of the local stage of the disease.

Keywords

neuroborreliosis, meningitis, pleocytosis, erythema migrans, cerebrospinal fluid

SATURDAY 20.04.

Student Session 1

Electroconvulsive therapy in treatment-resistant depressive episode of bipolar disorder in adolescent

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Introduction
Electroconvulsive therapy (ECT) is a medical procedure that uses an electrical current to cause mild seizures to treat a range of severe mental illnesses. The aim of this case report was to relate the effect of ECT in treatment-resistant depression as a part of bipolar disorder.

Case Report
A 22-year old female patient presented with severe depressive episodes of bipolar disorder after she was initially diagnosed with depression as a high school student. As a manic episode occurred, the diagnosis changed to bipolar disorder. Her positive psychiatric heredity includes chronic alcoholism with suicide, inorganic psychosis and paranoid schizophrenia. She has had numerous depressive episodes with difficulty of functioning, disturbed circadian rhythm, reduced energy, strength and will along with difficulty in concentrating and performing simple daily activities. Her mental status described a reduced volitional-instinctive mechanism, psychomotor tension and anxiety, lowered mood, nevertheless, she was cooperative and motivated for treatment. She has been hospitalized repeatedly due to high suicidal risk. ECT application was approved due to the intensification of the depressive state and resistance to the previous psychopharmacological treatment. Twelve applications of ECT were performed under short-term total intravenous anaesthesia (TIVA) along with the correction of pharmacotherapy with the introduction of lithium and clozapine. After the procedure, she is still sub-depressive, but 'can fight against listlessness'. Due to antipsychotic therapy (aripiprazole), she developed tremors of the whole body so biperiden was introduced.

Discussion/Conclusion
Unfortunately, electroconvulsive therapy still presents with stigma, as the mechanism of action is still not completely known. However, this case report highlights the utilization of ECT as a viable intervention in the challenging scenario of treatment-resistant depressive episodes of bipolar disorder. The patient's state did enhance, proving the positive effect of ECT in such indications.

Keywords:
Bipolar Disorder, Depression, Electroconvulsive therapy, Mood Disorders, Pharmacotherapy

Childhood psychotraumas and their influence on behavioural features in adult life

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Introduction
Sense of security and support are of paramount importance for every person during the early years of life, that lets to encourage children to explore the environment confidently and independently, despite possible failures. In case of trauma was caused to the child by one or two parents, then as a result can be formed a negative belief system, in which a secure attachment style is not shaped enough. Evidence in the scientific literature indicates the influence of child trauma on adult behavior. It is noted that more than 70 per cent of the world's population experienced some form of psychological trauma during childhood. Nevertheless, this issue, despite its relevance, remains insufficiently studied. In our study, child trauma is addressed through physical, sexual and emotional violence and used to understand future outcomes.

Materials and Methods
The survey was conducted remotely among the citizens of Tyumen, as well as directly in the Tyumen shelter, the total of 80 participants.

Results
The first group included residents of the city of Tyumen (40 people). A half of surveyed lived in intact families; 30 experienced physical violence in childhood, 15 witnessed the mother being beaten by their father/stepfather or mother's partner. Seven people admitted being victims of sexual violence as children. 5 of the respondents experienced the death of a close person (relative) in childhood. 12.5 % lived with those who had adipose disorders. According to the results of the meaningful orientation test, 37 (92.5%) have fairly high indicators in the following areas: 1. Determination; 2. Emotional saturation in life; 3. Satisfaction with self-realization. The second group of the surveyed included the patients of the Tyumen shelter (40 people). Based on the results of the questionnaire, the majority of people in 2 groups (87.5 %) lived in families with financial difficulties; 30 of those interviewed had experienced physical violence in childhood, 17 (42.5%) witnessed the beating of the mother by their father/stepfather or partner of the mother. 5 people admitted being victims of child sexual abuse, all 5 of whom were female. 14 patients experienced the death of a close person in childhood. 23 people lived with addicted. Most of the respondents of the second subgroup: 34 people or 85%, summing up the results of the meaningful orientations test have low indicators in the following areas: 1. Determination; 2. Emotional saturation in life; 3. Satisfaction with self-realization.

Discussion/Conclusion
Patients in the second group have a locus of control directed from the outside based on the results of the test of life-meaning orientations. Also low scores on determination; emotional intensity in life; satisfaction with self-realization. Despite all the traumatic factors listed above, according to the survey results, 27 (67.5%) of respondents believe that their childhood was happy, which indicates a possible mental distortion of the past.

Keywords
anxiety, childhood psychotraumas, depression, mental health, psychotherapy

Navigating the psychiatric perspective in a patient with recurrent postcoital transient global amnesia

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Introduction
Transient global amnesia (TGA) is a neurological syndrome characterized by the abrupt onset of profound anterograde amnesia, associated with variable retrograde amnesia and repetitive questioning. It is typically resolved within 24 hours, with no accompanied neurological deficit. The exact cause is poorly understood, but there is a general agreement that pathological changes affect the hippocampus. While TGA is primarily considered as a neurological phenomenon, this paper aims to emphasize the importance of considering the potential psychological and psychiatric aspects of the condition.

Case Report
A 43-year-old female presented with sudden onset confusion and memory loss after sexual intercourse. A brain magnetic resonance imaging scan showed no acute pathomorphological substrate, only minor chronic vascular lesions in the occipital lobe (she had had a cryptogenic stroke 14 years before, also after sexual intercourse) and several punctate vascular lesions in the frontal area. Extensive physical examination was performed with no clear diagnosis confirmed. Symptoms were understood as TGA. Five more of the same postcoital episodes followed during the next few years. The last hospitalization was due to retrorrhagia. The patient was exanimated by a psychiatrist due to the connection of previous complaints (TGA) and current ones with sexual intercourse. The patient denied psychological problems and being under stress. A psychological assessment revealed some conversion symptoms, generalized anxiety, a tendency of acting out reactions and suppression were registered.

Discussion/Conclusion
The presence of psychopathological elements in the context of TGA highlights the importance of a comprehensive and integrated approach to patient care. Collaboration between neurology and psychiatry allows for a more holistic understanding of the patient's presentation, which can inform treatment planning and ensure optimal outcomes for the patient.

Keywords
memory loss, psychiatry, psychological factors, sexual intercourse, transient global amnesia

Esk etamine: a novel fast-acting treatment option for treatment- resistant depression

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Introduction

Treatment-resistant depression (TRD) is a form of major depressive disorder that does not show effective responses to antidepressant medications after trials of two or more lines of treatment. This condition poses a significant challenge, leading to prolonged suffering and impaired functioning for those affected. Esketamine nasal spray has recently been approved for TRD and represents a new treatment paradigm because modulates glutamatergic activity by antagonizing the ionotropic N-methyl-d-aspartate (NMDA) receptor.

Case Report

A 61-year-old patient, who has been coping with depressive disorders since 2008, underwent various treatments without achieving symptomatic or functional remission. Despite trying multiple therapies such as maprotiline, sulpiride, mirtazapine, venlafaxine, vortioxetine, duloxetine, and escitalopram, her condition persisted, as indicated by MADRS=37 and CGI- S=6 scores. Eligible for nasal esketamine, the patient underwent 56mg twice weekly for one month, completed the initial phase, and achieved symptomatic remission. Notably, there was an improvement in mental functions, reflected in MADRS=14 and CGI-I=2 scores. With the first continuation of treatment, the patient underwent 56mg once weekly next month and continued to show progress, with MADRS=10 and CGI-I=2, and achieving symptomatic and functional remission. Presently, the patient remains on esketamine maintenance therapy at 56mg every two weeks.

Discussion/Conclusion

In this case, esketamine demonstrated notable effectiveness and acceptable tolerability in the short term, with mild and transient dissociative effects. For individuals dealing with severe depression and finding limited relief from conventional TRD management, the compelling results indicate that incorporating esketamine therapy adjunctively could be a particularly impactful and beneficial strategy, but minor adverse reactions can occur. Esketamine showed long-term efficacy and safety and according to the current guidelines, maintenance therapy should last for up to two years.

Keywords

Antidepressive Agents, Depression, Nasal Sprays, Psychiatry

Psychiatric manifestations of autoimmune N-metyl-D-aspartat-Receptor (Anti-NMDAR) encephalitis

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Introduction

Anti-NMDAR encephalitis is an autommune disease in which autoantibodies on NMDAR in the brain are being produced. Disruption occurs in neurological signalization, resulting in encephalitis and brain edema. Women are more commonly affected.

Case Report

A 29-year-old female patient was brought and urgently hospitalized in August 2023 in the Clinic for Psychiatry with symptoms of psychosis. She presented with agitation, disorganization, disorientation, under the infuence of delusional content with no possibility of adequate contact. Heteroanamnestically, it was found that she had relationship ideas and that „situations from the video, that she watched before, are happening to her“. Four days before hospitalization, she was coming to the emergency room every day because of headaches. There is no psychiatric ilnesses in her family history. During hospitalization, more types of antipsychotic drugs were ordinated because of inotolerance – initially haloperidol, risperidone, flufenazine and then aripiprazole with a low dose sedative. Eventually, the aripiprazole was excluded because of extrapyramidal symptoms: clozapine was ordinated instead, but without improvement. Atypical encephalitis was suspected and the cerebrospinal fluid (CSF) sample was taken. Onwards, the patient got edema and pain in the left foot with high rate of D-dimers during hospitalization. Color-Doppler confirmed deep vein thrombosis. Heart and abdominal ultrasound, electoencephalogram, brain magnetic resonance imaging and thorax computer tomography were made. Diferencial-diagnostic infectological and reumatological findings were negative. Paraneoplastic syndrome was excluded. The CSF finding on anti-NMDAR encephalitis was positive. The patient was eventually transfered to the Department of Neurology. After five cycles of plasmapheresis, the patient has improved.

Discussion/Conclusion

This case shows challenges in treatment of anti-NMDAR encephalitis. It presents difficulty not only in treating but also recognising this type of encephalitis, which has presented only through psychiatric symptoms due to the involvement of the limbic system. Also, it shows the importance of cooperation of psychiatrists and neurologists.

Keywords:

Anti-NMDA encephalitis, autoantibodies, neurology, plasmapheresis, psychiatry

Poster Session 2

Treatment-Resistant Schizophrenia in a Poor Drug Metabolizer

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Introduction
Treatment-resistant schizophrenia (TRS) is a clinical condition where patients continue to exhibit persistent psychotic symptoms despite the administration of at least three different antipsychotic medications. This condition develops in approximately 30% of individuals undergoing treatment for schizophrenia and is a major therapeutic challenge. This case report examines a patient who was hospitalized for a criminal offense and diagnosed with TRS.

Case Report
During psychotic decompensation, a 37-year-old male patient attacked his father who then called the police. The patient attacked police officers with a knife and insect repellent spray and injured them before being transferred to the forensic department, deemed legally insane. Medical history shows that the patient has been suffering from schizophrenia for two decades and hospitalized 14 times for psychotic decompensation. Both his father and sister suffer from schizophrenia. According to psychiatric examination, he lacked insight, was agitated, verbally aggressive and disoriented. He also had paranoid hallucinations and persecutory ideas. The patient was involuntary hospitalized for 6 months and was administered clozapine, haloperidol, levomepromazine, biperiden, paliperidone and clonazepam. The therapy helped him become more stable, cooperative and calm. In the course of extended monitoring and prolonged hospitalization, the antipsychotics were gradually increased to maximum doses due to occasional exacerbation of symptoms. However, the chronicity of psychotic thoughts, delusional ideas and hallucinations still persists despite the administration of maximal doses and various combinations of antipsychotics, including clozapine being the last-line medication, and mood stabilizers. This proves the TRS diagnosis. The brain CT was normal, but pharmacogenomic test showed that the patient is a poor drug metabolizer. Whenever offered electroconvulsive therapy (ECT), he always declined it.

Discussion/Conclusion
TRS remains a significant therapeutic challenge, especially in patients who do not respond to the last-line therapy clozapine. In this highly rare case, the patient not only fails to respond to clozapine but is also a slow drug metabolizer which requires a further research of this phenomenon. However, following the algorithm, ECT remains the only treatment option which requires the patient's consent.

Keywords:
Antipsychotic Agents; Electroconvulsive Therapy; Forensic Psychiatry; Pharmacogenomic Testing

Organic Etiology of Psychosis Decompensation

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Introduction
Deterioration of mental state, often manifested as psychosis decompensation, can sometimes be attributed to underlying organic pathologies. The case highlights the complex interplay between psychiatric symptoms and an underlying meningioma, emphasizing the importance of comprehensive diagnostic evaluation and interdisciplinary management.

Case report
A 59-year-old female, presented with psychosis decompensation, exhibited disorientation, elevated mood, and disorganized behaviour upon admission. Despite pharmacotherapy, including antipsychotics and anxiolytics, her condition showed minimal improvement. Diagnostic workup, including brain imaging, revealed a Falx meningioma on the right parietal lobe. Notably, the patient had been hospitalized two years prior in the psychiatric department, where the meningioma was initially discovered, but she resisted suggested treatment at that time. Neurosurgical consultation recommended intervention, though the patient initially declined, reflecting her previous reluctance. Throughout her hospitalization, the patient remained resistant to surgical intervention, resulting in ongoing psychiatric management. However, her symptoms persisted, suggesting the need for neurosurgical intervention to address the underlying organic pathology. Due to the interplay of psychiatric symptoms and the tumour, social services were involved. Surgical intervention was deemed vital, as the patient couldn't make an informed decision based solely on psychiatric evaluation.

Conclusion
In this case, the deterioration of mental state was intricately linked to an underlying organic event, the meningioma. Despite psychiatric management, the patient's symptoms remained refractory, highlighting the importance of addressing the organic etiology. Collaboration between psychiatric, neurosurgical, and social services teams ensured comprehensive care. Further outpatient management will necessitate ongoing psychiatric support alongside consideration of neurosurgical intervention to optimize the patient's long-term outcomes. This case underscores the need for a holistic approach in managing psychosis decompensation, especially when organic etiologies are implicated, and emphasizes the importance of interdisciplinary collaboration in addressing complex medical and social needs.

Keywords
antipsychotic agents, female, meningioma, psychotic disorders, social work

Psychiatric manifestations of alcohol addiction: A rare case of alcohol hallucinosis

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Introduction
Alcohol hallucinosis is a rare complication of chronic alcohol dependence characterized by auditory or visual hallucinations. This condition is rare due to early detection of alcohol dependance. Unlike delirium tremens, hallucinosis involves no significant confusion and disorientation. Our case focuses on a patient that has experienced alcohol hallucinosis which resulted in the murder of his mother.

Case Report
A 48-year-old patient with alcohol dependence has been hospitalized for experiencing psychosis. As a result of chronic alcohol addiction, the patient developed psychopathological phenomena corresponding to an acute psychotic disorder at the time of the crime. These phenomena point to alcohol hallucinosis. Upon arrival, medical history was taken. The patient has a positive family history of alcohol addiction. He did not receive any therapy until hospitalization. A month prior to the act, the patient began experiencing auditory hallucinations considering himself the “master of the universe.” Visual hallucinations were also presented in such a way that he viewed his mother as a “beast” that had to be killed. The patient did not understand his behavior and sought help with explaining why he committed murder. The psychological diagnostic Bender test showed severe difficulties in performing visual-motor coordination. These results point to organic brain damage due to alcohol addiction. Despite prior treatment with haloperidol, diazepam and polivitamins, auditory hallucinations persisted until switching to olanzapine. He currently receives individual psychiatric support, olanzapine, diazepam and escitalopram oxalate showing calmness, remorse and cooperation with no hallucination recurrence.

Discussion/Conclusion
This case addresses severe consequences of alcohol dependence leading to alcohol hallucinosis, an exceedingly rare acute condition. Continued research is vital to determine the crucial role of early intervention and personalized psychiatric care as well as monitoring psychiatric manifestations caused by alcohol addiction.

Keywords:
Hallucinations; Homicide; Psychotic Disorders; Psychoses, Alcoholic

Pharmacotherapy Challenges in Comorbid Alcohol Dependence and Social Anxiety Disorder

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Introduction

Alcohol use disorders (AUDs) and comorbid anxiety disorders often co-occur compounding one another, presenting great challenges in clinical management. Treatment approaches for one disorder may not effectively address the other, emphasizing the importance of individual treatment strategies.

Case Report

A 30-year-old male, suffering from social anxiety disorder, which would often escalate into panic attacks, presents with longstanding alcohol misuse. The onset of his alcohol dependence (AD) dates back to his high school years when he used alcohol as a means of self-medicating symptoms of anxiety, particularly during challenging social situations, reaching a dipsomaniac pattern of heavy drinking. Different pharmacotherapy and psychotherapy options have been attempted throughout his treatment history, including supervised detoxification using diazepam. Following detoxification, the patient was initiated on naltrexone to reduce alcohol cravings and pregabalin to address both alcohol withdrawal symptoms and underlying anxiety. The patient was also engaged in cognitive-behavioral therapy (CBT) to address maladaptive thoughts and behaviors associated with both social anxiety and alcohol misuse. He resumed alcohol consumption in the last ten days prior to his latest admission, consuming significant amounts daily. During this admission, the patient presented with severe withdrawal symptoms. Despite not specifying specific triggers for the relapse, he emphasized feeling a strong craving for alcohol.

Discussion and conclusion

The efficacy of pharmacotherapy for AUDs is well documented, but limited data exists from randomized controlled trials targeting these concurrent conditions. Individualized treatment strategies that address both AUDs and comorbid anxiety disorders are essential for successful outcomes. Pharmacotherapy, including benzodiazepines for alcohol withdrawal and naltrexone and pregabalin for dual symptom management, plays a crucial role in treatment. While serotoninergic medications commonly used in anxiety disorders have not shown significant benefits for comorbid AUDs and anxiety disorders, gabapentinoids demonstrate promise. Further research is needed to optimize treatment approaches in this area.

Keywords

Alcohol Dependence, Comorbidity, Pharmacotherapy, Social Anxiety Disorder, Withdrawal Syndrome

Exacerbation of chronic obstructive pulmonary disease during patient's psychotic phase due to residual schizophrenia

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Introduction

While most people with chronic obstructive pulmonary disease (COPD) can achieve good symptoms control with proper adherence to therapy, some psychiatric conditions like schizophrenia and major depressive disorder can lead to poor management of some present somatic diseases. We report on a further patient with COPD exacerbation during the psychotic phase of residual schizophrenia

Case Report

A 63-year-old female patient is admitted to the psychiatry department due to psychosis. The patient was initially monitored for multiple years by a psychiatrist due to symptoms of a depressive disorder, but after the occurrence of psychotic episodes, the diagnosis of schizophrenia was confirmed. She had been regularly taking injections of long-lasting paliperidon with promazine and diazepam for years. At the time of admission, she was presented with a deteriorated mental state in the form of restlessness, tension, insomnia, worry, abulia, and a disturbed mood. She reported auditory sensory illusions and connected the destabilization with the distress regarding her son's illness. During the physical examination, she was dyspnoic, and the auscultation confirmed occasional wheezing, so she was referred to a pulmonologist. Beside the dyspnea, she was cyanotic with bilaterally extended expirations and reported smoking around 20 cigarettes per day for 30 years. The diagnosis of COPD was not confirmed by spirometry tests of pulmonary function because of the patient's uncooperativeness due to deteriorated mental status, so diagnosis was established based on blood gas analysis, physical examination, and a positive response to bronchodilatatory therapy. Psychosis was successfully managed with promazine, paliperidone, diazepam and flurazepam. For COPD management, the patient was prescribed Anoro ellipta and Ventolin. After the stabilization of the patient's condition, she was discharged, but remains regularly monitored.

Conclusion

With a good patient approach and well-adjusted therapeutic management of psychiatric conditions, patients tend to have a positive approach towards somatic diseases, which may prevent possible complications.

Keywords:

Disease Progression; Psychiatry; Psychotic Disorders; Pulmonary Disease, Chronic Obstructive; Schizophrenia.

Pre-delirious state in a patient with alcohol and pregabalin withdrawal syndrome

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Introduction

Delirium, characterized by attention and consciousness disturbances, aggression, hallucinations, and confusion, often stems from alcohol intoxication or withdrawal. Delirium during withdrawal is life-threatening but can be prevented by prompt treatment within 12 hours of the last drink. Symptoms like tremors, sweating, anxiety, palpitations, and disorientation, refer to a pre-delirious state. Pregabalin, a neurotropic gabapentinoid, may also induce delirium and pre-delirious states.

Case Report

The 32-year-old patient voluntarily seeks his 6th hospitalization to abstain from alcohol and pregabalin. He has been consuming large amounts of alcohol for 14 years and pregabalin for 3 years. Upon this admission, his blood alcohol level is 2 ‰. After 12 hours, he developed severe bilateral hand and tongue tremors, sweating, and anxiety, but remained oriented and with no hallucinations. His vital signs are: blood pressure 200/100 mmHg, heart rate 205 bpm, body temperature 37.2°C, oxygen saturation 93%, and blood glucose level 4.7 mmol/L. The patient is treated with 10mg diazepam intravenously in 250 ml of saline solution and 10mg amlodipine per os, then after one hour with repeated dose of diazepam.

After two hours, his symptoms improve, with diminished sweating, tongue tremor, and milder hand tremors. His blood pressure was reduced to 150/90 mmHg, heart rate to 120 bpm. Zolpidem is finally given for sleep. After 5 hours, he wakes up fully oriented, with mild hand tremors, no anxiety, blood pressure 130/80 mmHg, heart rate 90 bpm, and normal parameters. The patient is stabilized, continuing benzodiazepine treatment and group therapy. Long-term rehabilitation in a therapeutic community is planned after hospital discharge.

Discussion/Conclusion

Pre-delirium can be identified by characteristic symptoms such as tremors, anxiety, sweating, and palpitations. Such a condition is not frequently recognized, yet it is crucial to promptly identify and treat it with high doses of benzodiazepines to prevent progression to a life-threatening delirium state.

Keywords

Alcoholic Intoxication; Benzodiazepines; Delirium; Pregabalin; Tremor

Aircraft mechanic holding PhD or patient with alcoholism, post- traumatic stress disorder, head trauma and psychosis?

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Introduction

Organic delusional disorder often features grandiose ideas. Patients perceive themselves as a central figure in a delusional system, possessing supernatural powers, special knowledge or relationships with important people. This case underscores the importance of quality forensic examination and a comprehensive approach when determining the insanity of individuals with mental difficulties during the commission of a felony.

Case Report

A fifty-six-year-old man undergoes a psychiatric evaluation after committing the felony of criminal threat. Medical records reveal that since 1999 he was treated 17 times due to alcoholism. In 2011 structural neurological changes were determined. The documented history includes records of depressive episodes and permanent personality changes attributed to post-traumatic stress disorder, as well as a mixed personality disorder and pseudologia fantastica. In 2017 after the alleged traffic accident and subsequent fight, a skull fracture, subarachnoid hemorrhage, and subdural hematoma were identified and were urgently operated on. The patient was born into a complete family with psychiatric burden. However, the family disintegrated during the patient's youth. In the field of personality, organic personality changes dominate, and along with dissimulation lead to projective and paranoid processing of reality. Grandiose ideas of greatness are noticeable alongside data manipulation. He often invents life content that does not correspond to hetero-anamnestic data. Despite claiming expertise as an aircraft mechanic and holding a PhD, the patient's formal education, in reality, is that of a waiter. Adaptability in all life situations is reduced. Additionally, the patient remains uncritical regarding both illness and alcohol consumption. Due to the potential recurrence of criminal behavior traits and the psychological condition requiring ongoing psychiatric care, involuntary hospitalization has been recommended.

Discussion/Conclusion

This case highlights the combined and irreversible impact of the patient's primarily mixed personality disorder, post-traumatic stress disorder, psychosis, a head trauma sustained during alcoholic episodes and alcoholism itself on the deterioration of brain structures and the entire personality of the patient resulting in delusional and psychotic symptoms.

Keywords:

Alcoholism; Brain Injuries, Traumatic; Delusional disorders; Personality disorders; Post Traumatic Stress Disorder

Long-term epilepsy as a path to forensic psychiatry?

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Introduction

Dandy-Walker syndrome is a group of congenital brain malformations that affect the cerebellum and the fluid-filled spaces around it. A key feature of the syndrome is hypoplasia or aplasia of the cerebellar vermis. Symptoms that appear in early childhood are slower motor development and progressive skull enlargement, as well as increased intracranial pressure. Irritability, vomiting and epileptic seizures, as well as delayed intellectual development and impaired vision, may be part of the clinical presentation.

Case Report

A man, born in 1979, accompanied by the police was admitted to hospital in an acute psychosis due to an attempted homicide. At the time of admission, he was conscious, with unpredictable behavior and reduced primary intellect, disorganized and without insight into his condition or behavior. He lives with his father. Heteroanamnesis indicates occasional physical attacks against his father, as well as excessive and violent reactions. Since early childhood he has been suffering from epilepsy with frequent status epilepticus. MSCT scan of the brain with intravenous contrast showed a hypodense zone (27x24x20 mm) in the posterior cranial fossa and a wider IV. chamber. Considering the above, Dandy-Walker syndrome was suspected. After the murder attempt, it was determined by court expert that he did not know and could not control his will and was mentally incapacitated. Given that he continues to pose a danger to himself and others, especially in states of frustration, a measure of involuntary psychiatric treatment was proposed.

Conclusion

This summary emphasizes the complexity of Dandy-Walker syndrome, which in this case is characterized by frequent and long-lasting epileptic seizures resulting in mental retardation, and later acute psychosis, which finally led to the commission of a criminal act.

Keywords

Dandy-Walker Syndrome; Epilepsy; Homicide; Involuntary Treatment, Psychiatric; Mental Retardation

Psychotic manifestation of new onset thyroid disease

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Introduction

Psychosis is a collection of symptoms and it's mainly determined by a person losing contact and insight in reality. During episodes of psychosis symptoms may be presented as delusions, hallucinations, incoherent speech, thought disorder, social withdrawal, and difficulties with everyday activities.

Case Report

This case presents a 26-year-old female patient who was admitted to acute psychiatric unit because of psychotic decompensation in May 2023. Before the hospitalization, she was examined by the psychiatrist in 2019. due to depressive symptoms. She was then recommended sertraline which she stopped taking after two months because of a "euphoric" phase. In 2022., the patient visited psychiatrist again and she was given lamotrigine and alprazolam which she didn't take. Upon hospitalization the patient presented as skeptical, unstable, messy and relevant information were obtained via heteroanamnesis. During the examination, she was suspicious about presenting her problems with an extensive thought process. She stated that the noise from outside of the ambulance sounded like people commenting on her and her family (ideas of reference). Sometimes she had auditory hallucinations. She also complained about palpitations. During inpatient treatment she was transitory disorganized (she demolished the room she was in) and aggressive (developed paranoid ideas towards medical team).

During the diagnostic workup sinus tachycardia (149/min) and disruption in thyroid hormone levels (thyroid stimulating hormone - TSH<0.004[mIU/L], triiodothyronine - FT3>30.72[pmol/L], thyroxine - FT4 44.39[pmol/L]) were found and she was newly diagnosed with hyperthyroidism and suspicion for Hashimoto disease. She was simultaneously treated with bisoprolol and thiamazole for hyperthyroidism and aripiprazole, biperidene, zopiclone, and diazepam for acute psychosis. The patient regained full remission of psychotic symptoms.

Discussion/Conclusion

This case highlights the importance of unrecognized thyroid diseases, especially among young women. Thyroid disease has many possible clinical presentations and sometimes psychiatric symptoms could be predominant. Therefore, an organic origin of psychotic symptoms must always be considered in differential diagnosis.

Keywords

delusions, hallucination, Hashimoto disease, hyperthyroidism, psychotic disorders

The great chameleon: why is it important to recognize functional neurological disorders

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Introduction

Functional neurological disorder (FND) or conversion disorder is a condition of altered motor or sensory execution caused by an alternation of brain network functioning. Some of the risk factors include exposure to recent psychological stressors and childhood adversity. It represents a diagnostic and therapeutic challenge in the emergency room (ER) since it's often presented with symptoms resembling stroke or epileptic seizures mimicking vital neurological conditions.

Case Report

A 57-year-old woman was initially rushed to the ER for an urgent examination following sudden-onset bradylalia and dysarthria with no other atypical neurological findings. Since stroke can present with speech difficulty, the patient was considered an ideal candidate for recanalization therapy. Urgently performed multi-slice computer tomography (MSCT) of the brain showed no signs of cerebral infarction, mass, or hemorrhage. Electrocardiogram (ECG) and laboratory tests were normal while speech disturbances were oscillating and unspecific, raising the suspicion of non-stroke-related symptoms. After a more detailed interview, the patient mentioned taking care of a sick husband and expressed significant distress regarding a family member suffering from a malignant disease. After additional examination, a speech therapist and a psychologist confirmed that speech disorder in this case can't be classified as organic but rather of functional origin in a highly anxious and depressed patient. During the following days, a series of neurovascular examinations, such as color Doppler artery flow, transcranial Doppler, ECG monitoring, and control MSCT of the brain, were performed showing no pathological findings. The neurological deficit upon admission was in gradual regression with mild residual bradylalia at the time of discharge.

Discussion/Conclusion

It is important to recognize and use recently proposed "positive clinical signs" in order to properly differentiate between neurological emergencies and FND. Since these patients are often disbelieved, humiliated or blamed it is important to remove the stigma and acknowledge this condition as the interface between neurology and psychiatry, following the modern multidisciplinary approach.

Keywords:

Conversion Disorder; Neuropsychiatry; Speech Disorders; Stress, Psychological; Stroke

SUNDAY 21.04.

Poster Session 3

The role of diagnostic procedures in patients with Alzheimer's disease

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Introduction

Alzheimer's disease (AD) is one of the most common forms of dementia and represents a significant public health issue. It is crucial to recognize the symptoms timely and carry out a detailed diagnostic work-up.

Diagnostics is not only based on psychological tests, but also on other objective parameters that are being analyzed in this case.

Case Report

We present a 68-year-old female patient whose family has been noticing memory disturbances and apathy for the past 3 years. She was referred for additional tests by a neurologist due to suspicion of primary degenerative dementia. In psychological tests, the patient showed signs of cognitive deficit, therefore additional tests were indicated – Magnetic Resonance Imaging (MRI), Positron Emission Tomography– Computed Tomography (PET CT), Color Doppler Flow Imaging (CDFI) of the carotid and vertebrobasilar basin, electroencephalogram, cerebrospinal fluid analysis and cognitive evoked potentials recording. The CDFI showed no significant findings. The brain MRI showed atrophy. The PET CT showed reduced glucose metabolism on the left parietal and frontal side. In the electroencephalogram record, a dysrhythmic change was observed in the left centroparietotemporal area. Cerebrospinal fluid findings show decreased Beta amyloid (1-42)/(1-40) ratio (<0.052 ng/L), significantly increased Tau protein (1228 ng/L) and increased pTau protein (>168 ng/L). The patient's cognitive evoked potentials were also recorded - the examination was conducted by counting the target stimuli and the dominant hand motor reaction. The findings indicated a deterioration of short-term auditory memory function. A detailed diagnostic work-up confirmed the suspicion of AD, and the patient was discharged with memantine and donepezil therapy.

Discussion/Conclusion

Detailed diagnostic work-up in AD forms the backbone of a safe diagnosis. While psychological testing is frequently the focus of attention, it is crucial to note that laboratory and imaging techniques are equally important in diagnosing dementia, therefore providing the quickest and safest confirmation of the illness.

Keywords:

Alzheimer Disease; Diagnostic Techniques and Procedures; Evoked Potentials; tau Proteins; Magnetic Resonance Imaging

Correlation between self esteem, body appreciation and cosmetic surgery acceptance within medical students

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Introduction

Research aimed to examine the correlation between self-esteem, body appreciation, and cosmetic surgery acceptance within final year medical students in Osijek and differences between genders. Further, to compare to similar studies on Croatian population with average age of 27 that showed no significant difference between sexes in overall acceptance of cosmetic surgery, and a Serbian study that showed woman have higher acceptance of cosmetic surgery than men but lower body appreciation scores. Hypothesis is that students in the final year of medical school with a higher level of self-esteem and body appreciation have negative attitudes towards aesthetic surgeries both in men and women.

Materials and Methods

The sample consisted of sixty-one 6th year medical students in Osijek who voluntarily filled out an online questionnaire in January 2024. The questionnaire consists of sociodemographic questions and three scales: Acceptance of Cosmetic Surgery Scale (ACSS), Rosenberg Self-Esteem Scale (RSES), and Body Appreciation Scale-2 (BAS-2).

Results

There is no significant difference in the assessment of self-esteem and acceptance of body appearance with respect to gender of examinee. Regarding acceptance of cosmetic surgery, the interpersonal domain score does not differ significantly, while the other two domains – Social ($P = 0.04$) and Consider ($P < 0,001$) rated significantly higher by women compared to men. Croatian students showed that while there is a strong connection of self-esteem and body acceptance ($Rho = 0,661$), it does not show connection to acceptance of cosmetic surgery.

Discussion/Conclusion

Our investigation offers insights into the intricate interconnections among self-esteem, body appreciation, and the acceptance of aesthetic surgery among final-year medical students in Osijek. Women showed favourable attitudes toward having cosmetic surgery for social reasons and are more likely to consider having surgery. The results correlated with previous Croatian study, where both men and women measured the same aesthetic surgery acceptance. However, for more robust conclusions, it is imperative to expand the study through longitudinal assessments and qualitative analyses, to reveal nuanced dynamics between self-perception, societal norms, and attitudes towards aesthetic interventions.

Keywords:

Body Appreciation; Body Image; Cosmetic Surgery, Self-Esteem; Self-Evaluation

The use of cognitive evoked potentials (P 300) in the differential diagnosis of Alzheimer's disease

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Introduction

Neurophysiological biomarkers, such as cognitive evoked potentials, have proven effective in diagnosing patients with neurocognitive disorders. Event-related potentials (ERP) are markers of neurocognitive function, especially the P300 component. P300 is an indicator of attention and memory processing. Deviations in the amplitude and latency of evoked potentials indicate a higher probability of Alzheimer's disease than other disorders or confusional states, while a normal finding will indicate a preserved short-term auditory memory.

Case Report

A 75-year-old male patient was referred to the Clinic of Neurology for further treatment of neurocognitive disorder. The patient's family first noticed his symptoms in December 2023. The patient had reduced reasoning ability and reduced awareness of his surroundings. Before the above symptoms occurred, he had a high fever. The multislice computed tomography (MSCT) showed the presence of microangiopathic changes but excluded the possibility of a stroke. His relatives are noticing an improvement in symptoms, but the patient still presents with bradykinesia and a slow flow of thoughts. Neurological status was normal, with no loss of motor or sensory functions. The mini-mental state examination (MMSE) score was 27, which is lower than expected considering the patient's profession as a physics professor. The measurement of cognitive evoked potentials (P300) was required to exclude the early stage of Alzheimer's disease from the differential diagnosis. The results showed regular latencies and amplitudes and ruled out Alzheimer's disease as a possible option. He will undergo further diagnostic processing, such as brain single-photon emission computed tomography (SPECT). The aim of further testing will be a definitive diagnosis.

Discussion/Conclusion

Although until now, it was thought that the diagnosis of Alzheimer's disease could only be made post-mortem, the use of non-invasive procedures such as ERP allows to distinguish patients in a confusional state from those who show early signs of Alzheimer's. It is a guiding thread for the future of early diagnosis and treatment of neurocognitive disorders.

Keywords:

Alzheimer Disease, Diagnostic Imaging, Evoked Potentials, Mental Status and Dementia Tests, Neurocognitive Disorders

Logopenic aphasia as rare initial presentation of early onset Alzheimer 's disease: a case report

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Introduction

Primary Progressive Aphasia (PPA) is a clinical entity encompassing three clinical phenotypes that are linked by their distinct presentations associated with different parts of the brain involved in speech. Two clinical phenotypes, Progressive Nonfluent Aphasia (PNFA) and Semantic Dementia (SD), are linked to the entity of Frontotemporal Lobar Degeneration (FTLD). The third phenotype, Logopenic Aphasia (LPA), characterized by spontaneous speech, hesitations, word-finding difficulties and problems understanding longer commands, is now considered a rare presentation of Alzheimer's disease (AD). We present a patient who exhibited PPA symptoms, but further evaluation led to the diagnosis of AD, indicating logopenic aphasia.

Case report

A 60-year-old patient was referred to Memory Clinic due to gradually progressive speech difficulties that led to the social withdrawal of the patient. A neurocognitive examination revealed spontaneous speech with hesitations and word-finding difficulties, disturbances in repetition, significant difficulties in understanding longer commands, and phonemic verbal fluency of 1 word per minute. Executive functions were impaired. Instrumental activities of daily living (IADL) were damaged. The patient scored 7/30 on the MoCA (Montreal Cognitive Assessment) Test. Suspicions of PP(primarily LPA) were raised. Brain magnetic resonance imaging showed significant atrophy on the left side of the brain, particularly pronounced in the frontal lobe with widening of Sylvian fissure. Molecular neuroimaging (amyloid PET) and analysis of cerebrospinal fluid biomarkers (total tau, phosphorylated tau and amyloid-β42) suggested Alzheimer's disease pathology. Consequently, the patients was diagnosed with LPA, which is a rare manifestation of early-onset AD, and the therapy with 10 mg of donepezil daily has been initiated.

Discussion/Conclusion

In patients presenting with symptoms of Primary Progressive Aphasia (PPA), it is advisable to undergo thorough diagnostic evaluation, including molecular neuroimaging methods and analysis of biomarkers from cerebrospinal fluid to differentiate between AD and FTLD as most common causes of PPA.

Keywords

Alzheimer Disease ; Aphasia, Primary Progressive ; Dementia ; Executive Function

GFAP-positive astrocytes in human fetal brain in Down syndrome

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Introduction

Intellectual disability is one of the hallmark features of Down syndrome (DS) caused by impairment of early-stage neurogenesis and gliogenesis. Using immunohistochemistry for neuronal and glial markers, such as the Glial Fibrillary Acidic Protein (GFAP), morphological alterations of the DS fetal brain have been noted. Secondly, studies aim to form associations between neuroanatomical irregularities and symptoms found in DS patients.

Materials and Methods

The PubMed database was searched using the keywords “Down syndrome” and “GFAP”, which yielded 29 results. Studies conducted on human fetal brain samples using immunohistochemistry were considered, resulting in five studies. The gestational age was 14-39 weeks.

Literature Review

Two studies focused on GFAP expression in the frontal lobe. One noted a slight discordance between the DS and control samples, while the other observed a significant increase in GFAP in the DS group. Two studies observed the GFAP expression in different regions of the temporal lobe. A normal GFAP expression was noted in the fusiform (FG) and inferior temporal gyrus (ITG), but with a decreased expression of neuronal markers (NeuN), pointing to a relative increase in GFAP positivity. On the other hand, GFAP expression in the temporal lobe germinal matrix and white matter was significantly decreased. Finally, the fifth study observed GFAP expression in the subiculum, which was also increased.

Discussion/Conclusion

The discovered morphologic changes might lay the ground for memory impairment in DS patients. The subiculum is believed to be associated with the process of memory recall, while the FG and ITG are responsible for visual recognition memory. Both processes are impaired in the DS population and these regions were noted to have a relative or absolute increase in GFAP expression.

On balance, the morphology of the DS fetal brain warrants further research and might be the key to improving our understanding of the disease.

Keywords

Anti-GFAP autoantibodies; Down syndrome; fetal development; frontal lobe; temporal lobe

Diagnosing Parkinson's disease in a patient initially suspected of Alzheimer's

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Introduction

Parkinson's disease is a progressive neurodegenerative disorder that primarily affects movement. It is characterized by symptoms of tremor, stiffness, slowness of movement, and difficulties with balance and coordination. The condition is caused by the progressive degeneration of nerve cells in the brain, particularly those responsible for producing dopamine. While there is currently no cure for Parkinson's disease, various treatment options can help manage symptoms and improve quality of life. On the other hand, Alzheimer's disease is a progressive neurodegenerative disorder characterized primarily by memory loss, cognitive decline, and changes in behavior and functioning.

Case Report

A 59-year-old male was closely evaluated due to suspicion of Alzheimer's disease. The patient presenting with a combination of extrapyramidal and cognitive impairments reported symptoms of slowness in movements, thoughts, and occasional memory disturbances. Nevertheless, he remained independent in daily activities. DaTscan test revealed scintigraphic signs of moderate functional impairment in the nigrostriatal dopamine system, more prominent on the right side. Neuropsychological testing was generally normal, with a deficit in cognitive-memory functioning for the patient's age and significantly reduced psychomotor speed, slowed thought processes, impaired attentional focus, and difficulty maintaining concentration. As these findings may correspond to the clinical presentation of Parkinson's disease, levodopa was introduced in a dose of 50 mg, three times a day. At the follow-up examination after 6 months, his symptoms were well controlled, so he remained on the same therapy.

Discussion/Conclusion

This case report demonstrates the complexity and challenges associated with the diagnosis of neurodegenerative disorders. It also underlines the importance of thorough examination and diagnostic process as different conditions may present with similar symptoms. Alike to the slowness of movement, nonmotor symptoms such as slower thinking and processing of information also tend to be present in the early stages of Parkinson's disease.

Keywords

Alzheimer Disease; Dopamine; Levodopa; Neurodegenerative Diseases; Parkinson Disease

Middle Cerebral Artery Stroke: A Case Report

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Introduction
The middle cerebral artery (MCA) is the most common artery involved in acute stroke due to its vast irrigation territory and direct flow from the internal carotid artery, providing the easiest path for thromboembolism.

Case Report
A 72-year-old male was admitted to the hospital because of right-sided weakness and speech impairment. Past medical history revealed only arterial hypertension. The electrocardiogram showed atrial fibrillation. In the neurological exam, the patient showed signs of sensorimotor dysphasia, right homonymous hemianopia, and right-sided weakness. Based on the findings, he was given the National Institute of Health stroke scale score (NIHSS) of 11. His modified Rankin scale (mRS) was 0. Computed tomography (CT) scan of the brain showed an ischemic lesion in the left basal ganglia, and due to this finding, thrombolytic therapy wasn't administered. CT angiography of carotid and cerebral arteries showed occlusion of the M1 segment of the left MCA. The patient underwent mechanical thrombectomy and the clot was successfully removed. The patient was later released from the hospital with persisting motor dysphasia, and discrete right-sided weakness. He also improved to a NIHSS of 4. Upon release, he was advised to take edoxaban, pantoprazole, atorvastatin, and a combination of perindopril, indapamide and amlodipine. In addition, he was scheduled for regular follow-ups with a neurologist.

Discussion/Conclusion
A fast assessment of the MCA stroke and fast administration of thrombolytic therapy are the basis of treatment in acute stroke. When thrombolysis isn't applicable, acute recanalization therapy in the first 6 hours can greatly improve the outcomes in these patients. Preventive measures, such as blood pressure check-ups, evaluation of thromboembolic risk, and a healthy diet can improve already existing neurological impairments and help prevent further cerebrovascular incidents.

Keywords:
Cerebrovascular Accident, Dysphasia, Homonymous Hemianopia, Middle Cerebral Artery, Thrombectomy

Acute Psychosis: Impact of Illicit Substance Use in Athletic Training

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Introduction
Acute psychosis, also known as Brief Psychotic Disorder, manifests as a sudden loss of contact with reality, characterized by impaired social functioning, affective blunting, hallucinations, and delusions. We present a case of acute psychosis in a 35-year-old man with religious delusions, complicated by previous illicit substance use.

Case report
The patient, a married father of two, presented with psychotic decompensation. A year prior, he had used Ostarine, a selective androgen receptor modulator (SARM) and anabolic steroids obtained from the internet for competitive preparation, their exact composition unknown due to illegality. Ostarine is an investigational drug and therefore not approved for any use. Despite this, it is still sometimes found in dietary supplements, particularly those marketed for bodybuilding. Ostarine, along with other SARMS, is banned by the World Anti-Doping Agency. He reported intensified religious practices following distressing events in Palestine, including increased prayer and seeking counsel from a priest. He exhibited disturbed sleep and suspicious auditory hallucinations, expressing predominantly religious delusions. Despite evident psychosis, he refused psychiatric intervention, preferring spiritual guidance. Psychological assessment revealed cognitive deficits consistent with acute psychoticism. Treatment included oral antipsychotics (risperidone), anxiolytics (diazepam), and anticholinergics (biperiden). Laboratory tests and brain imaging were unremarkable. Therapeutic interventions led to rapid stabilization, alleviating psychomotor agitation and affective disturbances. Upon discharge, the patient demonstrated significant improvement with diminished auto and heteroaggressive tendencies. Continued psychopharmacotherapy and psychiatric follow-up were recommended to maintain stability.

Conclusion
This case underlines the complexity of acute psychosis, particularly in individuals with a history of illicit substance use. Timely intervention and multidisciplinary management are crucial for optimal outcomes. Collaboration between psychiatry and allied healthcare professionals remains essential in addressing the multifaceted needs of patients. Recognition of the potential impact of substance misuse on mental health highlights the importance of comprehensive assessment and tailored interventions for effective management of acute psychosis.

Keywords
Anabolic androgenic steroids, delusions, hallucinations, ostarine, psychotic disorders

A case report of CVI as a manifestation of aortic dissection De Bakey 1

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Introduction
Cerebrovascular injury (CVI) refers to damage or impairment of blood vessels supplying the brain, leading to neurological deficits. CVI represents a critical complication associated with various medical conditions, including acute aortic dissection. While aortic dissection primarily manifests as a cardiovascular emergency, its impact on cerebral circulation and subsequent neurological sequelae are increasingly recognized.

Case Report
An 80-year-old female was admitted to the emergency room with suspected cerebral stroke. Clinical presentation revealed left-sided hemiparesis accompanied by left-sided hemineglect. Upon admission, the patient remained hemodynamically stable with vital signs within normal limits. According to her medical history, she had awakened during the night experiencing nausea and vomiting. She fell asleep but awoke in the morning unable to ambulate. Remarkably, she did not report any significant pain, and abdominal examination revealed a soft, non-tender abdomen. Discovered in this state by a neighbor, emergency medical services were summoned, leading to her evaluation by the neurology team in the emergency department. Computed tomography angiography revealed aortic dissection originating at the level of the aortic valve, coursing through the aortic arch, thoracic and abdominal segments, encompassing the internal iliac artery, common carotid artery, subclavian artery, and common femoral artery. While preparations for surgical intervention to repair the dissection were underway, the patient experienced a sudden cardiorespiratory arrest.

Discussion/Conclusion
Despite its significance, CVI secondary to aortic dissection remains relatively underreported in clinical literature. Thus, documenting and analyzing cases of CVI in the context of aortic dissection are imperative for better understanding its clinical presentation and management strategies. Contrary to earlier beliefs, studies reveal that the incidence of CVI in aortic dissection is higher than previously reported, and it significantly contributes to increased mortality rates. The predominant etiology appears to be cerebral hypoperfusion, underlining the necessity for heightened vigilance and prompt management strategies in such cases.

Keywords
Aortic Dissection; Stroke, Paresis

Idiopathic Optic Neuritis: A Case Report

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Introduction
Optic neuritis is an inflammation of the optic nerve. Common symptoms are pain with eye movements and usually temporary, unilateral vision reduction. It can be an initial indication of conditions such as multiple sclerosis, neuromyelitis optica, myelin oligodendrocyte glycoprotein (MOG) disease, or caused by various infections and immunological diseases.

Case Report
A 25-year-old male was submitted to the neurology emergency room due to right eye amaurosis and right orbital pain. Neurological examination revealed no other abnormalities except the above-mentioned. Blood and urine laboratory results showed nothing significant but hyperlipidemia. Serological tests indicated possible prior Borrelia Burgdorferi infection, but ex iuvantibus, ceftriaxone was prescribed and additional tests were ordered. Aquaporin protein and MOG antibodies tests were negative. Cerebrospinal fluid analysis showed increased proteins and leukocytes, but no oligoclonal bands were observed. Brain magnetic resonance imaging (MRI) revealed no brain or cervical and thoracic spine demyelinating lesions. However, it identified edema in the dorsal third of the optic nerve, which confirmed optic neuritis. After corticosteroid treatment, when vision was slightly clear, evoked vision potentials were made, which demonstrated neuronal lesions and difficulties in right eye signal transmission. Ophthalmological consult also confirmed optic neuritis by positive relative afferent pupillary defect in the right eye. During the hospital stay, the patient underwent pulse corticosteroid therapy with methylprednisolone, together with gastroprotection, analgesia, antibiotic treatment, ephedrine and anti-lipid therapy. The patient restored the ability to see margins and shapes, but problems with clear vision and color recognition persisted. Upon discharge, the patient was advised to do follow-ups by his ophthalmologist and neurologist, and repeat the brain MRI and evoked vision potentials in 6 months.

Discussion/Conclusion
Diagnostic tests eliminated all potential conditions associated with optic neuritis, so the underlying cause stays idiopathic. The only available treatment option was corticosteroid therapy, which partially restored the patient`s vision.

Keywords
Corticosteroids, inflammation, multiple sclerosis, optic neuritis, vision loss

Enhancing Quality of Life in Chronic Cluster Headache Patients: The Role of Sumatriptan Injections

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Introduction
Cluster headache is a primary headache disorder affecting up to 0.1% of the population. Patients suffer from attacks of severe unilateral pain, usually located in the orbitotemporal region, with a frequency of 1–8 per day. Attacks occur in series, so-called cluster periods. Approximately 10–15% of afflicted patients suffer from chronic cluster headache, with attacks persisting for over a year without remission periods or with remissions lasting less than one month.

Case Report
A 25-year-old male patient was referred to the neurologist due to a persistent two-year headache. He has been experiencing severe, intermittent headaches with intensive periorbital pain, rated 10/10 on the Numeric Pain Rating Scale, accompanied by ipsilateral rhinorrhea and lacrimation. The attacks occur daily, lasting 15 minutes, and approximately 3 hours at night once a month without remission periods. The patient is otherwise healthy but is a smoker. Initial neurological examination and brain-MRI were normal. Treatment began with a greater occipital nerve block and a sumatriptan injection. At follow-up appointment the neurologist prescribed verapamil 2x80 mg and referred the patient to a cardiologist for an EKG. While there was partial improvement with no nighttime attacks, the headaches persisted during the day, accompanied by low blood pressure after therapy. In response, the neurologist increased the verapamil dose, prescribed a sumatriptan injection, and directed the patient to the emergency department for oxygen inhalation as an acute treatment measure. Sumatriptan injections provide the patient with the most satisfactory relief, enabling a normal quality of life amidst cluster headache episodes.

Discussion/Conclusion
Chronic cluster headache proves challenging to treat due to a limited response to available therapeutic options. The treatment involves a dual approach: acute medication for the individual attacks and preventive medication to reduce the overall number of occurrences. The aim of this case report was to present a patient with chronic cluster headache who achieved improved quality of life through the use of sumatriptan injections, while prophylactic therapy for preventing attacks was not as effective.

Keywords
Chronic cluster headache, nerve block, rhinorrhea, sumatriptan, verapamil

The role of Dopamine Transporter Scan in timely Parkinson's disease diagnosis

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Introduction
Parkinson's disease (PD) is a progressive neurodegenerative condition characterized by loss of dopaminergic neurons in the striatum, accompanied by slow onset of symptoms. Lower level of dopamine in the striatum causes motor symptoms to precede the non-motor. Achieving early diagnosis is crucial in slowing down neurodegeneration and managing existing symptoms. Since early clinical signs of PD are often not specific, it is important to emphasize the importance of Dopamine Transporter Scan (DaT) scan in prompt PD diagnosis.

Case Report
We present the case of a 66-year-old male reporting motor disturbances. Starting with tremor of the right hand, symptoms worsened and spread to his right leg. Additionally, the patient reported slowing down of movement. During neurological examination, the patient showed signs of bradykinesia and hypokinesia. His stride length was normal, with somewhat reduced synkinetic movements. Rapid alternating movement were conducted with fast fatigue of the right arm. Akynetic tremor of the right arm with postural component was noticed via inspection. The patient's symptoms corresponded to stage I of Hoehn and Yahr scale. To differentiate between PD, parkinsonian syndromes and essential tremor, the patient was referred for additional brain imaging test called Dopamine Transporter Scan (DaT scan). DaT scan is a method based on SPECT imaging which detects the loss of dopaminergic neurons in the striatum. The patient's scan showed signs of mild to moderate functional damage of nigrostriatal dopaminergic system, more prominent on the left side. The findings correlated to the diagnosis of PD and proper treatment was started immediately.

Discussion/Conclusion
Timely diagnosis of PD is crucial for optimal treatment. Early motor signs can mimic other conditions, and clinical findings may not be enough for diagnosis in early stages of the disease. DaT scan improves the possibility of a timely diagnosis and improves the chance of slowing down the neurodegeneration in PD.

Keywords:
Diagnostic Techniques and Procedures; Early Diagnosis; Neurodegenerative Diseases; Parkinson Disease; Striatonigral Degeneration

Stereo-electroencephalography in presurgical assessment of pharmacoresistant refractory magnetic resonance-negative epilepsy

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Introduction:
Magnetic resonance imaging (MRI)-negative epilepsy is a form of epilepsy presenting with no identifiable pathological abnormalities on MRI imaging. Most commonly it is pharmacoresistant and requires neurosurgical management. Stereo-electroencephalography (SEEG) is an established preoperative invasive monitoring tool for detecting the focus of such epilepsy and thereby the neurosurgical target area. It is especially indicated for patients for whom noninvasive preoperative diagnostic tools have failed to define the previously mentioned.

Case report:
A 53-year-old male patient was diagnosed with pharmacoresistant epilepsy. As a neurorisk child, his first seizure occurred at the age of 6 months. During childhood and adolescence, the seizures presented with a temporal complex focal phenotype. Over time, the seizures had intensified, and sporadically generalized to clonic-tonic seizures. Based on semiology and clinical observations, the ictal focus was predicted to be located in the perisylvian region. CT and MRI showed no pathological abnormality. Chronic anti-seizure medication regimen included sodium valproate, clonazepam, carbamazepine and zonisamide, and was not able to control the seizures. Invasive evaluation using SEEG was indicated, total of 13 electrodes were implanted in the patient's brain. Ictal onset SEEG was identified in the right amygdala which propagated to the hippocampus, parahippocampus, lingual gyrus, and lateral part of the middle inferior temporal gyrus. Accordingly, a neurosurgical resection of the affected brain tissue, amygdalohippocampectomy was performed. Following the surgical procedure, the patient remained seizure free with 1-year follow up.

Conclusion:
MRI-negative epilepsy is most commonly a severe, drug-resistant form of epilepsy requiring neurosurgical management. Patients for whom noninvasive preoperative diagnostic tools have failed to define the focus of the epilepsy; the target area for neurosurgical resection, may benefit from invasive monitoring tools. This case highlights the role of SEEG, an invasive monitoring tool use in such cases.

Keywords
Case Reports; Drug Resistant Epilepsy; Electrodes; Electroencephalography; Stereotaxic Techniques;

Primary headache associated with sexual activity

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Introduction
Primary headache associated with sexual activity is described as at least two episodes of headache precipitated by sexual activity only. The intensity of the pain increases with increasing sexual excitement or occurs suddenly with high intensity just before or during the orgasm and lasts from one minute to 24 hours with severe intensity or 72 hours with mild intensity. It occurs in the absence of any intracranial pathology.

Case Report
A 51-year-old patient with a history of Heberden's arthrosis was referred to the neurologist due to a headache that started two weeks ago, following sexual intercourse. The patient complained of experiencing a sudden intense pressure in the head, followed by ripping pain that persisted for three days despite taking ibuprofen. At the examination, blood pressure was within normal limits (115/75 mmHg). Pain manifested again a week later, also following sexual intercourse. Neurological status of the patient was unremarkable. To exclude secondary headache, the patient underwent a transcranial Doppler of the circle of Willis and the vertebrobasilar system. The results revealed that both blood supplies were without vasospasm and within normal limits for the patient's age. Extracranial color Doppler and power Doppler examinations were performed, indicating blood vessels without plaques and demonstrating normal hemodynamics. Brain CT and MSCT angiography did not reveal any pathological changes. Considering the obtained examination results, we were able to rule out secondary headache and provide a diagnosis of primary headache associated with sexual activity. The patient was advised to take indomethacin at a dose of 25 mg, 30 to 60 minutes before engaging in sexual activity.

Discussion/Conclusion
Primary headache associated with sexual activity is a rare type of headache (1 to 1.6% in the general population). However, all patients need to be investigated for an underlying secondary cause through thorough neuroimaging to avoid misdiagnosis. Indomethacin is used as the drug of choice in therapy and for prevention as well.

Keywords
Angiography, circle of Willis, ibuprofen, indomethacin, vasospasm

Diagnostic approach to atypical parkinsonism: case report

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Introduction

Atypical parkinsonian disorders are frequently underrecognized due to their clinical manifestations overlapping significantly with other forms of parkinsonism. The aim of this case report is to present a patient with progressive supranuclear palsy.

Case Report

A sixty-eight-year-old woman was admitted to the Clinic of Neurology in Rijeka for further evaluation of an extrapyramidal syndrome. Her clinical presentation included parkinsonism, falls, postural imbalance, cognitive problems with disinhibition, and problems with the autonomic nervous system. The clinical features gradually developed over the past three years. First, balance disturbances appeared, then a hypokinetic-rigid form of extrapyramidal syndrome developed. Parkinson's disease was suspected, and therapy with rasagiline tartrate and ropinirole was started. Two months before admission, levodopa benserazide was introduced due to disease progression including bradykinesia, postural disturbances and decline in cognitive functions. At admission, the patient's history revealed: hand tremors, speech, memory and concentration disorders, sialorrhea, urinary urgency and nocturia, symptoms of depression and anxiety. Neurological examination showed ataxic-dysarthric speech, mild paresis of upward gaze, hypomimia, rigid tone, mild resting and postural tremor, ideomotor dyspraxia, ataxic gait and emotional incontinence. An MRI of the brain revealed atrophy of the cortex and mesencephalon. The patient had a minimally positive reaction on the levodopa test. Finally, progressive supranuclear palsy with clinical features of frontotemporal dementia was diagnosed. Although this condition has no known cure, some therapies can help in symptom management. Great emphasis is placed on in-home physical therapy, cognitive training, and round-the-clock care. The patient was monitored every two to three months, to adjust the therapeutic strategy or address any worsening symptoms.

Discussion/Conclusion

Atypical parkinsonisms are often difficult to differentiate from Parkinson's disease, but also from each other. It is important to monitor the development of symptoms in the course of the disease to distinguish between entities of Parkinson-plus syndrome. The reduced response to dopaminergic drugs, cognitive, behavioral and oculomotor abnormalities in addition to classic motor symptoms should prompt the clinician to think of atypical parkinsonism. After progressive supranuclear palsy is identified, the condition is treated symptomatically.

Keywords

Atypical parkinsonism; diagnosis; frontotemporal dementia; progressive supranuclear palsy; Parkinson's disease

Early onset of optic glioma as a complication of neurofibromatosis type 1

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Introduction

Neurofibromatosis type 1, also known as von Recklinghousen disease, is a relatively common autosomal dominant inherited disorder. The clinical diagnosis is based on the presence of café-au-lait spots, axillary and inguinal freckling, neurofibromas, iris hamartomas, skeletal changes and optic gliomas. The aim of this article is to demonstrate how optic glioma may occur earlier compared to the normal onset age of 6 to 7 years old.

Case Report

The male term newborn, whose mother and two sisters have neurofibromatosis type 1, was born with multiple café-au-lait spots on the skin. Since then, he was regularly monitored by a neuropediatrician due to his diagnosis of neurofibromatosis type 1. At the age of 10 months, the patient developed nystagmus, prompting an order for a brain magnetic resonance imaging (MRI) scan. The MRI showed bilateral optic gliomas involving the intraorbital, perichiasmatic and suprasellar regions. The patient started chemotherapy treatment at the pediatric hematology-oncology department. The treatment resulted in a reduction of the glioma, but it remained present. Bilateral thickening of the optic nerves, chiasm, and optic tracts remained visible on the MRI. The MRI also showed significant bilateral enlargement of the lateral ventricles. As a consequence of the optic glioma, the patient developed amaurosis due to optic nerve atrophy. Additionally, the patient occasionally experiences headaches and periodic dizziness due to internal hydrocephalus resulting from adhesions following chemotherapy treatments. The patient is currently stable, the MRI findings show no significant changes in the images. He attends regular primary school with adjustments due to amaurosis.

Discussion/Conclusion

Although neurofibromatosis is a relatively common disorder, the unpredictability of its clinical manifestations and complications, makes this disease challenging for both the patient and their family. Each successive generation presents with a more severe clinical presentation, as evidenced in this specified family.

Keywords:

amaurosis; Café-au-Lait Spots; magnetic resonance imaging; neurofibromatosis 1; optic nerve glioma

Atypical intracerebral hemorrhage – a diagnostic challenge

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Introduction

Intracerebral hemorrhage (ICH) is a type of stroke that usually presents with focal neurological deficit, impaired consciousness, headache or seizures. Typical locations of ICH are basal ganglia, thalamus, pons and cerebellum. The aim of this abstract is to highlight the importance of thorough diagnostic procedure in a case of atypical ICH.

Case Report

We present a 64-year-old patient with recurrent epileptic seizures. His medical history included arterial hypertension, diabetes mellitus type II, hyperlipidemia and chronic obstructive pulmonary disease. The patient was initially admitted to the Emergency Room due to unclear transient loss of consciousness. Neurological examination was unremarkable. A computerized tomography (CT) of the head showed no pathomorphological changes. Five days later he presented with recurrent convulsive seizures, tachycardia and hypotension. Glasgow coma scale score was 5. Upon neurological examination right sided head deviation, spontaneous movements of all extremities and positive Babinski sign bilaterally were detected. A head CT showed right frontal lobe hemorrhage, without the need for neurosurgical intervention. He was admitted to the neurological intensive care unit and treated with levetiracetam (500 mg twice daily) and 20% mannitol. Two times performed CT angiography of cerebral arteries showed no vascular malformations. Five days later he had another convulsive seizure with weakness and numbness of the left side of the body as well as left sided central facial palsy. Magnetic resonance angiography showed suspicion of Cognard type III dural arteriovenous fistula, but finally it was confirmed by cerebral digital subtraction angiography (DSA). Endovascular treatment was unsuccessful so the patient is going to be treated surgically.

Discussion/Conclusion

Even though a CT angiography is a highly sensitive method for the diagnosis of intracerebral hemorrhage and vascular malformations, physicians should always contemplate the possibility of false negative results. All patients with CT angiography-negative ICH should be considered for cerebral DSA.

Keywords:

Angiography; Arteriovenous Fistula; Cerebral Hemorrhage; Seizures; Tomography, X-ray Computed

It's all in your head: Limbic encephalitis

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Introduction

Limbic encephalitis is a term to describe patients presenting with amnesia, psychiatric disturbances (pertaining to the basal ganglia) and oftentimes seizures. It is a syndrome of subacute onset. In recent years, the term was expanded to include patients with a similar phenotype, in whom an infectious or non – paraneoplastic autoimmune (AI) cause has been confirmed or suspected. Clinical features include cognitive and memory impairment, frequent but inconsistent magnetic resonance (MRI) change within limbic structures.

Case Report

A 68 – year – old patient was admitted to the Department of Neurology in April 2023 due to an acute disturbed state and speech impedement. The patient was emotionally and sexually disinhibited and had problems with short – term memory. Emergency computer tomography showed a right frontal hypodense zone in the white matter (5 cm diameter). Electroencephalography was slighty dysrhythmically changed. During hospitalization, an MRI was performed in May 2023 that showed bilateral hyperintensity in the hippocampal area with radiations to the parahippocampal gyrus and no signs of hemorrhage. On the psychological plane, the patient exhibited borderline intelectual efficiency with cognitive deficits. Such findings fit the criteria for AI encephalitis. Cerebrospinal fluid with mild pleocytosis was obtained by lumbar puncture. Multiplex viral and bacterial polymerase chain reaction panel was negative: until results of the aforementioned were completed, acyclovir and ceftriaxone were initially prescribed by an infectologist. Tumor markers were normal. Treatment consisted of the following: intravenous fluids, potassium and folate supstitution, analgoanxiolytics, hypolipemic and antiedematous therapy. With the aforemetioned, the clinical state of the patient has improved. A follow – up MRI performed in June 2023 showed slight regression of the previously described areals. At the last follow– up exam in December 2023, the patient showed some improvements in independent functioning with prevalence of sleep disturbance. Concentration and memory have improved with impulsive behaviour.

Conclusion

The initiation of treatment depends on the certainty of diagnosis alongside clinical severity. If the primary cause of illness is AI encephalitis, as is the case with this patient, first – line treatment is antiedematous therapy, intravenous immunoglobulins or plasmapheresis, while treating other present symptoms.

Keywords

Basal ganglia, limbic encephalitis, magnetic resonance

A case report of optic neuritis in myelin oligodendrocyte glycoprotein antibody-associated disease

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Introduction

Myelin oligodendrocyte glycoprotein (MOG) antibody-associated disease (MOGAD) encompasses a range of demyelinating disorders of the central nervous system (CNS), including monophasic and recurrent optic neuritis (ON), acute disseminated encephalomyelitis (ADEM) and transverse myelitis (TM). It is a distinct entity from other demyelinating processes of the CNS, such as multiple sclerosis (MS) or AQP4-antibody-associated neuromyelitis optica spectrum disorder (NMOSD). Even though the median age of onset is 20 to 30 years, approximately 30% of MOGAD cases affect the pediatric age group. ON is less common initial presentation in MOG-positive pediatric cases than ADEM and retrobulbar pain is reported more rarely than in adult patients.

Case Report

7-yeard-old girl presented with sudden bilateral blurred vision with more prominent vison loss in her left eye. She displayed no signs of an infection and neurological examination didn't reveal any abnormalities. Laboratory investigation of her cerebrospinal fluid showed normal cell count and total protein level. Fundoscopy showed remarkably swollen disc bilaterally. Magnetic resonance imaging (MRI) of the orbits and brain revealed bilateral optic nerve edema and T2/FLAIR hyperintensity mainly localized to the left prechiasmatic region. Significant prolongation of P100 latency and decreased amplitude of the visual evoked potentials (VEPs) indicated bilateral neuron lesion. Antibodies against aquaporin-4 were negative. Positive serum MOG-IgG testing confirmed the diagnosis of MOGAD. Patient was treated with pulse dose of 20 mg/kg methylprednisolone, followed by 1 mg/kg maintenance dose. During a year she received 7 courses of IVIG. She responded well to the therapy with no adverse events associated with the treatment through 1,5-year follow-up.

Discussion/Conclusion

MOG-IgG related ON predicts a better prognosis than ON associated with MS or AQP4+NMOSD. MOG-antibody levels and negative values do not completely correlate with future disease course. Multidisciplinary approach and long-term follow-up are required for pediatric MOG-ON in order to prevent relapses, CNS involvement and retain visual function.

Keywords

Demyelinating disease; magnetic resonance imaging; methylprednisolone, myelin oligodendrocyte glycoprotein; optic nerve

Neuron-specific enolase as a biomarker in schizophrenia

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Introduction

Currently, the diagnosis of schizophrenia is made only based on a psychiatric examination. The literature shows that the concentration of neuron-specific enolase (NSE) positively correlates with the degree of brain damage. Previous studies aimed at comparing the level of NSE in people with schizophrenia and the healthy population have shown a significant difference in the concentration of biomarkers between the control and study groups.

Materials and methods

The study involved 180 participants, 60 patient with schizophrenia - SZ, 60 people with ischemic stroke - IS, and 60 healthy volunteers - CTRL. NSE concentration in blood serum was measured in each participant. Moreover, in the SZ group the severity of positive and negative symptoms of schizophrenia was assessed using the standardized PANSS scale. Members representing IS group were analyzed for data on the severity of symptoms using the NISHH scale and the level of performance before and after the examination using the RANKIN and BARTEL scales.

Results

NSE reference values are between 0 and 15.70ug/l. The average value in SZ group was 9.80ug/l. This result was lower than the mean value of the IS group, which was 12.92ug/l, but higher than in CTRL group – 11.76ug/l. However, a relationship was observed between the degree of severity of deficit symptoms and the NSE value in the SZ group.

Discusion/conclusion

Conducted research indicates a relationship between the severity of symptoms and the NSE value in SZ group. Further clinical studies are necessary to determine the indicated relationship in a more representative group of patients. The significance of the relationship may facilitate diagnosis, the stage of disease advancement, and the need to use individual neuroleptics, which is often delayed.

Keywords

Neuron-specific enolase, schizophrenia, stroke;

Therapeutic dilemma in patients with atrial fibrillation and cerebral amyloid angiopathy - a case report

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Introduction
Atrial fibrillation (AF) and cerebral amyloid angiopathy (CAA) are two common diseases in elderly populations. CAA represents a cerebral small-vessel disease characterized by the β-amyloid protein deposition in the walls of blood vessels. This deposition can lead to weakening and damage of the blood vessel walls, increasing the risk of spontaneous intracranial hemorrhage (ICH). Patients with AF on anticoagulants for stroke prevention face the risk of ICH. The combination of these two conditions can pose significant challenges in terms of treatment and management, as they both increase the risk of ICH.

Case Report
An 80-year-old female presented with transient focal neurological episodes of right extremities weakness. With a medical history including arterial hypertension, diabetes, and paroxysmal AF, the patient was already on anticoagulants. Brain MRI revealed small subarachnoid bleeding in the left central sulcus, with FLAIR hyperintensities in the right occipital, precentral, and parietal lobe sulci corresponding to recent bleeding. On SWI images, diffuse superficial siderosis was observed in both hemispheres with multiple cortico-subcortical chronic microbleeds. The observed changes indicated a diagnosis of CAA. Considering the patient's elevated risk of thromboembolic events (CHA2DS2-VASc score 7), anticoagulant therapy was deemed necessary. However, due to the new CAA diagnosis and a high HAS-BLED score (4), anticoagulant therapy had to be discontinued. Given the higher risk of hemorrhage the patient was evaluated for left atrial appendage closure (LAAC) in consultation with the cardiologist.

Discussion/Conclusion
The coexistence of CAA and AF in older patients is a common therapeutic dilemma prompting careful consideration of the risk-benefit ratio associated with long-term anticoagulation. LAAC has emerged as a promising alternative to long-term anticoagulant therapy, especially for patients at increased risk of ICH who are unsuitable for conventional anticoagulation. Following a successful LAAC procedure, the patient no longer requires anticoagulants, and her mild right hand paresis has improved with physical therapy.

Keywords
Anticoagulants, atrial fibrillation, cerebral amyloid angiopathy, intracranial hemorrhage, thromboembolism

Chemotherapy-induced polyneuropathy in a patient with grade III oligodendroglioma

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Introduction
Chemotherapy-induced polyneuropathy (CIPN) is a severe clinical problem caused by many cytotoxic drugs. Patients with CIPN may present with more fulminant symptoms and a faster progression of the disease. The aim of this case report is to show the severity of adverse effects in modern oncological treatment.

Case Report
A 46-year-old woman was admitted to the Department of Neurology in 2015 after having a convulsive attack in her sleep. Magnetic resonance imaging (MRI) showed a mass in the left anterior frontal lobe and severe perifocal edema. The patient underwent surgery and the tumor was removed up to the corpus callosum and the pericallosal artery. The extracted tumor was identified as grade II oligodendroglioma. A post-operative computed tomography (CT) scan showed residual tumor in the left anterior frontal lobe. The Institute of Pathology in Ljubljana was consulted and the tumor was re-classified as grade III oligodendroglioma. The patient received 30 fractions of radiation therapy. In the year after surgery, she had 4 convulsive attacks and was prescribed methylphenobarbital 200mg/day. Her condition was stable until 2021 when a follow-up MRI showed progression of the residual tumor and a newly formed subcortical mass in the right parasagittal region. Neurosurgeon did not indicate reoperation. The patient started Procarbazine-Lomustine-Vincristine (PCV) protocol in March 2022. During the 5th cycle of PCV protocol, she had an allergic reaction to Procarbazine, which was excluded from therapy, but continued treatment with Vincristine. In August 2023, the patient reported unsteady gait and tingling sensation in both lower legs. Neurological exam showed diminished myotatic reflex and a positive Romberg test, thus Vincristine-induced peripheral neuropathy was suspected. Vincristine was excluded, but due to the progression of the tumor, she is currently on the 2nd cycle of temozolomide 200mg and is being closely monitored for management of adverse effects.

Discussion/Conclusion
This case shows advances in the treatment of oligodendroglioma and the side effects that follow. With the rise in cancer survival rates, CIPN may occur even more frequently in the future, with no single effective method of prevention.

Keywords
Oligodendroglioma; Polyneuropathies; Procarbazine; PVC protocol; Vincristine

Benign Neurinoma of the Ischiadic Nerve: A Rare Cause of Progressive Lower Limb Weakness

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Introduction

Neurinomas, or schwannomas, are infrequent benign tumors from Schwann cells in peripheral nerves. The diagnostic odyssey involves challenges in identifying the lesion, highlighting the importance of a comprehensive approach.

Case Report

A 50-year-old female presented with persistent backache and proximal left thigh. Initial neurosurgical evaluation and spinal MRI showed degenerative changes in spinal vertebrae L3 through S1. A month later, the patient developed left foot drop and the pain increased. The patient was advised to manage her symptoms with painkillers such as dexketoprofen trometamol and other NSAIDs like Ibuprofen before undergoing further diagnostic investigations, including ultrasound examination and Electromyoneurography (EMNG). The ultrasound revealed the presence of a 70 x 68 x 70 mm sized mass in the proximal left thigh and EMNG revealed damage to the N. Peroneus. She experienced a worsening of symptoms characterized by tingling sensations with numbness in the left foot and an inability to lift the foot. An MRI of the proximal left thigh was performed, revealing an expansive lesion along the ischiadic nerve. The neurosurgeon diagnosed a neurinoma. The lesion was not detected in the initial spinal MRI, underscoring the diagnostic complexities associated with neurinomas. Surgical excision of the neurinoma was performed, confirming a benign tumor. A month later the patient showed gradual improvement in symptoms post-surgery, with resolution of foot drop and reduced pain. Regular follow-ups confirmed sustained improvement.

Discussion/Conclusion

While neurinomas are generally benign, this case reinforces the necessity for a comprehensive evaluation and tailored therapeutic interventions to ensure favorable outcomes. Continued research and the accumulation of similar case experiences are vital in refining diagnostic and treatment strategies for peripheral nerve tumors, contributing to the broader understanding and improved management of these intricate clinical scenarios.

Keywords

Electromyography, Neoplasms, Neurilemmoma, Sciatic Nerve

Mild presentation of Huntington's Disease with intermediate number of CAG repeats

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Introduction

Huntington's disease is an autosomal dominant neurodegenerative disorder characterized by motor dysfunction, cognitive decline, and psychiatric symptoms. It is caused by a genetic mutation leading to the production of an abnormal Huntingtin protein. This mutation occurs due to the expansion of a trinucleotide CAG repeat in the Huntingtin gene on chromosome 4. The normal amount of CAG repeats is below 27, while 40 and above is fully penetrant repeat length for Huntington's disease. Intermediate CAG repeat number of 27 or more is unstable and liable to increase when passed on to the next generation.

Case Report

A 57-year-old female presented in 2007 with involuntary head movements. In 2008, she was hospitalized due to progressive worsening of tremor and clumsiness. Genetic analysis showed a CAG repeat number of 35, which is considered borderline for Huntington's disease. Additionally, clinical evaluation by a neurologist showed bradykinesia, hypokinesia, tension headache, "yes-yes" head tremor and postural tremor, predominantly of the left arm. In 2016, she reported regression of the symptoms, but tremor of the left arm persisted while muscle stiffness and urgent incontinence developed. Recently, patient stated that head tremor disrupts some of her most basic tasks and parts of life, and at the same time family members reported the patient having problems remembering information about recent and past events and experiences. Over the past years, she has been treated with benzodiazepine clonazepam, antipsychotic clozapine, and beta-blocker propranolol for her extrapyramidal symptoms.

Conclusion

This case highlights the unusual presentation of an intermediate variant of Huntington's disease. Individuals with a CAG repeat in the 27-35 range are not believed to be at the risk of developing Huntington's disease. Limited data suggest they may exhibit behavioral changes as well as motor or cognitive impairments, although more research is required in this regard.

Keywords

Alleles, Huntingtin Protein, Hypokinesia, Tremor, Trinucleotide Repeat Expansion

Integrated Treatment Approach for Social Anxiety Disorder

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Introduction
Social anxiety disorder (SAD) is a mental health condition characterized by an intense fear of social situations, leading to avoidance of interactions or distress when facing them. We are presenting process of successful treatment of a person with severe psychosocial dysfunction resulting from generalized social anxiety.

Report
A 20-year-old patient was referred to psychiatrist by her family physician. Three and a half years ago, she was treated for bacterial meningitis, after which she suffered frequent headaches, low mood, panic, and reduced interest and motivation. She was prone to social anxiety and avoidance, which was greatly aggravated after her meningitis episode. Due to generalized social anxiety, she mostly restricted herself to home, unable to work, walk in the street, or use public transportation. Sertraline was initiated, and psychotherapy, which was primarily systemically oriented, included cognitive and experiential work, regular relaxation training, and gradual exposition to social situations. For most of the psychotherapeutic sessions patient's mother was present. Exposure exercises were introduced as a cognitive exposures, which were followed by predesigned exposure procedures in which facility personnel, nearby grocery stores, and public transportation were utilized. Patient reported increasing anxiety relief, allowing for gradually more challenging exposure exercises. Finally, she managed to attend treatment sessions without her parent's presence, and through ongoing work, significant progress was made in improving daily functioning. After three years of treatment Sertraline was discontinued and a year after discontinuation the patient remained fully psychosocially functional.

Discussion/Conclusion
In conclusion, we presented a case of severe social anxiety, underscoring the complex interplay of biomedical and humanistic perspectives in the helping process with persons with mental health problems. The successful outcome was achieved through personalized tailored approach which was possible due to flexible institutional framework and is rarely seen in hospital institutions where the focus is primarily on pharmacological therapy.

Keywords
Anxiety, Exposure Therapy, Phobia, Psychotherapy, Sertraline

Lung cancer pontine metastasis presenting with cross brainstem syndrome: a case report

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Introduction
It is estimated that 20-40% of patients with extracranial primary tumors will develop brain metastases. In the case of lung cancer patients, around 25% are anticipated to exhibit intracranial dissemination. Brainstem metastases comprise fewer than 7% of all brain metastases in which the pons is the most common location.

Case report:
A 70-year-old male patient presented with acute headache and bulbar symptoms - dysphagia, dysarthria, and paresthesia. These symptoms were indicative of cross brain stem syndrome which usually involves ipsilateral bulbar and contralateral motor deficit.

He had a history of chronic obstructive pulmonary disease, arterial hypertension, post-tuberculosis fibrosis, and pneumothorax. Upon admission, a brain CT scan was performed revealing an expansive process of the right side of the pons. Anamnestically, no symptoms were suggesting a malignant process. Other radiological findings (MRI, PET CT) were suggestive of a diagnosis of cavernous hemangioma, however, the etiology was uncertain. A stereotactic biopsy was ruled out since there was a high chance of intraprocedural bleeding, therefore surgery was scheduled. A temporal craniotomy was performed and extradural access was made to the base of the middle cranial fossa. An anterior petrosectomy was performed and neuronavigation was used to locate the neoplasm. The pons was incised to enable access to the tumor. During the surgery, 70% of the pontine tumor mass was removed to preserve his neural function. The surgery and postoperative hospital stay were uneventful. Intraoperative gross pathology was suggestive of malignancy, and histology was consistent with metastatic lung malignancy. Thoracic CT images obtained a few months before the operation were re-reviewed and a small lesion suspective of malignancy was identified, which at the moment of the CT was ignored and attributed to tuberculosis sequelae. A new thoracic CT scan was scheduled and showed progressive growth of the nodose lesion of the left apicoposterior lung segment morphologically consistent with the primary pulmonary neoplasm.

Conclusion
A definite diagnosis sometimes poses a great challenge for a clinician because the symptoms might mimic or mask each other. In this case, the patient had dominant symptoms originating from a secondary disease, while the primary disease was masked by an already existing chronic condition. It is important to consider the patient's comorbidities because, in most cases, the patient's symptoms are part of a unique entity, rather than coincidental multiple diseases.

Keywords
Lung neoplasms; tuberculosis; hemangioma, cavernous; intracranial neoplasms

Student Session 2

Peroxiredoxin-2 and -6 are present in the cerebrospinal fluid of patients with traumatic brain injury

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Introduction
Severe traumatic brain injury (sTBI) initiates with physical force on the head, causing primary injury. Subsequently, secondary injury progresses over hours, days, and weeks due to factors like elevated intracranial pressure, hypoxia, and oxidative stress, perpetuating brain damage.

Peroxiredoxins (PRDX) are ubiquitously expressed enzymes tasked with eliminating reactive oxygen species thus reducing oxidative stress. To gain more insight into the anti-oxidative response following sTBI, we aim to analyze the cerebrospinal fluid (CSF) of sTBI patients for the expression of PRDX in collected samples.

Materials and Methods
The study included 9 adult patients with sTBI after obtaining ethical committee approval and informed consent from a family member. In patients whose acute treatment included external ventricular drain, the drained intracranial CSF samples were collected once daily as long as the ventriculostomy was in place, up to 10 days maximum. CSF samples were analyzed by western blot method for the presence of PRDX-2 and -6 enzymes.

Results
In total, 64 CSF samples from up to 10 days after the injury were investigated for the presence of PRDX-2 and -6. Only in 16 CSF samples, levels of studied enzymes were not detectable. PRDX-2 and -6 were detected in 38 and 33 CSFs, respectively, whereby PRDX-6 was accompanied by PRDX-2 presence in 28 days albeit not always at comparable levels. Both enzymes ranged from very low to highly abundant levels across the 10 days studied and no apparent correlation with either early or late days after the injury has been noticed.

Discussion/Conclusion
This is a preliminary study showing how the expression of intracranial PRDX enzymes following sTBI varies. To better understand the role of PRDX enzymes in sTBI patients, more patients and other members of the PRDX family should be included in future studies, along with functional and quantitative testing.

Keywords:
Blotting, Western; Brain Injuries, Traumatic; Cerebrospinal Fluid; Oxidative Stress; Peroxiredoxins

Mechanisms of CRMP1 protein aggregation in major mental illness

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Introduction

Mental illnesses, such as schizophrenia, are conditions that can directly affect an individual's cognitive functions. Recently, it has been found that protein aggregation of specific proteins, including DISC1, CRMP1, and TRIOBP-1nvolved in major mental illness. CRMP1 is of particular interest, due to its role in neuronal development and axonal guidance. Three mutations of interest have recently been discovered: T509D mutation simulates a phosphorylation event implicated in amyotrophic lateral sclerosis, while T313M and P475L were discovered in children who variously displayed speech delay, hyperphagia, obsessive- compulsive disorder characteristics, autism spectrum disorder, global developmental delay, and moderate intellectual disability (IQ 55).

Materials and Methods

We investigated (T509D, T313M, P475L) by expressing them in SH-SY5Y neuroblastoma cell cultures. Aggregation of the mutated proteins as determined using an ultracentrifuge- based insoluble protein purification assay, followed by Western blot. Analysis of potential interactions in aggregation was studied using immunofluorescent microscopy.

Results

By examining these proteins, a pair-wise manner and co-expressing them in the cells, we observed that DISC1 readily causes the aggregation of, and leads to mixed aggregates with, both TRIOBP-1 and CRMP1 ("co-aggregation"). CRMP1 showed very little influence on the tendency of DISC1 to aggregate by utilizing the ultracentrifuge assay and Western blot analysis, we encountered the pioneering (or the first) evidence that T313M and P475L could lead to increased aggregation of CRMP1.

Discussion/Conclusion

Mutation can affect the folding, stability, and function of proteins. In some cases, mutated proteins have an increased tendency to aggregate and so and these mutations may underlie the altered aggregation of CRMP1.Aggregation of CRMP1 in schizophrenia appears to also be related to aggregation of DISC1, with DISC1 inducing co-aggregation of CRMP1. Separately, disease-implicated mutations may increase the ability of CRMP1 to aggregate. It therefore seems that multiple mechanisms may lead to pathological aggregation of CRMP1 in major mental illnesses.

Keywords

Mental Illness, Schizophrenia, Protein Aggregation, Pathological

Cerebrospinal fluid after traumatic brain injury contains Growth Associated Protein 43 as extracellular vesicle cargo

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Introduction

Growth Associated Protein 43 (GAP-43) is a neural protein implicated in axonogenesis and synaptic plasticity. This study explores the potential of GAP-43 in human cerebrospinal fluid (CSFs) as a biomarker for neuro recovery after severe traumatic brain injury (sTBI).

Materials and Methods

With appropriate ethical approval and informed consent, CSFs from sTBI patients requiring external ventricular drainage were collected. Drained CSFs were collected daily, lysed in protein extraction buffer, and screened by western blot to distinguish total protein and GAP43 levels by Ponceau staining and immunodetection, respectively. Subsequently, selected CSFs were pooled and separated by gravity-flow size exclusion chromatography (SEC) with sepharose CL-6B. The collected SEC-fractions were analysed by slot blot followed by immunodetection for GAP-43, extracellular vesicles markers CD9 and flotillin-1, and blood content, including haemoglobin, albumin, immunoglobulin G (IgG), and apolipoproteins (Apo) A1 and E.

Results

CSFs samples from two male patients, aged 44 (Pt1) and 68 (Pt2), were examined over 10 and 11 days (d) post-injury, respectively. GAP-43 was immunodetected in Pt1 in CSFs d2-10 while d1 and d3-6 were GAP43-positive in Pt2. Based on the highest GAP43 and lowest blood protein levels, we combined d4 and d10 from Pt1 and d3 and d6 from Pt2 into one pool that we separated into 38 fractions by SEC. We immunodetected the highest level of GAP43, flotillin-1, and CD9 in fractions (F) F10-11, F11-13, and F10-12, respectively. Other proteins were detected in later fractions: ApoA1 and ApoE in F23-30, and albumin, IgG, and haemoglobin in F24-32, F25-29, and F27-32, respectively.

Discussion/Conclusion

This is a preliminary study of intracranial CSF from sTBI patients. We detected upregulation of GAP-43 during acute treatment which could point to early changes in brain biochemistry towards neurorecovery. Our results indicate that GAP-43 is the cargo of extracellular vesicles, the membrane-enveloped nanoparticles involved in cell-to-cell communication.

Keywords

Biomarkers; Brain Injuries, Traumatic; Cerebrospinal Fluid; Extracellular Vesicles; GAP-43 Protein

SIRT3 and the Oxidative Damage in the Brain

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Introduction
The sSirtuin enzyme protein family plays a pivotal roleis crucial in metabolism regulation, stress response, inflammatory reactions, and other vital cellular pathways. Mitochondrial sirtuin 3 (SIRT3) governs oxidative defense mechanisms, important for. This function is particularly prominent in energy-demanding tissues like the brain. Despite this , most research has been focused on other tissues, leaving its specific brain-related roles in the brain are less understood. This study aims to elucidate the differences in oxidative damage and protein expression between SIRT3 wild-type (WT) and knockout (KO) mice in brain and kidney samples. , which mostly utilize glucose whilst having different metabolic demands.

Materials and Methods
In this study, sixteen samples of mouse brains and kidneys have been categorized into four groups: WT males and females and, KO males and , WT females, and KO females.

To determine oxidative damage in the samples protein carbonyl (PC) and lipide peroxidation analysis (LPO) were performed. Additionally, the activity of antioxidative enzymes superoxide dismutase (SOD) and catalase (CAT) was conducted. For every sample the following methods were conducted:

Analysis of protein expression of SIRT3, and its targets via Western blot was performed.

Analysis of protein expression of SIRT3, and its targets via Western blot

- Analysis of superoxide dismutase (SOD) and catalase (CAT) activity
- Analysis of protein (protein carbonyl analysis, ELISA) and lipide tissue damage (lipide peroxidation analysis, spectrophotometric assays)
- Was performed

Results
TContrary to the initial hypothesis, he loss of SIRT3 pknock-out has affected kidneys more than brain tissue. Protein damage induced a significantlyis higher in protein damage in KO kidney samples while lower in KO brain samples whereasile LPOlipid peroxidation exhibiteds the opposite findings. Regarding sex, LPO was significantly lower in females.

Both SOD and CAT Antioxidant enzyme activity wasies are lower in brain tissue than in kidneys.

The presence of SIRT3 was significantly lower in the brain although his transcriptional activator PGC-1αwas significantly lower in the kidney. SOD and CAT were significantly more abundant in the kidney while a different antioxidative enzyme, HO1, was more abundant in the brain. Proteins involved in lipid metabolism and under control of SIRT3, showed both sex and organ differences. HADHB is more abundant in the brain with different splice variants in the kidney, while FASN is significantly more abundant in female kidney (both WT and KO) and male WT brain samples. LDH, a protein involved in glucose metabolism, is significantly more abundant in WT samples, especially in the kidney. with generally lower activity in KO samples in females in comparison toand higher in KO male KO samples. Protein expression differs according to both sex and organ samples.

Discussion/Conclusion
This study provides comprehensive insights into the complex interplay of SIRTirt3 and the tissues physiological contexts of cells. SThe finding of sex- related differences suggests a sex-specific protection mechanism. The tissue-specific and sex-related variations underscore the importance of considering these factors in the development of therapeutic strategies targeting mitochondrial function and redox homeostasis.

Keywords
Gene Expression Profiling, Metabolism, Neurophysiology, Oxidative Stress, Sirtuin 3

Student Session 3

Rapid onset amblyopia of unknown etiology

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Introduction

Optic neuropathy is a frequent cause of vision loss that can have different etiology. Demyelinating, inflammatory, ischemic, and traumatic causes usually present with rapid onset of symptoms while gradual development is typical for compressive or toxic causes. Detecting the exact cause can be challenging.

Case Report

A 70-year-old male was referred to an urgent neurological examination after being examined by ophthalmologist due to sudden progressive bilateral vision loss in the past three days. Prior to the vision loss, the patient suffered no headaches or eye pain. He denies dizziness, febrility or trauma. Besides vision loss, patient did not experience any other symptoms. About 30 years ago, he was treated for optic neuritis of the left eye but had no damage to the vision left after. The patient is being treated for arterial hypertension, undergoing hemodialysis (three times a week for the past 4 years) due to chronic kidney failure and is on long-term oxygen therapy due to chronic respiratory insufficiency. Earlier this year, he was suspected of tuberculosis after granulomatous lymphadenitis and hemoptysis. Bone and joint tuberculosis was confirmed with biopsy of the right elbow and he was started on antituberculotics - quadruple and triple therapy at first which was later reduced to rifampicin and isoniazid. No particularities were spotted upon neurological examination and an urgent computed tomography (CT) scan showed no potential causes of such symptoms. In further neuroradiological diagnostics, brain magnetic resonance imaging (MRI) showed signs of periventricular microangiopathic lesions and of suspected progressive supranuclear palsy. MRI of the orbits showed clear signs of neuritis, specific cause of which is yet to be detected.

Discussion/Conclusion

Due to the complex causes of vision loss, thorough work-up and a multidisciplinary approach are necessary in the diagnosis. Only by determining a clear cause, it is possible to properly approach therapy and treatment with the aim of preventing further progression.

Keywords

Amblyopia, Mycobacterium tuberculosis, Optic neuropathy, Optic neuritis, Toxicity

Iodine-131 metaiodobenzylguanidine myocardial scintigraphy in a patient with multiple system atrophy

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Introduction

Multiple system atrophy (MSA) is a rare progressive neurodegenerative disorder presenting with various symptoms including parkinsonism, cerebellar ataxia and autonomic dysfunction. It is characterized by the accumulation of the alpha-synuclein in oligodendrocytes. Iodine-131 metaiodobenzylguanidine (131I-MIBG) myocardial scintigraphy is a useful diagnostic procedure for differentiating Parkinson's disease (PD) from MSA since heart/mediastinum (H/M) ratios are decreased in PD compared with MSA.

Case Report

A 60-year-old woman initially presented with hypomimia, shortened stride, reduced synkinetic movements and reduced postural reflexes. During the last three years, the patient has noticed the progression of symptoms in the form of frequent falls during daily activities. PD was suspected and levodopa was prescribed. One year later the patient presented with difficulty speaking and muscle stiffness in addition to previous symptoms. Brain MRI was described as normal as well as the holter monitoring of blood pressure. Since 131I-MIBG myocardial scintigraphy showed normal accumulation of 131I-MIBG in the myocardium as well as normal H/M ratio, MSA diagnosis was confirmed.

Discussion/Conclusion

MSA diagnosis is based on clinical findings and neurological examination. The final diagnosis can be made with pathohistological findings of brain tissue. No single test can confirm the diagnosis so it may be challenging to differentiate MSA from PD and other neurodegenerative diseases, especially in the early stages of the disease. 131I-MIBG myocardial scintigraphy may be useful in differential diagnosis.

Keywords

3-Iodobenzylguanidine, Multiple System Atrophy, Myocardial Perfusion Imaging, Neurodegenerative Diseases, Parkinson Disease

Behavioral Variant Frontotemporal Lobar Degeneration: A Comprehensive Case Analysis

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Introduction

Frontotemporal Lobar Degeneration (FTLD) is a group of progressive neurological disorders characterized by degeneration of the frontal and temporal lobes of the brain. The behavioral variant of FTLD (bvFTD) is one of the primary clinical syndromes within the FTLD spectrum predominantly manifesting with progressive decline in behavior, personality, and social conduct. Additionally, individuals with bvFTD experience impaired executive function, presenting with problems in planning, organizing, and problem-solving.

Case Report

A 46-year-old female, formerly a respected optician, presented with a 6-month cognitive decline. In a professional environment, she struggled with routine tasks, displayed reduced interest, and had difficulties understanding long-standing inside jokes while at home she exhibited compulsive cleaning, disinhibition, and excessive sweets consumption. Hetero-anamnesis revealed diminished insight into current problems and short-term memory loss. Laboratory findings indicated elevated total tau protein in cerebrospinal fluid whereas phosphorylated tau and amyloidβ42 were normal. An amyloid positron emission tomography(PET) scan of the brain displayed minimal deposits, and fluorodeoxyglucose-positron emission tomography(FDG-PET) scan revealed bilateral frontotemporal hypometabolism. Magnetic resonance imaging(MRI) showed no signs of frontotemporal atrophy. She was diagnosed with a behavioral variant of frontotemporal lobar degeneration. Ongoing donepezil therapy was continued, supplemented with quetiapine for behavioral symptom reduction.

Discussion/Conclusion

This case highlights the complex presentation of the behavioral variant of frontotemporal lobar degeneration (bvFTD) in a very young patient. Symptoms, including personality and behavioral changes, and craving for sweets align with typical bvFTD manifestations. The initial absence of frontotemporal atrophy on brain MRI may be misleading. However, even in the initial phases, the FDG-PET scan is positive, showing bilateral frontotemporal hypometabolism. Additionally, negative amyloid PET finding rules out concomitant Alzheimer's pathology.

Keywords:

beta Amyloid; Cognitive Dysfunction; Frontotemporal Dementia; Frontotemporal Lobar Degeneration; tau Protein

Sturge-Weber syndrome presenting as status epilepticus in a 20-month-old child

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Introduction

Sturge-Weber Syndrome, also known as encephalotrigeminal angiomatosis, is a rare neurocutaneous disorder characterized by facial port-wine stains, pial angiomas, and ocular abnormalities. The syndrome's leptomeningeal angiomatosis leads to vascular steal, affecting the subjacent cortex and white matter, resulting in localized ischemia. While the syndrome can manifest with various neurological symptoms, the most common is epileptic seizures.

Case Report

A previously healthy 20-month-old male child arrived at the emergency department during an epileptic seizure witnessed by the parents. The status epilepticus, lasting approximately one hour, was associated with unconsciousness, lethargy, and vomiting. Convulsions were absent, and there was no fever. Administration of both diazepam and phenobarbitone successfully halted the status epilepticus. Physical examination revealed no port wine stains, and no ocular abnormalities were reported. A native brain CT scan identified linear hyperdensities in the parieto-occipital region on the right side. Subsequent brain MRI revealed brain atrophy and leptomeningeal enhancement temporoparieto-occipitally with an enlarged ipsilateral choroid plexus. The SWI sequence also showed prominent medullary veins temporoparieto-occipitally on the right side, spanning this region's superficial and deep venous systems. The MRI findings were consistent with Sturge-Weber syndrome. Levetiracetam was initiated as chronic therapy to prevent future seizures, along with acetylsalicylic acid to prevent ischemic stroke.

Discussion/Conclusion

Sturge-Weber syndrome can be classified based on the presence or absence of facial and leptomeningeal angiomas. This patient aligns with type III (isolated leptomeningeal angioma; usually no glaucoma). Diagnosis is typically evident due to a congenital facial capillary malformation, commonly known as a port-wine stain, usually involving the trigeminal nerve's ophthalmic division (V1). In the absence of characteristic skin changes, establishing a diagnosis before the onset of neurological symptoms can be challenging. Therefore, it is essential to always be mindful of rare diagnoses when evaluating a child with an epileptic seizure.

Keywords

Angiomatosis; Neurocutaneous Disorder; Port-Wine Stain; Status Epilepticus; Sturge-Weber Syndrome,

Student Session 4

Difficulty of diagnosing and time sensitive treatment of young and middle–aged adults with stroke

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Introduction
Cervical artery dissection is one of the most common causes of stroke in people under 50 after injury to head or neck. This condition occurs after a tear in the wall of one of the large blood vessels in the neck. This can cause blood clots in arteries, which can affect blood supply to the brain. Non-traumatic dissections can occur due to straining or genetic conditions that affect connective tissue.

Case Report
A 46–year-old male was referred to Neurological Intensive Care Unit for further treatment of ischemic stroke which was initially presented with motor dysphasia and mild paresis of right arm an hour before admission to the hospital. The patient did not complain of any pain and denied any trauma to the head or neck. Initial computed tomography scan of the brain showed no signs of acute ischemic stroke. Upon admission to the Neuro ICU there was progression of motor dysphasia and weakness in the right arm. Following the guidelines, within 4.5 hours intravenous alteplase was initiated, unfortunately the patient's symptoms didn't improve.

Subsequently, within 6 to 24 hours as suggested by guidelines, thrombectomy was performed when an intracranial stent was deployed after initial multi-slice computed tomography

angiography revealed dissection and occlusion of the left internal carotid artery and left vertebral artery (V2). After the endovascular procedure, the patient was taken to Neuro ICU

where he was administered antiplatelet therapy, thromboprophylaxis, gastroprotective and other symptomatic treatment.

Discussion/Conclusion
Cervical artery dissection is a common cause of stroke in young and middle-aged adults. Difficulty in identifying this condition even with angiography highlights the importance of quick response and time sensitive treatment, otherwise symptoms could progress in a short period of time.

Keywords
Stroke, artery dissection, aphasia, computed tomography angiography, thrombectomy

Red Ear Syndrome: Case Report and Therapeutic Management in Clinical Practice

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Introduction
Red ear syndrome is an exceptionally rare disorder characterized by a sensation of burning pain and redness in the outer ear region. It can present as either an idiopathic syndrome or as a secondary form associated with cervical pathology. The etiology and pathophysiology remain unknown, although several hypotheses connect the central and peripheral nervous systems as potential causes of the syndrome.

Case Report
A 48-year-old patient presents with pain in the left ear region for the past seven years. The pain occurs approximately three times a year, lasting several days each time. These episodes occur with a frequency ranging from 1 to 3 times per day, manifesting at different intervals throughout the day and typically lasting approximately 2 hours per occurrence. Additionally, the patient reports erythema of the ear and heightened sensitivity upon tactile stimulation. Interestingly, the pain episodes do not disrupt the patient's sleep patterns. The medical history indicates the absence of any additional accompanying symptoms during episodes, and a previous examination by an otorhinolaryngologist had raised suspicion of trigeminal neuralgia. The patient provides MRI scans of the brain, temporal bones, and pontocerebellar angle, along with MR angiography. Physical and neurological examinations were conducted, yielding normal results. Considering the patient's extended history of recurring ear pain and the comprehensive examination of scans and tests that excluded other potential diagnoses, the diagnosis of red ear syndrome was established. The patient was prescribed to take indomethacin, 25-milligram tablets, three times a day and advised to return for a follow-up appointment in 2 weeks, or sooner if the pain recurs.

Discussion/Conclusion
Red ear syndrome presents a perplexing clinical challenge, characterized by recurring burning pain and erythema in the outer ear. This case underscores the imperative of a comprehensive clinical approach, where careful consideration of symptomatology guides both diagnosis and management decisions. While treatments such as indomethacin offer symptomatic relief, the relentless pursuit of deeper insights and more effective interventions persists.

Keywords
Ear, Erythema, Indomethacin, Magnetic Resonance Imaging, Pain Management

Acute necrotizing encephalopathy (ANE) in a patient with Influenza A

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Introduction

Acute Necrotizing Encephalopathy (ANE) is a rare type of acute encephalopathy with global distribution. ANE is primarily caused by viral infection-triggered cytokine storms, but there are also cases of familial ANE connected to mutations in the RANBP2 gene. Patients typically present with rapid changes in consciousness, seizures and focal neurological deficits.

Case Report

Presented here is a case of a 31-year-old woman who was initially examined due to high fever, cough and general weakness. Rapid antigen test was Influenza A positive. Two days later she returned to the emergency room, this time with altered state of consciousness, dysarthria and instability while performing Romberg test. Stiffness in the neck was observed, and her motor strength was graded at 3 out of 5, indicating the ability to move muscles against gravity but not against resistance. Computed Tomography showed no abnormalities, while Magnetic Resonance Imaging (MRI) revealed distinctive findings. On T2-weighted images and FLAIR (Fluid-attenuated inversion recovery) sequence pathological symmetrical hyperintensity in the thalamus with propagation through mesencephalon to the pons was observed. Similar finding were present in hippocampi, parahippocampal gyri and mammillary bodies. T1-weighted image sequence presented signal changes in both thalami, hippocampi and pons that represented hemosiderin deposits as part of the recent hemorrhage. These changes indicated ANE and the patient was admitted to the intensive care unit where she was treated with intravenous corticosteroids, antiviral medication and supportive therapy. Lumbar puncture was performed and a normal range of glucose and proteins was observed, while the level of lymphocytes was elevated. Polymerase chain reaction (PCR) was not able to isolate the influenza virus from the liquor, even though the clinical picture and cerebrospinal fluid findings indicated viral infection.

Discussion/Conclusion

While influenza virus can cause neurological complications, one of the most serious and rare outcomes is acute necrotizing encephalopathy. ANE progresses quickly and has a poor prognosis with a high mortality and morbidity rate. Outcomes are especially bad in those with brainstem involvement.

Keywords

Brain Diseases, Consciousness Disorders, Influenza A virus, Magnetic Resonance Imaging

Anxiety as an Early Symptom of Multiple Sclerosis – yes or no?

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Introduction

Multiple sclerosis (MS) is a chronic immune-mediated demyelinating disorder of the central nervous system (CNS), often accompanied by various clinical symptoms leading to a wide range of disabilities. Fatigue, depression, and anxiety often co-occur in individuals with MS and may excerbate the disease burden. Recent epidemiological studies indicate an increasing prevalence of neuropsychiatric disorders in MS patients, particularly depression and anxiety disorders. In fact, the diagnosis of MS may serve as a risk factor for developing anxiety disorders, with self-reported anxiety symptoms rising from 2.7 % at the onset of MS to 6.2 % at the time of diagnosis.

Case Presentation

A 33-year-old patient, suffering from anxiety for the past year and treated with SSRI, presents to an ophthalmologist for initial evaluation due to right eye disturbances. Over the last 6 months, the patient has experienced recurring episodes of visual dimming restricted to the right eye, inability to fully focus on observed objects, lasting for hours before subsiding. These eye disturbances have been nearly daily for several months, with recent diary observations noting a correlation with anxiety. Ophthalmological examination reveals demyelinating lesions of the right optic nerve, suggesting a diagnosis of demyelinating optic neuritis of the right eye. The patient was hospitalized in the neurology department for further diagnostic evaluation. MRI findings of the brain and cervical spine have shown multiple demyeliating lesions (>17). Cerebrospinal fluid analysis has shown intrathecal IgG synthesis. Patient was confirmed the diagnosis of MS and treatment with ofatumumab was initiated.

Conclusion

The diagnosis of multiple sclerosis (MS) relies on the revised 2017 McDonald criteria, which are based on two fundamental principles: dissemination in space and time, assessable through clinical and/or MRI findings. In our patient's case, both criteria are met. Interestingly, this case presents with the occurrence of an anxiety disorder and optic neuritis. Was the anxiety first symptom or just the co-occurence in this disease? This remains unclear. Studies, along with patient case reports, lay the groundwork for further research.

Keywords

Multiple sclerosis, anxiety disorder, depression

Student Session 5

In-flight cerebral air embolism: status epilepticus from bronchogenic cyst rupture

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Introduction
In-flight seizures, rare yet serious, typically affect passengers with pre-existing epilepsy. Status epilepticus (SE) is a life-threatening condition that requires immediate medical attention and an emergency landing. Pressure differentials during flight influence volume changes (Boyle's law), causing cyst rupture and embolization. Our case involves a patient with an unknown bronchogenic cyst experiencing an epileptic status mid-flight. Patients' diagnostic and therapeutic workups and treatment options for SE are explored.

Case Report
A 66-year-old female patient, passenger on a commercial airplane flight, suffered an epileptic seizure, progressing to a generalized tonic-clonic seizure one hour after departure. The seizure lasted 45 minutes, and without antiepileptics, the patient was managed conservatively on board. An emergency landing was performed, the patient was treated with diazepam and admitted. The patient was unconscious (Glasgow coma scale score (GCS) of 4). No epilepsy, pulmonary pathology or recognizable risk factors for SE were noted in the medical history. Following admission, neuroimaging, lumbar puncture, electroencephalography (EEG), and laboratory tests were performed. Cerebral CT angiography showed signs of cerebral arterial air embolism. A thoracic computed tomography scan showed an enlarged mediastinal mass-a giant bronchogenic cyst. EEG findings displayed continuous and abnormal electrical activity, characterized by persistent high-frequency discharges. The patient was treated in accordance with the guidelines for refractory and super-refractory ES. Initially, levetiracetam and midazolam were prescribed, with the later addition of pulse corticosteroid and intravenous immunoglobulin therapy. Despite treatment efforts, the patient remained clinically unchanged (GCS-4). Repeated head MRI scans revealed signs of cerebral air embolism. The neurological exam showed anisocoric pupils. The patient was transferred to a parent institution with assisted spontaneous ventilation, where she later succumbed.

Conclusion
This condition is rarely documented, presenting a potentially fatal scenario where timely diagnosis becomes crucial for effective treatment. Barotherapy is the primary successful approach for stable patients, complemented by algorithm-guided therapeutic measures. Our case contributes to understanding this rare condition, endorsing chest radiography for individuals with a history of in-flight seizures to rule out bronchogenic cysts and avert fatal air embolisms.

Keywords
Air Embolism, Bronchogenic Cyst, Cerebral Embolism, Status Epilepticus

Microsurgical resection of Dumbbell shaped schwannoma in upper cervical spine - case report

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Introduction
Spinal schwannomas are rare, usually located intramedullary, intradural extramedullary, epidural and dumbbell shaped. Dumbbell shaped tumors have an incidence of 18% of which 44% occur in the cervical spine which is challenging for complete resection and postoperative rehabilitation.

Case Report
A 36-year-old male came to the neurosurgery clinic in December 2023, reporting numbness in all extremities, particularly the hands. Neurological examination revealed spastic quadriparesis, hypertonia and hyperreflexia on all extremities equally, along with bilaterally positive pathological reflex - Babinski sign. The patient first noticed symptoms six months prior, and they were worsening progressively. MRI indicated a dumbbell-shaped extradural and intradural extramedullary mass on C1-C2. The intradural component situated ventrally to the spinal cord, caused compression leading to myelopathy and spinal cord edema. Operative treatment, utilizing intraoperative neuromonitoring, involved a less invasive unilateral approach. During the operation, the patient was placed in a prone position and the tumor, sized 17x32x22 mm, was approached through posterior exposure. C1-C2 hemilaminectomy on right side was done, and a capsulated tumor was identified compressing the dural sac medially. After the resection of the extradural part, the dura is opened paramedially and the intradural part of the tumor is separated and resected using a microsurgical technique. Since a unilateral less invasive approach was performed, there was no need for spinal stabilization, which could have been impaired if the operation demanded a laminectomy instead of the performed hemilaminectomy. Due to the size of the tumor and complexity of the operation, the minimal invasive approach of the operation was challenging because of the reduced operative corridor and difficulty of the total resection of the tumor. The minimal invasive approach also had the potential complication of a greater retraction of the medulla due to the smaller operating space, which was not the case in our patient. Postoperative evaluation showed good recovery of preoperative symptoms, which was evident by the verticalisation of the patient within two days after the surgery. Pathological findings were consistent with schwannoma. Postoperative MRI done after 3 days showed complete tumor resection and improvement of spinal cord edema. Successful tumor removal, with retained spinal stability and an improvement of the neurological deficit within 5 postoperative days, with a complete recovery of the motor weakness one month after the operation and a mild numb sensation in the hand that only lasted for two months postoperatively, showed that this minimal invasive approach was the best operative solution.

Discussion/Conclusion
Thorough surgical planning with the choice of minimal-invasive surgical approach and incorporating neuromonitoring, enabled a safe approach for the total tumor removal and was crucial for the complete postoperative rehabilitation of the patient.

Keywords
Minimally-invasive surgical procedure, spinal cord neoplasm, compressive myelophaty, quadriparesis, intraoperative monitoring

Intraorbital solitary fibrous tumor with intracranial propagation: a case report

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Introduction
Solitary fibrous tumor (SFT) are rare collagen-rich, spindle-cell, mesenchymal-origin neoplasms. There are only a small number of reports of such tumors in pleural and extrapleural sites, including the pericardium, peritoneum, lungs, liver, upper respiratory tract, mediastinum, thyroid and parotid glands, and central nervous system (CNS). Extrapleural SFT is extraordinarily rare, especially in the CNS. We present a distinctive case of a patient with intracranial SFT.

Case Report
A 48 year-old male patient was admitted to the neurosurgery department for operative treatment of a right-sided intraorbital lesion with intracranial propagation. Upon admission there were no abnormalities in his physical examination apart from right bulbar proptosis. Almost thirty years prior to the admission, he had undergone a surgery to remove a right-sided temporobasal meningioma, yet did not have any documentation on the surgery or histology of the removed tumor. His latest MRI scan performed several months before the admission showed an intraorbital /intracranial tumor. Surgery was therefore scheduled, aimed at removing the tumor and also obtaining samples for histology. Temporobasal craniotomy was performed and the roof of the bony part of the orbit was removed to access the extradural component of the tumor. Dura was incised at the base of the anterior cranial fossa. Both intra and extradural components of the tumor were removed and samples were sent to histopathological analysis. The postoperative course was uneventful and the patient was discharged on the third postoperative day. Histology showed that the tissue was composed of bundles and clusters of spindle and oval mesenchymal cells with scarce cytoplasm, moderate nuclear atypia and good vascularisation. Histological diagnosis was consistent with SFT.

Conclusion
Solitary fibrous tumors are rarely suspected in clinical practice, especially when they are located within the orbit or cranium. Despite its low incidence rate, SFT should be kept in mind as a differential diagnosis.

Keywords
Brain neoplasms, skull base, orbit, solitary fibrous tumor, central nervous system, neurosurgery

Endovascular Embolization of Occipital Lobe Arteriovenous Malformation (AVM) with Preserved „en passage“ Drainage Pathway

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Introduction

Intracranial arteriovenous malformations (AVMs) are rare lesions but unrecognized and left untreated can cause severe neurological deficits and death due to bleeding. The main aim of the treatment of AVM is to reduce or eliminate the risk of intracranial hemorrhage and to preserve or restore the patient's functional status.

Case Report

This case report describes a patient presenting with occipital pain that lasted a few weeks, subsequently diagnosed with an AVM in the right occipital lobe via brain MR angiography. Upon admission, the patient demonstrated intact consciousness, orientation, and independent mobility, with no sensory deficits. The patient underwent an endovascular procedure under general endotracheal anesthesia using bilateral transfemoral transarterial access. A guiding catheter was placed in the right internal carotid artery (ACI) and right vertebral artery (VA), revealing the previously verified AVM in the right occipital region. Employing two mini occlusive balloons, an endovascular intervention was performed on individual arteries arising from the right middle cerebral artery (MCA) that supplied the AVM. Following balloon inflation, liquid embolic material was applied directly into the AVM nidus. Subsequent angiograms confirmed complete AVM reduction, narrowing of the draining vein, and removal of the mini balloons from the upper branch of the M2 segment. However, attempting to remove the mini balloon from the lower branch resulted in proximal migration of the embolic material, and the mini balloon was left within the vascular system. The remaining nidus, filled with "en passage" vessels supplying the distal territory of the right posterior cerebral artery (PCA), was intentionally left open to facilitate arteriovenous drainage of the AVM. The patient is neurologically stable, and she is being discharged for home treatment.

Discussion/Conclusion

This case highlights the necessity for an individualized approach in the management of AVMs and underscores the significance of endovascular therapy as a primary step in the comprehensive treatment of AVMs. Continued advancements in endovascular techniques and imaging modalities hold promise for further improving outcomes and expanding the treatment options available for patients with intracranial AVMs.

Keywords:

Arteriovenous Malformation, Embolization, Magnetic Resonance Angiography, Pain, Vascular Malformations

Student Session 6

B12 deficiency resulting in subacute combined degeneration of the spinal cord – case report

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Introduction

A deficit of vitamin B12 (cobalamin) can cause severe hematological and neurological symptoms such as weight loss, anemia, progressive neurological deficits, mood changes, and muscle weakness. The deficit can be caused by impaired function of substrates like methylmalonic acid (MMA) or homocysteine. Supplementation can halt disease progression.

Case Report

A 61-year-old male patient was exposed to heavy metals, including cadmium, mercury, and lead. He was first referred months after exposure for walking difficulties and tremors accompanied by vertigo and insomnia due to leg cramps. The patient also reported behavioral changes and speech stammering. Increased mixed spastic and rigid tone, intentional and postural tremor of both hands in rest, bradykinesia, and paraparesis were found. Magnetic resonance imaging (MRI) showed changes in the dorsal columns of the spinal cord at C3-C7 levels, while brain MRI was normal. Laboratory results showed vitamin B12 deficiency via increased MMA levels. Liver laboratory test were normal. Electroencephalography (EEG) noted background suppression. Initially prescribed vitamin B12 and E, selenium, and clonazepam were ineffective. Afterward, he received intramuscular vitamin B12 for 6 weeks, after which most neurologic symptoms improved. On a two-year follow-up, significant neurological disabilities persist with regular speech and physical therapy.

Discussion/Conclusion

Subacute combined degeneration is a severe consequence of vitamin B12, E and copper deficiency, or heavy metal exposure. Unfortunately, it took several months for the patient to receive appropriate treatment and significant disability persists. Most cases of vitamin B12 deficiency are successfully treated with vitamin supplementation.

Keywords:

Intramuscular injections; neurological deficits; spinal cord; subacute combined degeneration; vitamin B12 deficiency

Outcome of DuoDopa pump therapy in a patient with advanced Parkinson's disease – case report

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Introduction

Parkinson's Disease (PD) is a progressive neurodegenerative disorder characterized by the degeneration of dopaminergic neurons within the substantia nigra. In advanced stages of Parkinson's disease, oral medications become insufficient to control motor symptoms in which case the DuoDopa pump can be applied. It delivers a combination of levodopa and carbidopa directly into the small intestine to provide continuous medication delivery for managing motor fluctuations. This case report examines DuoDopa pump outcome in advanced Parkinson's patient.

Case Report

A 70-year-old male patient was hospitalized at the Clinic of Neurology in Rijeka for assessment of the indication for the treatment of advanced PD with infusion therapy. The patient was diagnosed with PD twelve years ago, and the initial symptoms at the time of diagnosis included a right-sided dominant resting tremor, prolonged insomnia, and anosmia. At admission, the patient presented with hypomimia, bradykinesia, resting tremor, and rigid muscle tone. Additionally, the patient complained of reduced effectiveness of oral medication therapy with pronounced motor fluctuations and dyskinesias. During hospitalization, tests for cognitive assessment and psychological testing were performed, indicating mild cognitive impairment. The patient had a positive reaction to the levodopa test. After clinical evaluation, it was established that the patient was a candidate for DuoDopa pump therapy. Three weeks later, the patient underwent gastroscopy to place a percutaneous endoscopic gastrostomy with a jejunal tube for the application of the levodopa/carbidopa gel. At the first control examination, the patient experienced fewer motor fluctuations with longer "on" periods and fewer dyskinesias.

Discussion/Conclusion

Duodopa pump therapy is a valuable option for patients with advanced PD, particularly for those who experience significant motor fluctuations and dyskinesias. It offers a more stable delivery of medication directly to the intestine, which can significantly reduce "off" times and enhance gait function, leading to an overall improvement in quality of life.

Keywords

External infusion pump, neurodegenerative disease, Parkinson disease

Challenges in Diagnosis and Treatment of Spastic Paraplegia

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Introduction

Hereditary spastic paraplegia (HSP) is a group of rare inherited disorders that cause difficulty in walking due to muscle weakness and tightness in the legs. There may be significant variation in the clinical presentation so HSP is often misdiagonsed. The aim of this report is to demonstrate the complex etiology of late-onset toe-walking.

Case Report

A 5-year-old girl who was referred to the pediatric neurology department due to constant toe walking that had been ongoing for a year. Her perinatal and psychomotor development were normal, and on examination, increased reflexes of the legs up to clonus and ataxic gait were found, but the rest of the neurological status was normal. Following detailed clinical examination, dysrhythmia with occasional slowing on the electroencephalogram was identified and transcranial Doppler showed asymmetry in the area of the anterior cerebral arteries. Brain magnetic resonance imaging (MRI) scan was normal. Additionally, the orthopedist ruled out shortened Achilles tendons. Spine MRI showed thickening of the filum terminale more distally than L2, raising suspicion of tethered cord syndrome. The patient underwent surgery, including L3 laminectomy and filum resection, resulting in a slight reduction in toe walking, but ataxia persisted. After the operation, she underwent rehabilitation and physical therapy, with follow-ups every year. Five years after the operation, toe walking had not completely disappeared, although it was significantly improved compared to before the surgery. Finally, genetic testing was performed isolating the ATL1 gene, indicating spastic paraplegia type 3A. After the correct diagnosis, the patient continues physical therapy and undergoes annual check-ups.

Discussion/Conclusion

Toe walking is considered physiological up to around 3 years of age, but if it persists beyond that, we should suspect various etiologies. This case illustrates that the problem of spastic paraparesis should be taken seriously, and the correct cause of the disease should be patiently sought and adequately treated.

Keywords:

gait ataxia; hereditary spastic paraplegia; laminectomy; magnetic resonance imaging; tethered cord syndrome

From symptoms to diagnosing Wilson's disease: a 20 year journey

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Introduction

Wilson's disease (WD), also known as hepatolenticular degeneration, is an autosomal recessive disease caused by a mutation in the adenosine triphosphatase gene (ATP7B) on chromosome 13 important for copper transport. Consequently, copper accumulates in various tissues, including the brain, particularly the basal ganglia, thalamus, and brainstem. Some WD symptoms are fatigue, lack of appetite, abdominal pain, jaundice and tremor, along with Kayser-Fleischer (KF) corneal rings. Copper accumulation disrupts neurotransmitter function, notably dopamine, leading to tremors, dysarthria, and other extrapyramidal signs. Additionally, it impairs mitochondrial function, exacerbating oxidative stress and neurodegeneration.

Case Report

A 44-year-old man presents with static, dominantly postural and action hands tremor which resembles ''flapping tremor'', dysarthria and occasional mild head tremor. Twenty years before first tremor appearance, elevated levels of transaminases of unknown etiology were continuously monitored. From anamnestic information about occasional alcohol consumption, he was diagnosed with alcoholic liver cirrhosis. On abdominal ultrasound, the liver was granular and hyperechoic with a 20 mm lesion and cholelithiasis. In patients with tremor and liver cirrhosis, 24-hour urine copper, serum copper and ceruloplasmin tests, as well as an ophthalmological examination with a proven KF ring indicate WD. The patient was prescribed d-penicillamine and vitamin B6 substitution, with the recommendation of a reduced copper intake diet. The therapy resulted in a complete regression of neurological symptoms and a significant improvement of the liver status.

Discussion/Conclusion

The processing algorithm for younger patients with tremor should include the copper metabolism parameters processing. In case of liver lesions of unknown etiology with or without tremor, but also other extrapyramidal signs, it is important to rule out WD, because non-recognition or late diagnosis usually have a fatal outcome. Only by raising suspicion about this disease and using targeted tests that are simple, cheap and available, a timely diagnosis and treatment can be made.

Keywords

Ataxia, Copper-transporting ATP-ases, Hepatolenticular degeneration, Tremor

Student Session 7

Neurosurgical access to non-traumatic acute spontaneous subdural hematoma (ASDH) of arterial origin

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Introduction

Subdural hematoma (SH) is a serious neurosurgical emergency often triggered by head trauma, resulting in bleeding between the dura and arachnoid layers of the meninges. Acute subdural hematoma (ASDH) presents a life-threatening condition with a significant mortality risk. Although trauma is the primary cause in most ASDH cases, non-traumatic causes are relatively uncommon, occurring at an incidence rate of 3% to 5%.

Case Report

We present a case of a female patient who developed an acute spontaneous subdural hematoma (ASDH) with a previous medical history of schizophrenia, high blood pressure, type 2 diabetes, and hypothyroidism. The patient was found immobile an hour after appearing neurologically normal. She presented with dysarthria, headaches, confusion, and left-side paraplegia. Weakness and supranuclear paresis of the facial nerve were evident. An urgent CT scan confirmed right hemispheric extra-axial hemorrhagic collection, prompting emergency neurosurgical intervention involving a right frontotemporal craniotomy. A 20 mm coagulated subdural hematoma covering the entire right hemisphere was revealed after dura removal. Further exploration disclosed a (3*3 cm) hemorrhagic cortical contusion in the high convexity area near the central sulcus and postcentral gyrus. Hemostasis was achieved, and the base of the brain was covered with Surgicel. Peripheral suspension and Tachosil were applied in the region of the transversal sinus. The dura was reconstructed with a primary suture, and a locally excised periosteum was utilized. After ensuring hemostasis, an epidural redon drainage was placed, and a separate skin opening was created. Following surgery, a patient with a Glasgow Coma Scale (GCS) score of 14 was transferred to the neurosurgery department due to left-sided hemiparesis and facial paresis for further treatment. The wound healed well, and the patient was discharged home after a follow-up CT scan. One month later, another CT scan was done for further monitoring.

Discussion/Conclusion

ASDH is a life-threatening condition in which an urgent CT scan is necessary to identify the lesion. It is essential not to overlook the prospect of arterial rupture, even when the primary concern is venous bleeding. Aggressive treatment is necessary.

Keywords

Acute Subdural Hematoma, Craniotomy, Hemorrhage, Hemostasis, High Blood Pressure

Mastering Challenges in Olfactory Groove Meningioma Surgery: A Case Report

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Introduction

Olfactory Groove Meningiomas (OGM) are a relatively uncommon subset of intracranial meningiomas, constituting approximately 8% to 14% of all cases. Symptoms often remain unrecognized until the tumor reaches a certain size. Then, symptoms such as anosmia and ageusia, visual disturbances, persistent headaches, fatigue, and personality alterations may manifest.

Case Report

We are discussing a 38-year-old male patient who has been referred to our facility after a previous stay in the neurology department due to bilateral amaurosis which lasted for a month and acute psychotic episodes where subsequent magnetic resonance imaging (MRI) confirmed a suspected olfactory region meningioma measuring 7,8 x 7,2 x 7,7 cm. The Neurological assessment at our institution substantiated bilateral amaurosis with concomitant dilated and non-responsive pupils. The patient underwent surgical intervention positioned supinely with head fixation utilizing a Mayfield clamp. The procedure commenced with a bicoronal incision followed by bifrontal craniotomy and a subfrontal approach. Dural incision allowed precise navigation-guided access to the tumor after displacing anterior cerebral arteries, facilitating its methodical excision. After covering the anterior fossa with a dural patch, the autologous bone flap was repositioned and secured using 3 titanium plates. The procedure proceeded without complications, however, unfortunately, bilateral amaurosis persisted due to tumorous damage to the optic nerves, but no new neurological deficits emerged. Three follow-up brain multi-sliced computed tomography (MSCT) scans revealed no signs of complications. Brain MRI showed a well-healed postoperative cavity with no signs of residual tumor. The optic chiasm was caudally displaced, and a partial empty sella was confirmed, indicating that this procedure posed a challenge due to critical neurovascular structures. Subsequent endocrinological evaluation revealed no signs of hormonal disbalance.

Discussion/Conclusion

Surgically addressing OGM presents challenges, especially when aiming to preserve the integrity of the olfactory and optic nerves. Therefore, a carefully planned surgical approach is crucial to attain a favorable outcome.

Keywords

Craniotomy; magnetic resonance imaging; meningioma; olfactory nerve; optic chiasm

Managing Essential Tremor: Evaluating the Role of Gamma Knife Thalamotomy for Refractory Tremor

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Introduction

Essential Tremor (ET) is a prevalent movement disorder characterized by involuntary rhythmic movements. Initial treatment typically involves medications like propranolol, primidone, and topiramate, with alprazolam and botulinum toxin type A also considered. When medication fails, surgical interventions like deep brain stimulation and thalamotomy are options. However, some patients may not qualify for surgery due to comorbidities or age. In such cases, Gamma Knife (GK) therapy offers a viable alternative.

Case Report

We present a 68-year-old female patient diagnosed with ET over 40 years ago, with symptoms exacerbating in the past 6 years. The progression of tremor impacted her daily life and forced her into early retirement. Additionally, she suffers from hypothyroidism, hypertension, hypertensive cardiomyopathy, and diabetes. Propranolol and primidone were tried without significant relief. A neurological examination revealed severe upper limb action and postural tremor, with a Fahn-Tolosa-Marin tremor rating scale (FTM) score of 65.

Further investigation via magnetic resonance imaging (MRI) detected chronic ischemic changes, while neuropsychological testing indicated cognitive impairment and depression. Given her complex medical history, GK thalamotomy, employing a single 4 mm isocenter of radiation delivering 130 Gy, was chosen as the primary treatment option.

Follow-up at 4 months demonstrated a significant tremor reduction (FTM score=28), with MRI confirming the desired lesion location. One year follow-up revealed continued improvement without any side effects. Today, she can engage in all normal day-to-day activities that were challenging for her in the past.

Discussion/Conclusion

GK thalamotomy is an important treatment option for refractory ET symptoms. Due to its non-invasive nature, GK thalamotomy becomes an essential option for patients who aren't suitable candidates for surgery. This approach can significantly enhance patients' quality of life, albeit requiring acknowledgement that improvement necessitates time. Further research is imperative to establish this technique as a standard option for carefully selected individuals.

Keywords

Essential Tremor; Movement Disorders; Radiosurgery; Stereotaxic Techniques

Spontaneous intracranial hypotension

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Introduction

Spontaneous intracranial hypotension (SIH) is a syndrome marked by headaches that worsen when upright and improve when lying down, known as orthostatic headaches, and are often accompanied by symptoms like diplopia and tinnitus. It results from the loss of cerebrospinal fluid (CSF) typically occurring in middle age and affecting women twice as often as men. CSF leaks can occur through various pathophysiological pathways, including dural tearing, leaks from nerve root diverticula, and CSF-venous fistula formation. Besides clinical presentation, diagnosing SIH requires neuroradiological assessment, including head and spine MRI and CT myelography. Conservative treatment includes rest, hydration, and oral caffeine, with neurosurgical intervention for refractory cases.

Case Report

We present a case of a 33-year-old female who developed orthostatic headaches localized in the frontal, occipital, and temporal areas, with greater intensity on the left side, exacerbated by coughing and sneezing but relieved in the supine position. Additionally, she experienced symptoms including nausea, vomiting, blurred vision, and diminished hearing sensation. Despite a brain MRI showing no indicative signs of SIH, a spine MRI revealed a positive finding of a cerebrospinal fluid collection in the posterior epidural space spanning from C7 to Th1, extending through the entire thoracic spine, which was additionally confirmed by CT myelography. Following unsuccessful conservative treatment, the patient underwent transforaminal epidural application of autologous blood under MSCT guidance, a procedure commonly referred to as an epidural blood patch. This intervention, aimed at restoring normal cerebrospinal fluid pressure, involves injecting autologous blood into the epidural space to clot and seal off the leak. Subsequently, the patient experienced complete clinical recovery.

Discussion/Conclusion

This case emphasizes the importance of considering spontaneous intracranial hypotension in the differential diagnosis, despite its rarity, for patients presenting with orthostatic headaches. Neuroradiological assessments play a crucial role in diagnosis, with conservative treatments and neurosurgical interventions offering viable management options.

Keywords

Blood patch; cerebrospinal fluid; headache; intracranial hypotension; myelography

Poster Session 4

Effect of levodopa-entacapone-carbidopa intestinal gel infusion on advanced Parkinson's disease

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Introduction
A Considerable number of patients with advanced Parkinson's disease (aPD) are candidates for non-oral treatment methods, i.e. „device-assisted therapy“ (DAT). One of the most recent treatment options is levodopa-entacapone-carbidopa intestinal gel (LECIG) approved for use in Sweden in 2018. LECIG infusion continuously administers aforementioned antiparkinsonian medications in a methylcellulose gel directly to the proximal part of the small intestine via the percutaneous endoscopic gastrostomy tube with a jejunal extension (PEG-J system) leading to a constant therapeutic levodopa plasma concentration, decreased motor fluctuations and improved quality of life of PD patients.

Case Report
We present a case of a 62-year-old female patient diagnosed with juvenile idiopathic PD at the age of 48. She presented with moderate hypomimia, left-sided rigidity, occasional static tremor of the left hand and clumsiness of left extremities. The patient's state improved after the prescription of a dopaminergic agonist pramipexol. During the intervening time, she was regularly controlled and her therapy was titrated. In 2022 (disease duration of 14 years) patient presents with worsening symptoms including nocturnal akinetic crisis, somnolence and falling. During her hospitalization PEG-J system was installed and LECIG infusion was started after the initial test with a nasojejunal tube. Consequently, patient's neurological exam showed significant improvement. On the last appointment, the neurological exam showed no rigidity or hyperkinesis.

Discussion/Conclusion
LECIG infusion treatment is the latest DAT option for advanced and complex PD. Due to the presence of entacapone, a COMT inhibitor, the bioavailability of levodopa is increased leading to lower overall levodopa doses needed for achieving therapeutically effective plasma concentrations, fewer side effects and better quality of life.

Keywords
Antiparkinson Agents, Carbidopa, Dopamine Agonists, Levodopa, Parkinson Disease

Iatrogenic extrapyramidal syndrome and cognitive deterioration associated with the use of duloxetine

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Introduction
Duloxetine is a selective serotonin and norepinephrine reuptake inhibitor (SNRI) used to treat major depressive disorder, generalized anxiety disorder and pain associated with diabetic peripheral neuropathy. The initial and recommended maintenance dose is 60 mg taken once a day, with or without food. The main side effects, occurring in 10% to 20% of patients include nausea, drowsiness, insomnia and dizziness.

Case Report
A 79-year-old female patient has been complaining of forgetfulness and slowness over the past few days. She is oriented and cooperates, but responds with latency and exhibits psychomotor slowing. Minimally increased generalized muscle tone is observed, slightly more pronounced on the left side, without hyperkinesia. Rapid alternating movements are also performed somewhat slower overall. She occasionally experiences urinary incontinence and sleeps poorly, maintaining a good appetite and stable body weight. A brain magnetic resonance imaging (MRI) revealed chronic periventricular lesions in the white matter and chronic vascular lesions in the pons. The symptoms experienced by the patient are associated with the initiation and dose escalation of duloxetine, introduced after the recent death of her husband for the treatment of depression and neuropathic pain. With gradual dose reduction and discontinuation of the medication, her condition has significantly improved.

Discussion/Conclusion
Numerous medications can cause iatrogenic extrapyramidal side effects. In the presented patient, an exceptionally rare case of extrapyramidal and cognitive side effects associated with the use of duloxetine has been documented, with complete recovery observed after discontinuation of the medication.

Keywords
Basal Ganglia Disorders; Cognitive Dysfunction; Dementia; Duloxetine Hydrochloride; Iatrogenic Disease

Early-Onset Alzheimer's: Exploring Diagnostic Strategies and Treatment Outcomes

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Introduction
Alzheimer's disease stands as the leading cause of dementia, typically afflicting the elderly with progressive memory loss and cognitive decline. However, this case presents a unique scenario of early-onset Alzheimer's disease, manifesting in a 63-year-old female patient. This report delves into the diagnostic process and therapeutic considerations surrounding this atypical presentation.

Case Report
The patient, a 63-year-old female, exhibited cognitive impairment over the past five months, characterized by difficulty recalling names and tasks, alongside a noticeable decline in work performance. Remarkably, she had experienced coordination issues for the past two decades, attributing them to normal aging. Her medical history included successfully managed epilepsy with benzodiazepines (Rivotril). Psychological testing revealed significant cognitive disability, while neurological examination unveiled partial orientation in time and acalculia, despite complete spatial orientation. Brain MRI (magnetic resonance imaging) depicted microangiopathic lesions, prompting further diagnostic investigation with amyloid PET- CT (positron emission tomography-computed tomography). Following intravenous administration of an amyloid radiotracer, the scan revealed diffuse tracer accumulation within the cerebral parenchyma, confirming Alzheimer's disease diagnosis. Despite initiating antidementia therapy with donepezil (0.5mg), the patient exhibited poor response, rapidly deteriorating and becoming entirely dependent on familial support.

Conclusion
The utilization of amyloid PET-CT emerges as pivotal in diagnosing Alzheimer's disease, particularly in early-onset cases like the one presented. Early diagnosis facilitates timely intervention, potentially slowing disease progression and enhancing quality of life. However, as evidenced in this case, therapeutic efficacy can vary, with some patients experiencing rapid deterioration despite early intervention. This underscores the complexity of Alzheimer's management and the need for personalized treatment approaches.

Keywords
Amyloid; Cognition; Dementia; Disease, Alzheimer's; Tomography, computed

Successful revascularization of basilar artery occlusion – a case report

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Introduction
Basilar artery occlusion (BAO) precipitates ischemic stroke, characterized by severe symptoms involving consciousness, motor function, and cranial nerve deficits. If left untreated, BAO has an alarming mortality rate of up to 90%. Mechanical thrombectomy is employed in all protocols for anterior stroke, while research for posterior stroke is still ongoing due to high rates of death and disability.

Case Report
We present the case of a 76-year-old male with a history of arterial hypertension who presented to the Emergency Department following the sudden onset of dysarthria and generalized weakness. Neurological examination revealed severe right-sided extremity paresis, a positive Babinski sign on the right, and an NIH Stroke Scale (NIHSS) score of 14. The NIHSS is a 15-item neurological examination stroke scale used to evaluate the effect of acute cerebral infarction, and to determine appropriate treatment. A trained observer rates with score the patent's ability to answer questions and perform activities. It has been shown to be a predictor of both short-and-long term outcomes of stroke patients. Considering the high NIHSS, thrombolysis was initiated, followed by thrombectomy. Following stabilization, he was transferred to the ward, and comprehensive investigations ensued. Laboratory findings indicated hypercholesterolemia and elevated thyroid stimulating hormone (TSH) levels, while transcranial color Doppler exhibited sluggish hemodynamics across all three vertebrobasilar arteries, most notably in the right vertebral artery. Additionally, cardiological assessment unveiled previously undiscovered paroxysmal atrial fibrillation which most likely caused the stroke together with blood clot that was detected in basilar artery by computed tomography (CT) scan. Upon successful revascularization, the patient's NIHSS score improved to 0. Prescribed therapeutic regimens included antiplatelet and anticoagulant agents for a lifetime, antihypertensives, anxiolytics, and statins. Underlying causative factor for this case is very likely cardioembolic, as a consequence of the paroxysmal atrial fibrillation, hypercholesterolemia and arterial hypertension.

Discussion/Conclusion
Acute basilar artery occlusion (BAO) has a high mortality rate (45%) and a worse outcome than anterior circulation stroke. Due to its rare occurrence and small sample size, the benefits, selection of a first-line thrombectomy technique, and percentage of procedure-related complications still remain uncertain. Nevertheless, this patient's recovery continued without complications as he successfully completed his treatment.

Keywords
Basilar Artery; Dysarthria; Ischemic Stroke; Neurological Disorders; Paresis; Reflex, Babinski

Effective Psychotherapy in Comorbid Anorexia Nervosa and Obsessive-Compulsive Disorder in Adolescent

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Introduction

Eating disorders, including anorexia nervosa, have seen a significant increase in prevalence among both children and adults worldwide with current estimated prevalence of around five percent in the general population. Anorexia nervosa, a complex psychiatric disorder, stems from various factors such as genetic predisposition, biological influences, environmental factors, and psychosocial dynamics. This case report presents a successful treatment approach for anorexia nervosa comorbid with obsessive-compulsive disorder (OCD).

Case report

A 17-year-old female patient, previously without significant health concerns, presented with severe low body weight, multiorgan failure, and fatigue. She lives with her parents and brother, and there is a history of psychiatric disorders in her immediate family. The family had recently relocated, having previously lived with actively involved grandparents. The patient reported feeling isolated by her peers since starting high school, as well as experiencing unpleasant interactions in a group chat with classmates from a previous class. A few months before this hospitalization she began eating sparingly, initially noted by her teacher. Upon admission, psychotherapy commenced, revealing an underlying cause for her anorexia nervosa: intrusive thoughts of harm befalling a loved one if she consumed her meals, indicative of an undisclosed comorbid OCD. The patient underwent exclusively psychoanalytically oriented supportive psychotherapy, conducted face-to-face in an atmosphere of positive therapeutic rapport. This approach involved utilizing confrontation, clarification, interpretation, and working through in a consistent setting. This treatment led to the cessation of restrictive eating behaviors and resolution of OCD symptoms. Subsequent monitoring over a year revealed sustained remission from psychopathology, with the patient successfully resuming regular activities.

Conclusion

This case underscores the importance of recognizing and addressing comorbidities in anorexia nervosa management. Early initiation of psychotherapy, particularly of a psychoanalytic nature, as a method of choice, is paramount as it directly influences the prognosis of this prevalent and severe disorder.

Keywords

Anorexia Nervosa; Obsessive-Compulsive Disorder; Psychotherapy

The importance of lorazepam in the treatment of catatonia

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Introduction

One of the most serious manifestations of schizophrenia, catatonia, presents with motor inhibition, mutism, negativism, and stupor. Catatonia's severe motor disturbances require appropriate treatment to support daily functioning and quality of life. High-dose lorazepam has consistently been proven effective in both acute and chronic catatonia management. What happens to patients when lorazepam is unavailable or abruptly discontinued from the treatment?

Case Report

Due to a lorazepam shortage in the Croatian market during 2023, a 41-year-old female patient with catatonic schizophrenia has been left without her regular treatment. The patient's illness had remained stable for 14 years prior through consistent outpatient care, with her last admission under this diagnosis occurring in 2009. During this period, she was treated with a combination of clozapine, escitalopram, and lorazepam. However, within less than two months of losing access to lorazepam in 2023, she began to exhibit pronounced catatonic symptoms. Initially, oxazepam was administered as an alternative therapy, but without results. She presented to the clinic with noticeable symptom progression, including verbal impairment, decreased mobility, muscle rigidity, and a lack of cooperation. Upon admission, the patient was unable to consume fluids or food. She was eventually discharged after being successfully treated with clozapine and diazepam. However, less than two weeks later, she required readmission. During this hospital stay, she was transferred to another institution due to physical health complications associated with prolonged immobility. Her in-hospital treatment continues today with further deterioration and reliance on nasogastric tube feeding. The clinical staff is facing major difficulties in placing the patient in a specialized care institution.

Discussion/Conclusion

Removing lorazepam from the treatment regimen can significantly exacerbate the symptoms of catatonic schizophrenia. This situation emphasizes the importance of consistent access to established treatments for managing complex psychiatric disorders. Maintaining continuous lorazepam treatment in patients with catatonia is essential in preventing severe outcomes.

Keywords

Catatonia; Lorazepam; Mutism; Schizophrenia; Stupor

Early Recognition Matters: A Case Study on Non-Convulsive Status Epilepticus

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Introduction

Non-convulsive status epilepticus (NCSE), in which continuous epileptiform EEG discharges occur that manifests primarily as altered mental processes and behavior without seizure-like movement. Nonconvulsive status epilepticus (SE) had an annual incidence of

12.1 per 100 000 adults. Patient mortality is 18 deaths per 100 patients in NCS. NCS occurs in about 50% of patients with coma or convulsive status epilepticus.

Case Report

A 38 - years old female patient was admitted to the hospital after a series of seizures after self-initiated discontinuation of anti-epileptic therapy that consisted of: Perampanel, Lamotrigine, Sodium valproate, a week before the hospitalization.

The patient's mother brought her daughter to the emergency center and in the heteroanamnesis told us the patient was absent and asleep. During the inspection we have confirmed that the patient answered slowly and inadequately to questions, wasn't completely oriented in time, space and other people, but was aware of herself, confirming that her consciousness was qualitatively and quantitatively altered.

At the clinic, we did a MRI with and without contrast that confirmed there was a changed signal located on the left frontal cortical side of the brain, next to the old posttraumatic or vascular resorptive field. With the scan we couldn't differentiate if the abnormal signal was due to a focal dysplasia or some other etiology.

During hospitalization, a NCSE was registered for 7 days. Continuous EEG monitoring suggested a specifically changed EEG with signs of severe dysfunction of the fronto-cortical- parietal region with increased electric epileptiform activity above it.

Discussion/Conclusion

The patient was treated with sodium valproate infusions and gradually started taking oral therapy of the same medicine. Clinical results and significant reduction pathological discharges in the EEG showed an objective improvement in the patients' status. All of this implies how important it is to continuously take the prescribed antiepileptic therapy and that self-initiated discontinuation could lead to a life-threatening state.

Keywords

Consciousness, level altered; electroencephalography; discharges; antiepileptics; nonconvulsive status epilepticus

Mechanical thrombectomy as treatment for ischemic stroke beyond the conventional criteria - a case report

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Introduction

Mechanical thrombectomy (MT) is an endovascular method of treating acute ischemic stroke.

The Alberta Stroke Program Early CT score (ASPECTS) is used for early middle cerebral artery (MCA) stroke evaluation. The criteria for performing mechanical thrombectomy are ASPECTS >5 and <6 hours from symptoms onset. To improve the outcome of patients with ischemic stroke who don't meet the criteria for MT, clinicians aim to find specific patient subgroups that could benefit from such treatment beyond the current criteria for endovascular recanalization.

Case Report

A 45-year-old male was admitted to the emergency room, 13 hours after the sudden onset of left-sided hemiparesis. He presented with severe dysarthria, right gaze palsy, supranuclear left facial nerve paresis and left limb paresis, NIH stroke scale (NIHSS) 10, modified Rankin Score (mRS) 0. Computerized tomography (CT) showed acute right MCA ischemia with ASPECTS=2. CT angiography showed a right interior carotid artery dissection. CT perfusion found an infarct core in temporal and periinsular regions, with a large penumbra extending cranially and frontally - these findings suggested that endovascular treatment may be effective due to the large size of the penumbra in comparison to the infarct core, despite the exclusion criteria. A percutaneous MT was performed 15 hours after symptoms onset. The patient's state of consciousness deteriorated with brain edema, subfalcine and uncal herniation leading to a decompressive craniectomy. Over 26 days, he underwent extensive neurorehabilitation and was discharged with NIHSS 10 and mRS 4 and thrombolysis in cerebral infarction (TICI) 2B cerebral perfusion. He was prescribed antithrombotic aspirin and physical therapy. On his 3-month follow-up, he improved to NIHSS 5 and mRS 3, and was able to walk again.

Discussion/Conclusion

Mechanical thrombectomy could be a feasible method of acute ischemic stroke treatment in an extended time window for carefully selected patients, based on the viability of the collateral circulation.

Keywords

Cerebrovascular Circulation; Ischemic Stroke; Patient Selection; Perfusion Imaging; Thrombectomy

Meningioma with Psychiatric Decompensation and Surgical Intervention

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Introduction

Meningiomas are commonly occurring intracranial tumors that arise from the meninges, the protective membranes surrounding the brain and spinal cord. They are usually benign and slow-growing, often asymptomatic until they reach a significant size or exert pressure on adjacent structures. Symptoms include headaches, seizures, hearing loss, weakness or numbness in the limbs.

Case Report

The patient is a 52-year-old female presented to the Psychiatry Clinic due to worsening of her mental state. She had a history of diabetes mellitus, arterial hypertension, hyperlipidemia, and psoriasis, and was under psychiatric treatment for about a month due to worsening of the symptoms of her anxiety-depressive disorder. Upon examination, the patient exhibited high anxiety, cognitive disorganization, and depressive mood. She spent most of her days in bed and had difficulties verbalizing her feelings. A neurological examination and laboratory tests revealed no acute abnormalities. However, magnetic resonance imaging (MRI) of the brain showed an extra-axial lesion in the left frontal region measuring 19 mm, consistent with a meningioma causing mass effect and contralateral displacement of brain structures. The patient was initially treated with anxiolytics along with antipsychotics and antidepressants together with dexamethasone as an antiedematous therapy. The patient underwent craniotomy for tumor removal. Postoperatively, she developed respiratory insufficiency requiring mechanical ventilation. Subsequent imaging showed postoperative changes with no signs of tumor recurrence. She was transferred to the neurosurgery ward for further management and the control examination by a psychiatrist was indicated within a year.

Discussion/Conclusion

This case highlights the diagnostic and management challenges posed by the coexistence of intracranial tumors with psychiatric disorders. Prompt recognition and interdisciplinary management are crucial for optimizing outcomes in such cases. Close collaboration between psychiatrists, neurosurgeons, and other specialists is essential for comprehensive patient care and favorable prognostication.

Keywords

Psychiatric Disorder; Depressive Disorder, Major; Neurosurgical Procedures

Reciprocal impact: how malignant brain tumors and sleep quality influence each other

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Introduction

Glioblastomas, highly aggressive neoplasms, bring a devastating diagnosis and severe symptoms, notably sleep disturbance. Disrupted sleep triggers systemic pro-tumor effects in various cancers. This article reviews current research on sleep in glioblastoma patients, exploring the pro-tumor impact of disturbed sleep and the potential pathophysiological effects of the brain lesion on sleep ability.

Materials and Methods

A comprehensive literature search was conducted using PubMed, CrossRef, and Google Scholar databases, employing keywords such as glioblastoma, sleep disturbances, and sleep disorders, focusing on articles published between 2016 and 2023.

Discussion

Research reveals a direct link between neoplasms and sleep disruption. Patients with disrupted sleep exhibit a higher prevalence of diseases, and those with CNS pathology are susceptible to sleep disruption. Existing literature recognizes sleep disruption as a brain tumor symptom, often overlooking exploring why tumors cause it, and how it hinders fighting against the disease.

Precise reasons for brain tumors affecting sleep remain unknown. Various articles mention potential explanations, including patients' comorbidities, medications, and neuropsychiatric effects. A malignant lesion disrupting neural projections or structures in sleep-wake circuitry can impair sleep due to complex changes involving the entire brain.

The literature proposes mechanisms linking disrupted sleep to malignancy's pro-tumor effects: phase shifts, reduced antioxidants, immunosuppression, metabolic changes, melatonin depletion, cognitive impairment, and epigenetic changes.

Standard treatment for glioblastoma includes surgery and oncotherapy. Disrupted sleep severely affects patients' quality of life, yet its frequent disregard in oncological treatment seems insensible. Recognizing and addressing this may actively suppress the disease, emphasizing the crucial need to focus on the sleep disturbance patients are suffering from.

Conclusion

Disrupted sleep might not only be a symptom but a potential factor in disease progression. Addressing this in glioblastoma patients could go beyond palliative measures, offering a therapeutic approach to enhance the quality of life and limit disease progression, particularly with other treatment exhausted.

Keywords

glioblastoma, neoplasms, sleep, sleep-wake disorders, quality of life

Global Neurodevelopmental Delay As A Clinical Presentation Of MT-ATP6 Gene Mutation

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Introduction
MT-ATP6 gene encodes adenosine triphosphate synthase 6, which is responsible for the final step of oxidative phosphorylation in mitochondria. Clinical expression of MT-ATP6 gene mutation is highly variable, and predominantly seen in the pediatric population. It usually involves symptoms of neurodegenerative or cardiovascular conditions, such as cardiomyopathy, optic neuritis, or Leigh Syndrome. There are only about 200 described cases in the world.

Case report
We present an 8-year-old female patient born from the second controlled pregnancy of healthy parents at 34 weeks, who has psycomotor development deficits since birth. She started walking when she was 18 months old, but had to visit regular logotherapist sessions due to difficult articulation. She is currently enrolled in the first grade of elementary school. The patient was an acutely healthy child, but the parents noticed that during every viral infection, she is slower, more distracted, and the recovery is longer than expected. The girl was admitted due to an infection with Influenza B virus. In addition to symptoms typical for this infection, she was somnolent, ataxic, and with no adequate verbal contact. Cerebrospinal fluid lactates were elevated, and brain magnetic resonance imaging revealed changes in the hippocampus area. Symptomatic therapy was prescribed, and the infection was resolved successfully, but dysarthria and spastic walking persisted. Increased alanine and glycine levels were later found, which indicated a possible mitochondrial deficit. The Whole Exome Sequencing test was ordered, and the results showed mutation in the MT-ATP6 gene, which goes with her clinical presentation. Even though, there is no targeted cure for this condition, the patient is being given vitamin C as symptomatic therapy, due to its potent antioxidant properties.

Conclusion
This patient has a very rare mutation in the MT-ATP6 gene, which manifests as a global neurodevelopmental delay. Even though it is rare, clinicians should consider this disease in the differential diagnosis when encountering patients with neurodevelopmental delay or some of its common symptoms like optic neuritis or ataxia.

Keywords
Adenosine triphosphate, infection, mitochondria, mutation, oxidative phosphorylation

Late postpartum eclampsia with the development of Posterior reversible encephalopathy syndrome: A case report

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Introduction
Posterior reversible encephalopathy syndrome is a clinical-radiological syndrome of heterogeneous etiology characterized by nonspecific neurological symptoms, including headache, visual impairment or loss, epileptic seizures, altered mental status, and a characteristic radiological image. Late postpartum eclampsia with development of PRES syndrome presents a life-threatening complication manifested by a series of symptoms such as convulsions, high blood pressure, proteinuria, and various neurological symptoms. This work aims to point out the importance of prompt recognition and diagnosis, as well as urgent treatment.

Case Report
A 36-year-old woman in the 27th week of gestation underwent an emergency cesarean section two weeks before the onset of neurological symptoms due to placental abruption. The clinical course was complicated by a relaparotomy and complete hysterectomy due to massive bleeding, leading to disseminated intravascular coagulation, hemorrhagic shock, and acute kidney injury. Intensive care anesthesia measures were undertaken, along with hemodialysis. Recovery continued in the Gynecology department where her blood pressure values were normal. On the tenth day of recovery, the patient suddenly experienced a severe frontal headache, followed by peripheral vision blurring. A neurologist was called and immediately recognized the clinical picture and possible diagnosis. Just before diagnosis, she had her first generalized tonic-clonic seizure (GTCS) and developed complete amaurosis, along with disorientation and psychomotor agitation. Her blood pressure was 170/90 mmHg, and pulse was 100/min. CT, CTA, and MRI of the brain confirmed the acute clinical picture of PRES syndrome, within the context of late eclampsia. Intensive treatment continued in Neurology with anti-edema therapy, antiepileptic drugs after the second GTCS, and neuroprotective therapy. There were no further seizures. On the second day CT scan showed improvement. Eight days later, MRI revealed significant regression of PRES changes. After 4 days of fully normal parameters she was discharged. One month later her brain MRI was normal. All neurological therapy was discontinued.

Discussion/Conclusion
Rapid neurological evaluation along with neuroradiological imaging in the context of late postpartum eclampsia with the development of PRES syndrome is crucial in timely life-saving interventions and prevention of permanent neurological damage, as well as other complications.

Keywords
Postpartum; Eclampsia; PRES; arterial hypertension; amaurosis; seizures

Anti-NMDAR limbic encephalitis of unknown etiology

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Introduction
Anti-NMDA receptor encephalitis is a life-threatening condition usually presented with acute behavioral change and psychosis along with motoric, cognitive, and autonomic symptoms which rapidly progress to seizures. It is characterized by the presence of autoantibodies against N-methyl-D-aspartate receptors (NMDAR) in serum and cerebrospinal fluid.

Case Report
A 29-year-old female was admitted to the Department of Psychiatry due to acute psychotic decompensation. She was also ataxic with severe weakness of peroneal muscles bilaterally. During hospitalization, she developed deep vein thrombosis of the left leg. Upon initial treatment with antipsychotics, no desired therapeutic effect was achieved. Due to unusual, severe, and acute presentation of psychosis, neurologist and infectious disease specialist were consulted for suspected atypical presentation of encephalitis. Brain MRI showed hyperintense changes of left temporomedial and frontobasal cortex as well as of left inferior temporal gyrus, which were in favor of autoimmune encephalitis. Electromyoneurography showed severe lesion of lumbosacral plexus on the left leg and lesion of the tibial nerve on the right leg with normal findings on hands. Slightly increased protein and lymphocyte levels, and NMDAR antibodies were detected in CSF. The patient was transferred to neurology department for treatment where she received methylprednisolone (1g/day/5 days), intravenous immunoglobulins (0.4 g/kg/day), and underwent plasmapheresis (5 times/every other day). Extensive examination (CT of the chest, abdomen and pelvis, lumbar spine MRI, gynecologist evaluation, transvaginal ultrasound, whole-body PET CT, paraneoplastic antibodies) showed no abnormal findings. Anti MAG antibodies were slightly positive with normal antiganglioside antibodies. Psychiatric symptoms completely resolved on treatment, however motor weakness on both legs persisted so she was referred to inpatient rehabilitation treatment.

Discussion/Conclusion
The etiology of NMDAR positive limbic encephalitis in this patient remains unclear, however it highlights the need for multidisciplinary approach. The integration of diverse expertise remains indispensable in optimizing patient care, addressing complex medical needs, and fostering holistic healing.

Keywords
Autoimmune encephalitis; Behavioral symptoms; Limbic encephalitis; Psychosis; Holistic health

Surgical and Intensive Care Coordination in a Penetrating Cranial and Brain Trauma

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Introduction
This case report presents the urgent management of a 61-year-old male with a traumatic penetrating cranial injury from an industrial accident. It emphasizes the multidisciplinary approach required for treating complex head traumas involving retained foreign objects and associated complications and outlines the crucial steps taken in emergency response, surgical intervention, and intensive care that led to the patient's stabilization.

Case Report
A 61-year-old male was admitted with a traumatic penetrating cranial injury after an industrial accident involving a cutting machine, which led to the embedding of a foreign object within his cranial cavity. The initial assessment in the Intensive Care Department identified two frontal sinus entry points with a metallic foreign body extending from the right zygomatic region into the intracranial space. This resulted in pneumocephalus, as evidenced by CT imaging. Subsequent complications included not only the pneumocephalus but also an epidural hematoma along the interhemispheric fissure, a complex fracture of the frontal sinus, and traumatic subarachnoid and intracerebral hemorrhage in the left frontal lobe. An emergency surgical operation was undertaken for the removal of the foreign. Bifrontal decompressive craniotomy was performed to remove the foreign body. Frontal sinus cranialization was made due to the multi-fragmental fracture of the frontal sinus along with cranioplasty of the anterior skull base with periosteum and fatty tissue. Bifrontal decompression of the dura was made to achieve adequate reduction of intracranial pressure (ICP) and to prevent injury of the swollen brain from the bony edges of the craniectomy. Post-surgery, the patient's management involved mechanical ventilation and sedation due to his critical condition, along with a regimen of antibiotics, diuretics, anticoagulants for thromboprophylaxis, and mannitol and furosemide to address the cerebral edema. Postoperative imaging showed no signs of brain compression; however, the patient's recovery was complicated by persistent deep sedation. This necessitated his transfer to the Neurosurgical unit for specialized ongoing care, highlighting the necessity of a dedicated neurocritical pathway for such complex traumatic brain injuries which resulted in the patient's successful recovery.

Discussion/Conclusion
In conclusion, the case highlights the critical role of timely surgical intervention and specialized neurocritical care, as well as the critical need for a multidisciplinary approach in achieving successful outcomes for severe traumatic brain injuries.

Keywords
Cranial Injury; Foreign Object; Multidisciplinary Approach; Neurotrauma; Surgical Extraction

CD20 immunotherapy as a first line treatment for multiple sclerosis with commorbidity of schizophrenia

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Introduction
Multiple sclerosis is a chronic neurodegenerative autoimmune disease of the central nervous system. Recent changes in the national guidelines enabled potent immunomodulatory therapy, such as CD20 monoclonal antibodies, as first-line treatment for patients in a high risk of progression.

Case Report
We present the case of a 23-year-old female who first experienced health problems at the age of 14 years when she was diagnosed with a schizoaffective disorder, and was treated with antipsychotics. First examination by a neurologist happened when she was 20 years old, due to right side paresthesia, weakness, and double vision. Neurological examination showed internuclear ophthalmoplegia, trunk ataxia, and right-sided hemiparesis. Neuroimaging with both CT and MRI confirmed multiple demyelination lesions in the brain and cervical spinal cord, with two lesions showing gadolinium enhancement. The patient received pulse corticosteroid therapy and did not come to any further control visits until two years later due due to instability. Her status showed bidirectional horizontal nystagmus, dysmetria of the left extremities and gait ataxia. A diagnosis of a relapse-remitting form of multiple sclerosis was made. She was determined to be a high-risk patient due to moderate disability and numerous MRI demyelinating lesions. She qualified for ofatumumab CD20 monoclonal antibody as a first-line treatment in a once-monthly subcutaneous dose of 20 mg, and shows beneficial follow-up in both neurological and psychiatric symptoms.

Discussion/Conclusion
The early introduction of highly active therapy in high-risk patients has the benefit of reducing relapse rates and disability accumulation. These patients should receive highly active immunomodulation therapy as the first line of treatment. Recent meta-analyses show that ofatumumab is one of the most effective drugs to reduce the annual relapse rate. Furthermore, reports are showing beneficial effect on schizophrenia as well, which needs to be explored more in the future.

Keywords
Multiple sclerosis, CD20 monoclonal antibody, Relapsing-remitting form, ofatumumab, schizoaffective disorder

Positive impact of high intensity physical activity on multiple sclerosis – case report

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Introduction
Multiple sclerosis (MS) is a chronic autoimmune disease affecting the central nervous system, commonly afflicting young adults and potentially leading to disability if untreated. Its pathogenesis involves inflammatory demyelination, causing axonal loss and impairing cardiovascular, musculoskeletal, and sensory functions. Initially viewed as an alternative treatment, physical activity (PA) has gained recognition for its positive impact on MS patients in recent years. PA improves muscular strength, aerobic capacity, ambulatory performance, and quality of life, while also reducing fatigue and positively influencing gait, balance, and overall well-being for individuals with MS.

Case report
We present a 24-year-old patient who was diagnosed with MS in 2015 after experiencing left facial paresis and meeting the McDonald criteria. The patient was actively engaged in sports, participating in soccer twice daily. Immediately after diagnosis, the patient commenced therapy with first-line immunomodulatory therapy, specifically interferon, while continuing their physical activity regimen. In 2020, the patient experienced a relapse characterized by paresthesias in both legs and impaired coordination. In response to disease progression, the patient initiated treatment with second-line immunomodulatory therapy, specifically ocrelizumab. Despite the challenges, the patient continues to actively participate in soccer, train with weights at the gym, and engage in longer daily walks. During high-intensity training sessions, the patient encounters blurred vision and reduced limb coordination, which are alleviated by reducing the intensity of training and taking breaks. Nonetheless, the patient reports an overall improvement in physical and mental health when exercising to remain vital and symptom-free.

Conclusion
Phisical inactivity and a sedentary lifestyle are common practices among MS patients. In that way patients contribute to the deterioration of psychophysical wellbeing. In contrast, structured PA has a positive effect on MS. Patients, like ours, serve as the foundation and reason for further research and the development of a physio-rehabilitative treatment model.

Keywords
Multiple sclerosis; physical activity; exercise therapy

The importance of neurorehabilitation after stroke; case report

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Introduction
Neurorehabilitation is the term used to describe the treatment that patients can receive after they had a neurological injury. The main goal of neurorehabilitation is to help patient to return the highest level of function and independence.

Case Report
We present a case of 59- a year- old woman patient treated by occupational therapist and physiotherapist due to left-sided central hemiparesis, hyperreflexia, hypesthesia and severe dysarthria after stroke. Due to the gradual progression of these symptoms, the patient was admitted to neurorehabilitation. Before the beginning of neurorehabilitation an occupational therapy assessment was made. The results of the test indicate progression of disability to perform personal and domestic activities of daily living tasks. Functional Independence Measure (FIM):49/126. The Nine Hole Peg Test (NHPT) to measure finger dexterity was: 37.17 sec for the right but there was inability to perform the test for the left hand. The Dizziness Handicap Inventory (DHI) test that quantifies the impact of dizziness on daily life was 80/80, FUGL-MEYER assessment of the upper extremity: 19/66, sensation and proprioception 17/24. By working with physical and occupational therapists and by using the Armeo robotic therapy patient learned effective ways to target affected muscles and compensate for limited movement. Final test results after neurorehabilitation show a significant motoric skills improvement; FIM:115/126, NHPT: R 22.44 sec, L 29.47 sec, DHI: 9/80, FUGL-MEYER assessment of the upper extremity: 62/66, sensation and proprioception 19/24.

Discussion/Conclusion
The main purpose of this report is to highlight the relevance of the neurorehabilitation of the body caused by neurological injury. While it may be worrisome to experience loss of motor control and sensation, there is potential for individuals to improve their mobility and functional independence. Early time to rehabilitation admission, combination of conservative and robot-assisted rehabilitation are associated with better functional outcomes, lower mortality and shorter length of recovery.

Keywords:
Hemiparesis, Neurorehabilitation, Occupational Therapy, Rehabilitation, Stroke

A case report of anti-NMDAR encephalitis

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Introduction
Anti-NMDAR encephalitis is an autoimmune encephalitis characterized by the presence of IgG antibodies against the NR1 subunit of the NMDA receptor. Many patients present with symptoms imitating common viral infections, which progress into complex neurological and psychiatric symptoms within a few weeks or months.

Case Report
A 39-year-old female, one month postpartum, with a medical history of uterine myoma, initially showed memory deficits and excessive fatigue. Her husband noticed her unusual behavior as if she was avoiding the newborn. Two months later, she presented to the emergency department partially oriented towards herself and in time and disoriented in space, with truncal ataxia and left-sided dysmetria. Urgent MRI showed T2/FLAIR hyperintense lesions in the right parahippocampal gyrus and deep and periventricular white matter in the left temporal and parietal lobes with gadolinium enhancement. Cerebrospinal fluid (CSF) analysis revealed intrathecal synthesis of oligoclonal bands. The treatment included methylprednisolone 1 g daily for 5 consecutive days and 6 cycles of plasmapheresis. A follow-up MRI after 10 days showed partial regression of the lesions and an almost complete neurological recovery was observed at examination, though short-term memory remained somewhat impaired. CSF and serum tested positive for anti-NMDAR antibodies, which confirmed the diagnosis. Another cycle of plasmapheresis was done, and she received IVIG therapy. Following complete resolution of neurological deficit, almost two months later, she received the first cycle of rituximab. During the following months, follow-up MRIs showed further regression of the lesions and she received a total of 4 cycles of rituximab, each 6 months apart. The patient had no residual neurological deficits after the treatment.

Discussion/Conclusion
Given its severity (25% of patients die or have significant deficits), anti-NMDAR encephalitis requires timely diagnosis. Poor outcome after autoimmune encephalitis is most frequently linked to delayed treatment, emphasizing the importance of recognizing it on time and starting the therapy.

Keywords
Anti-NMDAR; autoimmune; encephalitis; plasmapheresis; rituximab

Tay-Sachs disease – a case report

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Introduction
Tay-Sachs disease (TSD) is a rare, progressive, neurodegenerative, autosomal recessive disorder with the carrier incidence of 1 in 300 and affected individuals incidence of 1 in 360,000 in general population. It is caused by a mutation in the HEXA gene, which causes a deficiency of the beta-hexosaminidase A enzyme and subsequent intraneuronal accumulation of GM2 gangliosides. TSD manifests in a wide spectrum of clinical presentations.

Case Report
A 3-year-and-2-month-old female patient born from the first uneventful pregnancy without perinatal risk factors is presented. At the age of 7 months, she could sit independently, but further development of her motor skills was stagnant. At the age of 2 years, she was evaluated by a neuropediatrician. Her neurological examination showed general hypotonia, auditory startle myoclonus, no verbal skills, absent visual tracking, no purposeful hand movements, and an inability to sit independently. Fundoscopic examination showed a suspected cherry red spot. Video electroencephalogram (VEEG) during sleep was overall slower and poorly organized for the age. Magnetic resonance imaging of the brain showed delayed myelination. Metabolic workup discovered significantly low levels of beta-hexosaminidase A. Further genetic testing confirmed both parents as heterozygous carriers for variant c.589A>C in the exon 6 of the HEXA gene, and the patient is homozygous for the same variant, which confirmed the diagnosis of TSD. At the age of 2.5 years, she developed tonic and myoclonic seizures, and VEEG showed bilateral focal discharges. Levetiracetam, followed by valproic acid, was started. She exhibited further decline in her psychomotor skills. Due to recent refractory status epilepticus during febrile respiratory infections, she required intensive care treatment. With the addition of clobazam, the seizures stopped. Now, at 3 years and 2 months the patient is blind, has lost all postural transitions, has no voluntary movements, and is fed via nasogastric tube.

Discussion/Conclusion
With its wide spectrum of symptoms and no universally available newborn screening, making the diagnosis of TSD is extremely difficult. Even though TSD is rare, it should be considered in the differential diagnosis of any infant with psychomotor retardation and rapid regression of previously acquired motor skills.

Keywords
Heredodegenerative Disorders, Nervous System; Hexosaminidase A; Homozygote; Infant; Tay-Sachs Disease

The Role of Deep Learning Artificial Intelligence Technologies in Personalized Treatment of Multiple Sclerosis

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Introduction
Multiple sclerosis (MS) is a neurodegenerative disorder characterized by varying symptoms and disease progression, making personalized treatment strategies crucial for optimizing patient outcomes. In recent years, the integration of deep learning (DL) within the larger set of artificial intelligence (AI) technologies into healthcare has sparked significant interest in the scientific community. This literature review aims to explore the following question: "Are DL AI technologies vital for the future of personalized treatment of MS?"

Materials and Methods
Google Scholar bibliographic database was searched using the following keywords: multiple sclerosis, deep learning, artificial intelligence, and personalization. The search has yielded a total of 254.100 records, but only scientific papers with minimum of 50 citations were analyzed for this review.

Literature Review
Personalized treatment approaches for MS were previously explored and researched, but they have not yet become the healthcare standard. Treatment response in MS patients may vary based on factors such as disease subtype, severity, and individual patient characteristics. DL has demonstrated remarkable capabilities in analyzing diverse large and multifaceted datasets across different domains. In the context of MS, DL shows great potential in data discovery within differently structured patient data, ranging from genetic information, medical records to neuroimaging. Also, published studies have demonstrated the validity of using DL to predict individual responses to different treatment. Further, currently the most advanced multimodal Large Language Models (LLM), such as LaMDA, PaLM, Gemini, GPT-4 or Mistral, with their innovative natural language and imaging processing applications, show an additional potential to enhance the understanding of patient-specific factors influencing MS progression.

Discussion/Conclusion
In conclusion, current DL AI technologies, especially the advanced LLM models like GPT-4 or Mistral, hold the promise to become a key component in personalized MS treatment. The ability to analyze diverse datasets and provide patient-specific insights into individual profiles opens new possibilities for more effective and precise therapeutic interventions. As interdisciplinarity research in this field progresses further, the integration of DL into clinical practice may become a critical factor in improving outcomes for individuals affected by MS.

Keywords
Artificial Intelligence, Deep Learning, Multiple Sclerosis, Neuroimaging, Precision Medicine

Two case reports of rare Friedreich's ataxia

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Introduction

Friedreich's ataxia (FRDA or FA) is a rare progressive neurodegenerative disorder inherited in an autosomal recessive manner. It is caused by abnormal (GAA)n trinucleotide repeat expansion in intron 1 of the frataxin gene (X25). X25 located at chromosome 9q13 carries the genetic code for the production of a protein called frataxin. FRDA is typically diagnosed between 10 to 15 years of age, equally affecting males and females. The main clinical features include spinocerebellar ataxia with sensory loss and disappearance of deep tendon reflexes. Non-neurological involvement includes hypertrophic non-obstructive cardiomyopathy and diabetes mellitus.

Case Report

6-year-old boy presented with impaired muscle coordination, which worsened during the past 6 months, and poor balance resulting in recurrent falls backwards. Physical examination revealed generalized ataxia, inability to heel walk, absent deep tendon reflexes, unilateral Babinski sign, talocrural joints contractions and mild kyphoscoliosis. His handwriting was ataxic. Nerve conduction velocities showed severely slowed sensory conduction, with normal motor conduction. Magnetic resonance imaging showed no abnormalities. Genetic analysis of the frataxin gene confirmed the expanded trinucleotide GAA repeats +405. Further annual cardiology follow-up consisting of echocardiographic examination and electrocardiogram is required. He started physical therapy. Also, he was prescribed with potent antioxidant Idebenon 10 mg/kg and coenzyme Q10 supplementation.

Another patient started experiencing similar symptoms at the age of 5. Genetic testing confirmed the FRDA diagnosis. He struggled going down stairs, experienced tripping and swaying while walking. In addition, he had dysarthria and pes cavus. He has been treated with propranolol due to mild concentric hypertrophic cardiomyopathy.

Discussion/Conclusion

Early-onset FRDA is associated with more progressive disease course. Currently, FRDA has no known cure or effective treatment. Unfortunately, an individual with FRDA becomes fully wheelchair dependent within 10 to 20 years after the first symptoms. Challenging prospective treatments include mitochondria-targeted agents with neuroprotectant activity and gene therapy based on frataxin augmentation.

Keywords

Electromyography; frataxin; Friedreich ataxia; hypertrophic cardiomyopathy; kyphoscoliosis

Spontaneous recanalization of internal carotid artery occlusion

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Introduction

Occlusion of internal carotid artery (ICA) is commonly associated with occurrence of stroke or transient ischemic attack. Spontaneous recanalization of ICA occlusion can occur early or late after stroke, but both are considered rare and are often neglected. The mechanism of this phenomenon, which most commonly occurs within a short period after the diagnosis of the occlusion, remains unclear.

Case Report

Male, smoker, aged 42, with no significant medical history was admitted to hospital due to 2 days old left-sided weakness, with no other associated neurological symptoms. Routine blood testing, including coagulation tests were normal. The emergency computed tomography (CT) scan of the brain showed an old lacunar stroke without recent brain lesions. Color doppler ultrasonography of carotid arteries revealed an occlusion of the right ICA which was later confirmed by CT angiography of carotid and cerebral arteries in addition to revealing no radiological findings typical of fibromuscular dysplasia, vasculitis, or dissection. Further extensive diagnostic workup was performed. Follow-up color doppler ultrasonography was performed two times in the following 2 years, and they showed the same results as those obtained during hospitalization but, after 3 years it revealed a flow in the right ICA, with no signs of stenosis. To confirm finding, a CT carotid angiography of carotid arteries was performed and corroborated with a right ICA full recanalization.

Conclusion

The underlying mechanism of spontaneous recanalization is yet to be fully discovered. Clot size, composition, source, and age of thromboembolic material influences the potential for recanalization. The intent of this case report is to point out the importance of long-term monitoring of ICA occlusions and the possible benefit of surgical intervention.

Keywords

Angiography, color doppler ultrasonography, internal carotid artery, stroke, transient ischemic attack

Structual Brain Changes Linked to Substance Abuse in a Young Patient

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Introduction
Substance abuse can modify brain structure and function, resulting in distorted thinking, personality alterations, abnormal movements, behavioral adjustments, and occasionally, manifestations resembling other neurological conditions.

Case Report
A 26-year-old male was hospitalized for further investigation and treatment of episodic movement disorders affecting the left side of the body. The described episodes involved involuntary spasms, including flexion and medial deviation of the hand and the foot, as well as flexion of the forearm and the leg. Circumduction of the left leg was observed upon walking. He experienced several similar episodes during hospitalization, lasting for approximately thirty seconds, without loss of consciousness or other phenomena. Previous examinations in an external facility revealed suspicious hypoxic hyperintense changes on brain magnetic resonance imaging (MRI) in the T2/FLAIR technique, located bilaterally in the subthalamic regions, more prominent on the right side. Apart from slightly elevated urine free light chains, laboratory findings were unremarkable. Paraproteinemia was ruled out. Neurosonological evaluation did not show hemodynamically significant stenosis of carotid arteries.

Electroencephalography showed normal findings. A follow-up MRI of the brain, compared to the previous one, showed lesions on the right side in the posterior limb of the internal capsule, marginal lesions in the posterior part of the globus pallidus, cerebellar peduncle, and on the left side of the posterior limb of the internal capsule. Considering the patient's substance use history, it is postulated that the identified lesions stem from the repercussions of substance abuse. With the initiation of clonazepam therapy and gradual dose escalation, control of paroxysmal movement disorders was achieved.

Discussion/Conclusion
Substance abuse can lead to lasting alterations in brain structure, potentially resulting in permanent neurobiological damage. This case underscores the difficulty in diagnosing neurological symptoms in young individuals with a background of substance abuse, suggesting a potential etiological link that should be considered in the diagnostic process. Advocating for a multidisciplinary approach, it stresses the need for prompt intervention and personalized support.

Keywords
Clonazepam; neuroimaging; neurology; spasm; substance-related disorders

Cortical Infarct in a Young Patient Caused by Patent Foramen Ovale and/or Hypercoagulability

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Introduction
Cortical brain infarction results in neurological dysfunction due to interrupted blood flow and hypoxia. Occurrence in young patients requires a thorough consideration of potential underlying causes. While patent foramen ovale (PFO) is a recognized risk factor, its interplay with hypercoagulability prompts assessment of their combined contribution to cortical infarction.

Case Report
A 45-year-old male recreational runner was admitted to hospital due to a thirty-minute episode of transient disorientation, described heteroanamnestically as articulate, but incoherent speech. The symptoms improved upon admission, the neurological examination was unremarkable, and computed tomography imaging demonstrated no acute pathomorphological substrate. Acetylsalicylic acid was introduced to the treatment regimen. Despite the patient's recollection of the event being incomplete, he reported blurred vision, fatigue and speech problems, finally diagnosed as conduction aphasia. He experienced central retinal vein occlusion two years prior and has a positive family history of cerebrovascular incidents, which prompted a comprehensive evaluation in the following period with unremarkable findings. Brain MRI ten days later displayed T2/FLAIR hyperintensities and mild diffusion restriction in the left parietal lobule, supramarginal, and angular gyrus, indicative of subacute ischemia. Follow-up MRI indicated regression of diffusion restriction and residual T2/FLAIR hyperintensities, suggestive of early cortical laminar necrosis. Blood tests indicated slightly elevated factor VIII, lipoprotein A, and D-dimers. No atrial fibrillation was found on 24-hour electrocardiographic recording, only first and second degree atrioventricular block. Transcranial Doppler bubble ultrasonography and transesophageal echocardiogram unveiled a middle-sized PFO. Despite the absence of subsequent neurological episodes, further evaluation is necessary to determine if hypercoagulability contributed to the probable paradoxical embolism and whether PFO closure should be considered.

Discussion/Conclusion
This case highlights the diagnostic challenge of unraveling the etiology of cortical infarction in young patients. The potential synergy of PFO and hypercoagulability increases the risk of recurring incidents, therefore emphasizing the importance of ongoing vigilance and personalized management strategies.

Keywords
Brain infarction; conduction aphasia; hypercoagulability; neurology; patent foramen ovale

Recurrent Squamous Cell Carcinoma of the Lower Lip with Perineural Spread: A Case Report

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Introduction

Perineural spread (PNS) is a phenomenon in which tumors spread along nerves, which can have serious clinical consequences. Recognition of perineural spread is crucial as it is associated with a poor prognosis, even when asymptomatic. Furthermore, this spread is often overlooked during surgical procedures and can occur without hematogenous or lymphatic metastases. The complexity of perineural spread emphasizes the need for a comprehensive evaluation and treatment strategy in oncologic cases.

Case report

A 63-year-old woman presented with recurrent squamous cell carcinoma of the lower lip, eight years following initial surgical intervention. She experienced symptoms such as tingling, swelling, and pain localized to the right side of the lower lip, which progressively worsened over time. These symptoms extended to the right ear and temporal region, accompanied by tongue discomfort and facial swelling, prompting a comprehensive diagnostic evaluation. Despite a normal neck ultrasound, magnetic resonance (MR) imaging of the viscerocranial region revealed perineural spread involving the mylohyoid nerve, mental nerve, and inferior alveolar nerve. This finding suggested a recurrence of the disease, emphasizing the importance of neuroanatomical knowledge in interpreting imaging results and guiding further management. Surgical intervention was required to remove the recurrent lip tumor. Pathological examination confirmed squamous cell carcinoma with healthy margins. Post-surgery, the remaining malignant cells were targeted with chemoradiotherapy. However, persistent symptoms persisted, prompting evaluation by an ear, nose, and throat specialist. This interdisciplinary approach led to the identification of hearing loss in the right ear and facial swelling, necessitating ongoing collaboration between neurologists and other specialists to manage these sequelae. Control MR scans performed in the following years showed a continuous opacity along the right mandibular nerve and a newly formed pathologic opacification on the left side involving the mental nerve and the infraalveolar nerve.

Conclusion

The presence of PNS in head and neck tumours complicates diagnosis and management and requires a collaborative approach. MRI is crucial for the radiologic diagnosis of PNS. Although targeted therapy for PNS is not common, optimal oncologic surgery and advanced radiation therapy are critical for treatment success and toxicity reduction.

Keywords

Chemoradiotherapy, head and neck neoplasms, lip neoplasms, MRI scan, squamous cell carcinoma

Achievement Of Better Emotional Life Through Post – traumatic Growth: A Case Report

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Introduction

Posttraumatic growth includes the processes and outcomes of emotional and psychological advancement. It is based on developing pre-existing strengths, discovering hidden abilities, and reshaping the patient's personal concept and self-image. Additionally, it involves upgrading quality relationships, releasing trauma, prioritizing situations that are benefiting the personal growth, and embracing life to the fullest, reveling in the present moment. Posttraumatic growth is synonymous with establishing a more positive life perspective.

Case report

This case report looks into the experience of a 28-year-old female patient who endured severe traumatic sexual abuse at the age of six, perpetrated by peers slightly older than her. This traumatic incident resulted in social isolation and engagement in brief, superficial emotional relationships that promptly terminated upon deepening. The patient exhibited regressive behavioral patterns indicative of inadequately processed separation experiences, leading to strained family relationships with a pronounced negative projection toward the mother.

Despite undergoing various pharmacological treatments across different institutions, tangible progress remained elusive. However, following appropriate psychiatric treatment (klozapine, alprazolam, sertraline) and consistent psychotherapeutic support, the patient, within a span of three years, managed to cultivate a healthy emotional relationship. The regular inclusion of the partner in evaluations and conversations with the psychiatrist became standard practice. With unwavering support from her partner, the patient successfully processed the trauma. Presently, at the age of 31, she is married with a child and only occasionally takes alprazolam as needed.

Conclusion

The integration of therapeutic support, pharmacotherapy, and a nurturing environment establishes the "magic triangle." This triumvirate empowered the patient to overcome the trauma, infuse personal meaning into the experienced situation, and discover purpose in her own existence. The emergence of a novel perspective and alterations in personal functioning paved the way for posttraumatic growth, enabling the patient to reach her full potential.

Keywords

posttraumatic growth, sexual abuse, social isolation, trauma, pharmacotherapy

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