

ESSTS 2021

Habit Reversal Workshop Part one - Psychoeducation

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Part one - Psychoeducation

- What are Tics?
- Which Tic-Disorders exist in the ICD-10?
- How frequent are Tic-Disorders?
- What is the course of Tic-Disorders?
- Which are frequent comorbidities?
- What is the origin of Tics?

What are Tics?

Definition in ICD-10

„[...] A tic is an involuntary, rapid, recurrent, nonrhythmic motor movement (usually involving circumscribed muscle groups) or vocal production that is of sudden onset and that serves no apparent purpose.[...]“

Motor Tics

simple:

- rapid, jerky movement
- only one muscle involved

complex:

- several muscle groups involved
- Slow
- Intentional looking

Simple Motor Tics	Complex Motor Tics
Eyes blink, blink, roll	Seemingly intentional movements
Eyebrows lifting	Jumping
Nose wrinkling	Clapping
Mouth widening	Bending, flexing trunk movements
Lip smacking	Extending arm movements
Frowning	Stomping
Grimacing	Dystonic tics
Shake heading	Writing tics
Shoulder shrugging	Echopraxia
Arm/hand movements	Copropraxia
Abdominal movements	Palipraxia
Trunk movements	(autoaggressive actions)
Leg/foot movements	

Vocal Tics

simple:

Sounds and vocalizations

complex:

Words and sentences

Simple vocal Tics	Complex vocal Tics
Throat clearing	Echolalia
Sniffing	Coprolalia
Coughing	Palilalia
Nose lifting	Speech block
Snorting	Atypical speech turns
Noisy inhaling or exhaling	Calling out of speech fragments
Squeaking, grunting	Calling out other socially inappropriate words (non-obscene complex socially inappropriate behavior, NOSI)
Whistling, humming	
Screaming	
Uttering syllables (hm, eh, ah, ha)	
Animals sounds	
Spitting	

Different types of tic severity

According to the Yale Global Tic Severity Scale (YGTSS), there are 5 types of tic severity:

1. Number
2. Frequency
3. Intensity
4. Complexity
5. Interference

Description of the Premonitory Urge

- Ticklish/itchy feeling
- Pressure in the brain or body
- Feeling agitated or tense
- Feeling that something is not "right"
- Feeling that something is not complete
- Energy in the body that wants to get out

Taken from the PUTS by Woods et al. 2005

Tic Suppression

- Exhausting
- Unpleasant
- Increase in anticipation
- Increasing internal pressure
- Requires concentration
- Possible for a limited time

Premonitory Urge

Age Group years (N)	Presence of Premonitory Feeling		Ability to suppress tics		Mean comorbidity score (entire age group)	Mean tic severity (entire age group)
	Banaschewski et al. [%]	Current study [%]	Banaschewski et al. [%]	Current study [%]		
<8 (80)	-	34.8	-	56.5	2.23	2.34
8-10 (180)	34	61.8	48	75.1	2.36	2.39
11-14 (174)	56	61.8	66	82.8	2.35	2.66
15-19 (136)	68	76.6	79	90.6	2.62	2.92
>19 (429)	-	81.3	-	93.4	3.03	3.05

Sambrani T, Jakubovski E, Müller-Vahl KR. New Insights into Clinical Characteristics of Gilles de la Tourette Syndrome: Findings in 1032 Patients from a Single German Center. *Front Neurosci.* 2016 Sep 12;10:415.

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Summary

- There are motor and vocal tics
- There are simple and complex tics
- Tics can differ in severity
- Tics come with a premonition
- Tics can be suppressed at will

Which Tic-Disorders exist in the ICD-10?

F95.- Tic disorders

- F95.0 Transient tic disorder (< 1 year)
- F95.1 Chronic motor or vocal tic disorder
- F95.2 Combined vocal and multiple motor tic disorder [de la Tourette]

- F95.8 Other tic disorders
- F95.9 Tic disorder, unspecified

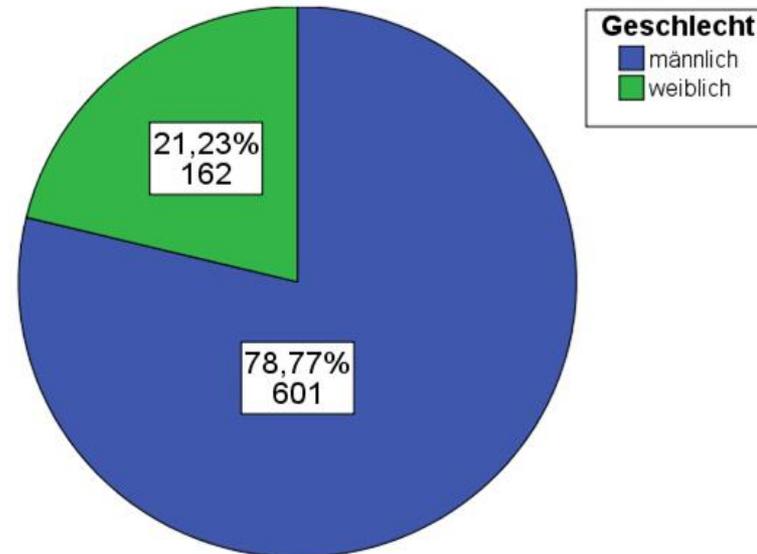
How frequent are Tic-Disorders?

Epidemiology

- Prevalence	All tic disorders	2 - 3%
	Tourette Syndrome	0,7-1%
	Tics in Children/Adolescents	10-12 (-15)%

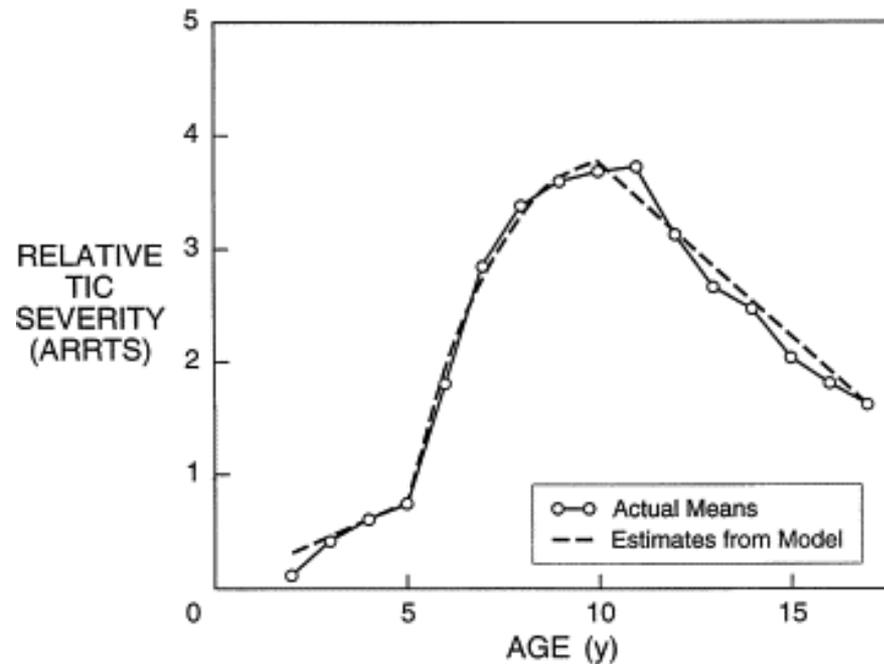
Sex Ratio

M:F 4:1



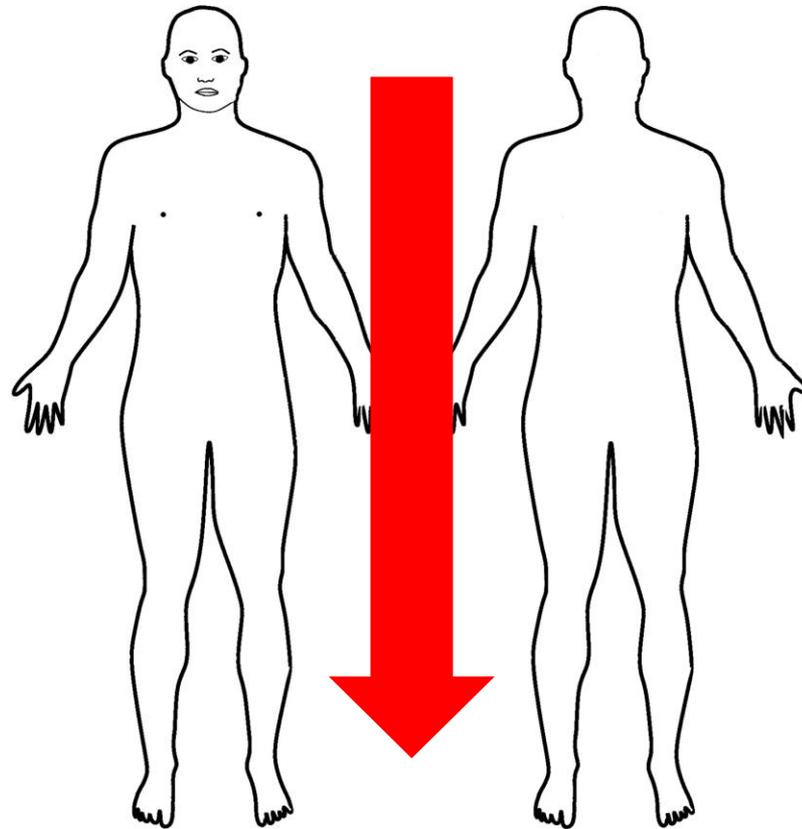
What is the course of Tic-Disorders?

Typical development



- **Onset: 6-8 years**
 - Before age of 10 for 93% of affected
 - Before age of 15 for 99% of affected
 - Onset Motor tics on average 2 - 3 years earlier than vocal tics
 - Simple tics earlier than complex tics
- **Worst ever severity: 10-12 years**
 - Coprolalia: onset on average at 12 yrs.
 - Copropraxia: mean onset at 11 yrs
- Continuous improvement in adolescence/adulthood
 - For 3/4 of those affected

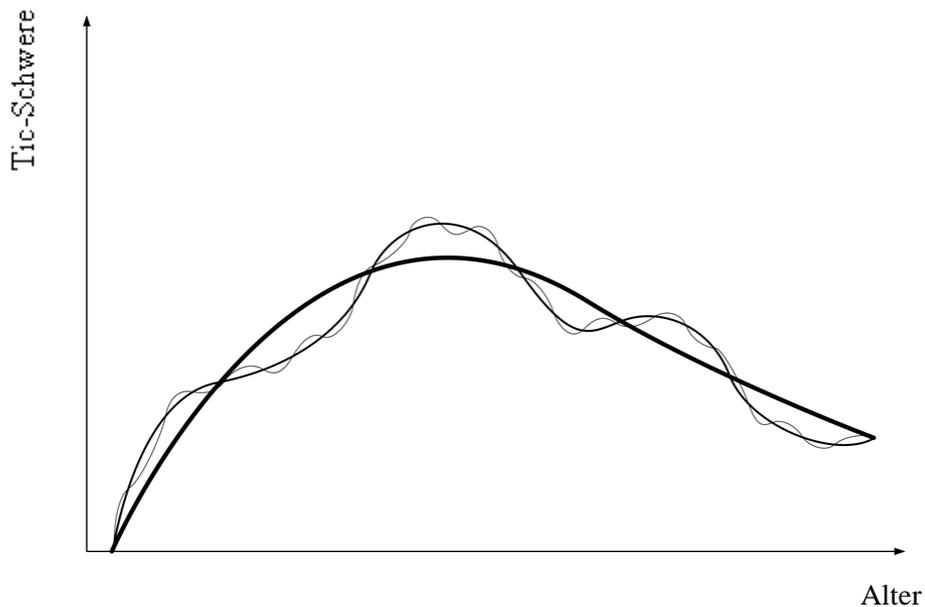
Distribution of Tics during Development



Fluctuation of Tics Severity

Fluctuation of tic severity can depend on

- (i) Age
- (ii) spontaneous Fluctuations
- (iii) situative Factors



Fluctuation of Tics Severity

Exemplary Situative Factors

Increase	Decrease
Stress	Sleep
Anger	Relaxation
Fear	Focused activities
Excitement	Sport
Tiredness	Dancing
Boredom	Sex/Orgasm
Talking about tics	Being busy

Which comorbidities are common?

Comorbidities in Tourette Syndrom

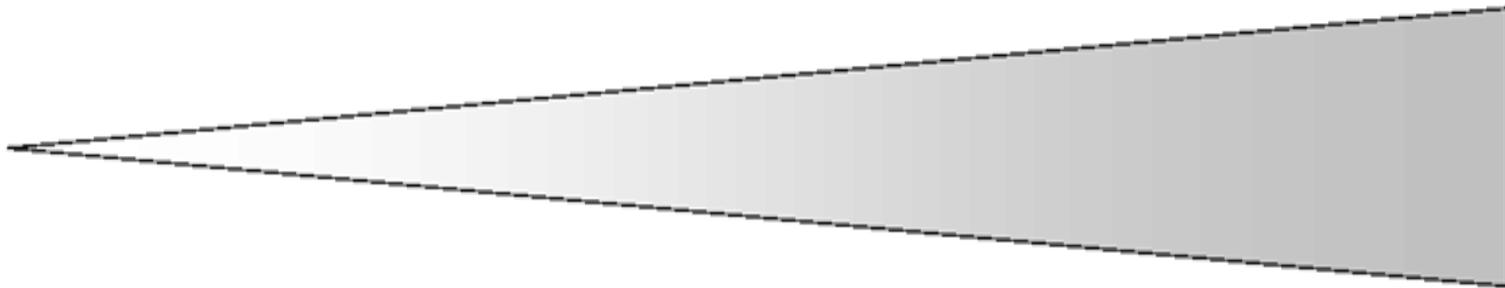
Komorbidität	Mittlere Häufigkeit	Schwankungsbreite
TS only, keine Komorbiditäten	12%	2-35%
ADHS	60%	33-91%
OCD	27%	2-66%
OCB	32%	13-66%
CD/ODD	15%	4-44%
Learning Disorders	23%	3-43%
Depression	20%	2-47%
Anxiety Disorder	18%	4-38%
Developmental Disorders	4,5%	1-9%
Mental Retardation	3,9%	1-14%
Rage attacks (ever)	37%	0-72%
Rage attacks (current)	26%	0-58%
Sleeping disorder (ever)	25%	0-58%
Sleeping disorder (current)	16%	0-11%
Autoaggressive Behavior	14%	4-43%
Trichotillomania	2,7%	0-14%
Sexually inappropriate behavior	6%	0-18%

OCD=obsessive-compulsive disorder
 OCB= obsessive-compulsive behavior
 CD=conduct disorder
 ODD=oppositional defiant disorder

Freeman RD, Fast DK, Burd L, Kerbeshian J, Robertson MM, Sandor P. An international perspective on Tourette syndrome: selected findings from 3,500 individuals in 22 countries. Dev Med Child Neurol 2000;42:436-47

□ 88% have more than just tics!!!!

Spectrum of Tic-Disorders



Transient Tic-Disorder

Chronic Tic-Disorder

Tourette Syndrom
Without comorbidities

Tourette Syndrom
With comorbidities

Summary

- The incidence of tic disorders is 2-3%(TS<1%) and is 4 times more often in males
- Tics begin at 6-8 years of age, and improve during puberty and fluctuate greatly in the course
- Tic disorders rarely come alone (about 10%).
- The most common comorbidities are:
 - Obsessive Compulsive Disorder, ADHD, subclinical compulsions.
- Often there is more than one comorbidity

What is the origin of Tic-Disorders?

Heritability of Tic-Disorders

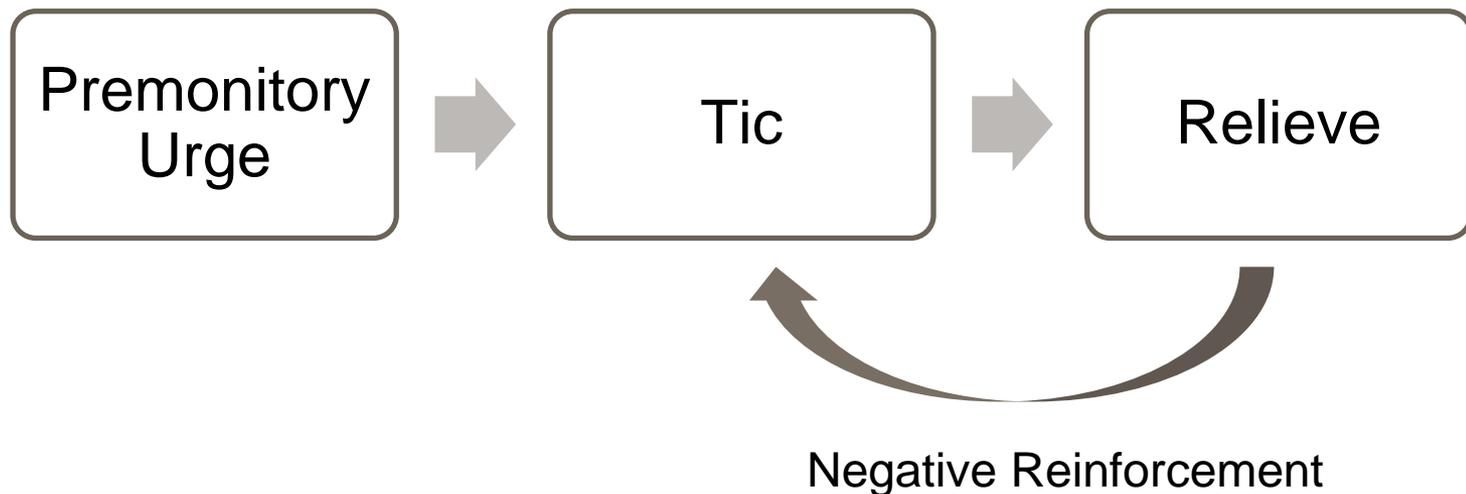
- Twin studies indicate a clear and strong heritability of TS and Tic-Disorders
 - Tourette-Syndrom:
 - monozygotic 50-70% vs. dizygotic 8-10%
 - Tic-Disorders:
 - monozygotic 77-94% vs. dizygotic 20%
- Yet, so far no reliably replicated candidate gene could be identified.
- Heritability is high, but cannot be pinned down to a clear gene.

Brain-physiological Correlates

Structural abnormalities could be found in multiple brain regions:

- Basal ganglia
 - Corpus Callosum
 - Limbic structures
 - Middlebrain
 - Thalamus
 - Cerebellum
 - Cortic regions
- **Cortico-striato-thalamo-cortical loop**
- Important role in the generation of movements and reward learning
 - Tics as a result of a failure of impulse inhibition

Operant Conditioning and Maintenance of Tics



Summary

- Tic disorders have a high heritability
- However, no genes have been found to which tic disorders can be unambiguously attributed
- Tic disorders have a clear brain physiological correlate
- Negative reinforcement mechanisms are involved in the maintenance of Tics

What we learnt today

- ✓ Characteristics of tics
- ✓ ICD-10 Diagnostic categories of Tic-Disorders
- ✓ Prevalence of Tic-Disorders
- ✓ Course of Tic-Disorders
- ✓ Most frequent psychiatric Comorbidities
- ✓ Correlates and Causes of Tic-Disorders