



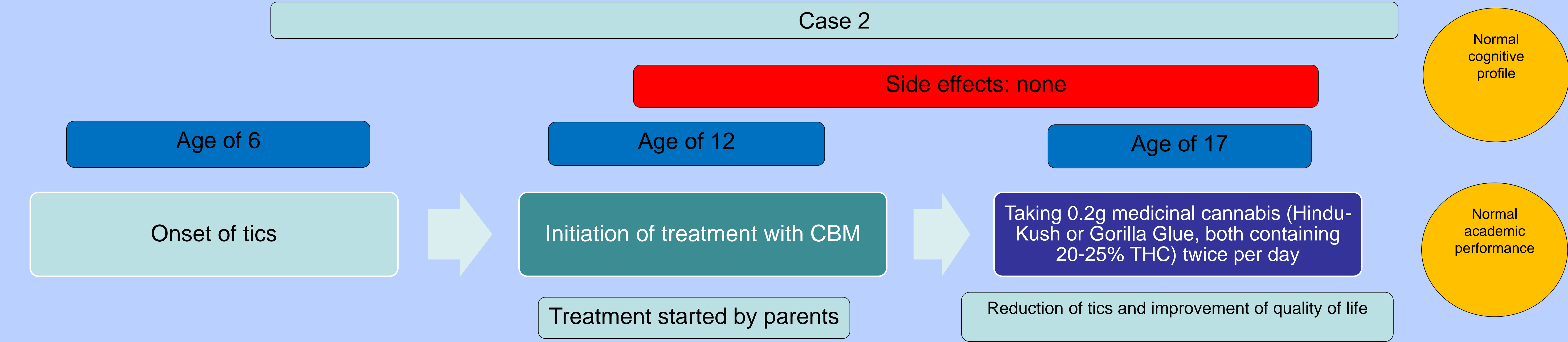
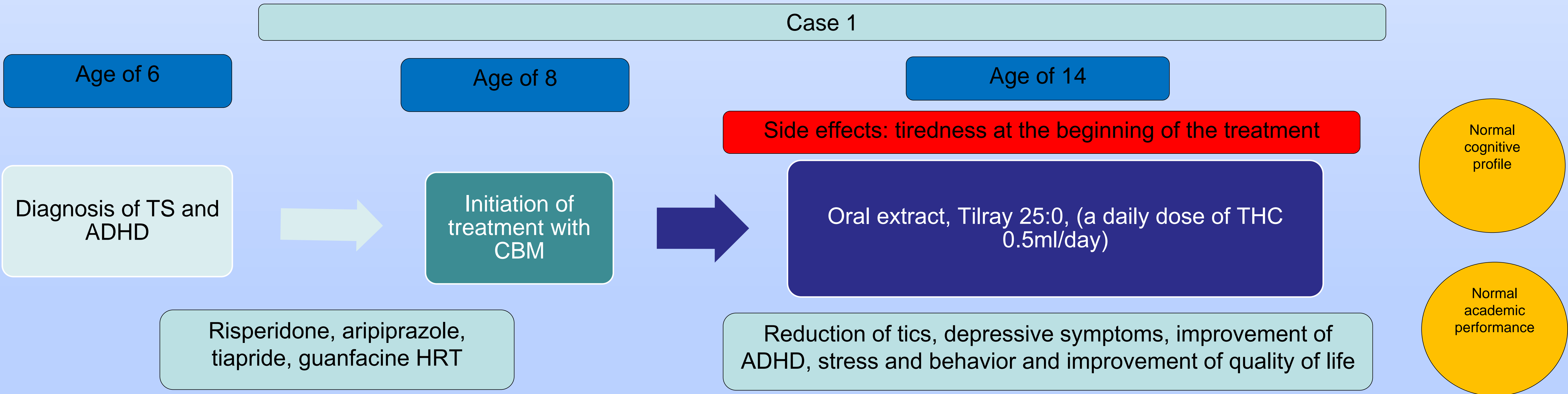
Long-Term Treatment with Cannabis-based Medicines in two Children with Tourette Syndrome

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Background

- Cannabis-based medicine (CBM) is recommended for the treatment of tics in otherwise treatment-resistant patients with Tourette syndrome (TS) in adults.
- However, evidence in children with TS is very limited.
- Long-term effects of CBM in this population are unknown.



Conclusions

We present two cases of minors with TS who started CBM treatment at the age of 8 and 12 years, respectively and continued treatment for five to six years resulting in clinically relevant symptom improvement without side effects or negative impact on cognitive and academic performance.

Case 1: Clinical measurements before and after treatment with CBM

Scale [range]		Baseline	Follow-up 2 months	Follow up 4 months	Long term follow up 6 years	Change [%] Baseline vs. Long term follow up 6 years
Age		8y9m	8y11m	9y2m	14y8m	
Tics	YGTS-TTS [0-50]	38	21	17	23	-39,48%
	MRVS [0-20]	12	10	11	/	-
	PTQ	/	/	/	56	-
	ATQ	/	/	/	28	-
Impairment	YGTS-IS [0-50]	30	10	10	0	-100%
Tics + impairment	YGTS-GS [0-100]	68	31	27	23	-66,18%
Premonitory urge	PUTS [0-40]	11	5	3	18	+38,89%
Quality of life*	GTS-QOL [0-100]	42	6	7	3	-92,86%
	GTS-QOL-VAS [0-100]	/	/	/	100	
	KID-KINDL [0-100]	65	96	92	90	+27,78%
Global impairment	CGI [0-7]	5	4	3	4	-20%
	CGI-I [0-7]	/	2	2	/	
Depression	DIKJ [33-80] T-Wertbande]	53	45	41	33	-37,74%
Stress	PSS-P [0-40]	36	9	9	12	-66,67%
Behavior	SDQ [0-40]	40	24	18	26	-35%
Autistic traits	ASSF [0-56]	22	9	15	12	-45,45%
	SNAP [0-54]	34	19	20	2	-94,12%
Intelligence**	WISC [percentile ranks]					
	Processing speed	/	/	/	90%	
	Working memory	/	/	/	34%	
	TMT: Trail A	/	/	/	21.29s	
	Trail B	/	/	/	44.10s	

*The higher the score, the better quality of life, ** 40-60% is considered normal result
YGTS-TTS= Total tic score of the Yale Global Tic Severity Scale; PTQ= Parent Tic Questionnaire; ATQ=Adult Tic Questionnaire; YGTS-IS= Impairment score of the Yale Global Tic Severity Scale; YGTSS-GS= Yale Global Tic Severity Scale, global score; PUTS= Premonitory Urge for Tics Scale; GTS-QOL= Gilles de la Tourette Syndrome - Quality of Life Scale; GTS-QOL-VAS= Visual Analogue Scale of Gilles de la Tourette Syndrome - Quality of Life Scale; CGI= Clinical Global Impression Severity Scale; CGI-I= Clinical Global Impression - Improvement Scale; PSS-P= Perceived Stress Scale; SDQ= The Strengths and Difficulties Questionnaire; ASSF= Autism-Spektrum Screening Fragebogen; SNAP= Swanson, Nolan and Pelham Teacher and Parent Rating; CY-BOCS= Children's Yale-Brown Obsessive Compulsive Disorder [cut off: <=16]; WISC= Wechsler Intelligence Scale for children- fifth edition; TMT= Trail Making Test (Trail A: Deficient: >78 sec; Trail B: >273 sec.) / corresponds to lack of values

Case 2: Clinical measurements before and after treatment with CBM

Scale [range]		Baseline [Before CMB treatment]	Follow-up [30 min after CBM treatment]	Long term follow up 4 years	Change Baseline vs. long-term follow up 4 years
Age		12y1m	12y1m	16y11m	
Tics	YGTS-TTS [0-50]	29	19	24	-17,3%
	MRVS [0-20]	17	13	/	/
	PTQ [0-224]	56	4	/	/
	ATQ [0-224]	61	14	103	+40,78%
Impairment	YGTS-IS [0-50]	30	10	2	-93,3%
Tics + impairment	YGTS-GS [0-100]	59	29	26	-50,85%
Premonitory urge	PUTS [0-40]	23	15	27	+14,82%
Quality of life*	GTS-QOL [0-100]	42	2	20	-52,39%
	GTS-QOL-VAS[0-100]	45	85	80	+43,75%
	KID-KINDL [0-100]	86	/	92	+6,53%
Global impairment	CGI [0-7]	3	2	3	0%
	CGI-I [0-7]	/	2	/	
Depression	DIKJ [33-80, T-score]	50	/	41	-18%
Stress	PSS-P [0-40]	/	/	11	
Autistic traits	ASSF [0-54]	11	/	3	-72,73%
ADHD	SNAP [0-54]	/	/	6	
OCD	CY-BOCS [0-40]	/	/	22	
Intelligence**	WISC [percentile ranks]				
	Processing speed	/	/	50%	
	Working memory	/	/	34%	
	TMT: Trail A	/	/	29:63 sec	
	Trail B	/	/	105:38 sec	

*The higher the score, the better quality of life, ** 40-60% is considered normal result
Quality of Life Scale; GTS-QOL-VAS= Visual Analogue Scale of Gilles de la Tourette Syndrome - Quality of Life Scale; KID-KINDL= health associated life quality; CGI= Clinical Global Impression Severity Scale; CGI-I= Clinical Global Impression -Improvement Scale; DIKJ= Depressionsinventar für Kinder und Jugendliche, German instrument to measure intensity of depression in children and adolescents; PSS-P= Perceived Stress Scale; ASSF= Autismus-Spektrum Screening Fragebogen; SNAP= Swanson, Nolan and Pelham Teacher and Parent Rating; CY-BOCS= Children's Yale-Brown Obsessive Compulsive Disorder [cut off: <=16; 16-23 = moderate severity]; WISC= Wechsler Intelligence Scale for children- fifth edition; TMT= Trail Making Test (Trail A: Deficient: >78 sec; Trail B: >273 sec.), / corresponds to lack of values