



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

Natalia Szejko <sup>a,b</sup>, Lara-Katharina Woerner<sup>a</sup>, Carolin Fremer<sup>a</sup>, Kirsten-Müller Vahl<sup>a</sup>

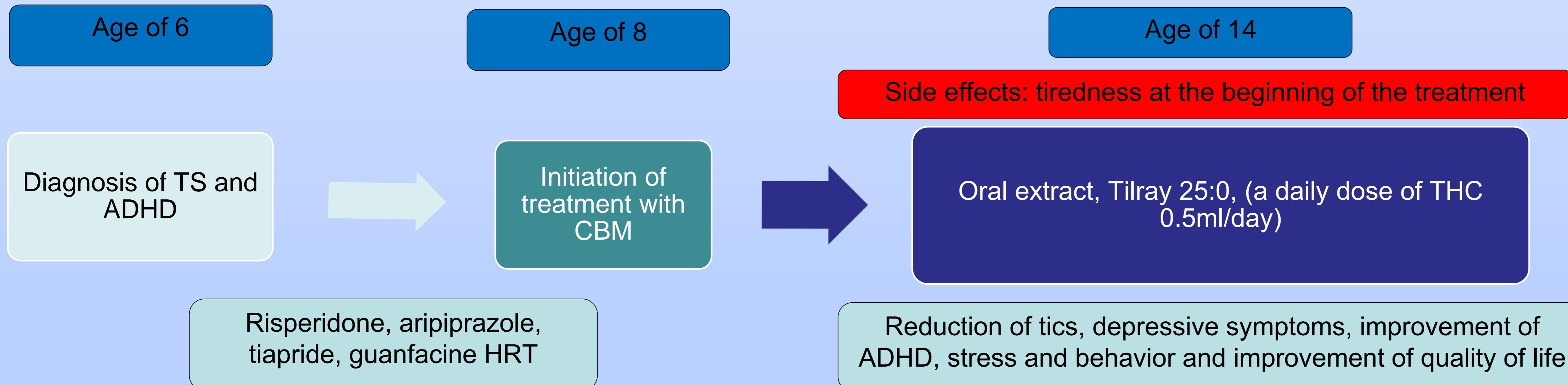
<sup>a</sup> Clinic of Psychiatry, Social Psychiatry and Psychotherapy, Hannover Medical School, Hanover, Germany

<sup>b</sup>Department of Clinical Neurosciences, University of Calgary, Alberta, Canada

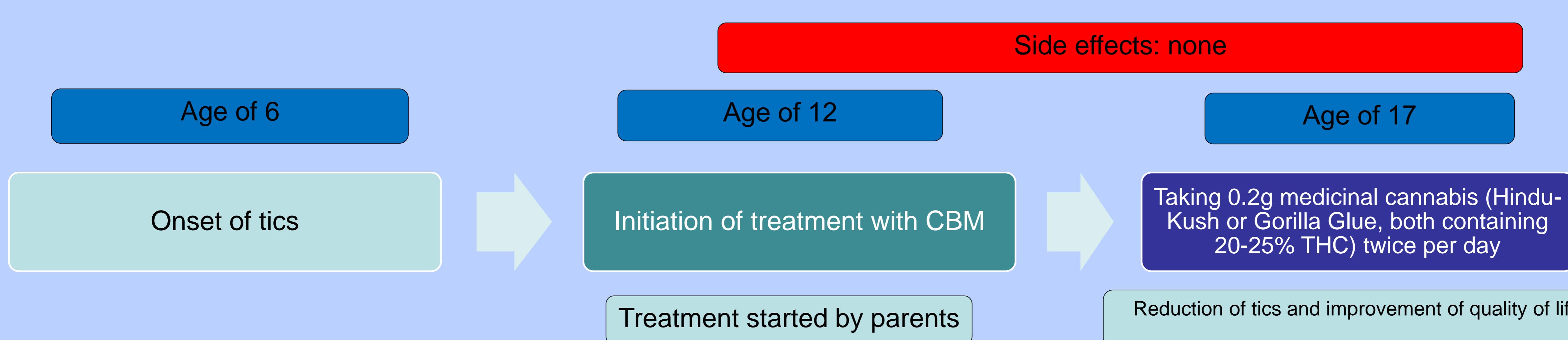
### Background

- 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.

### Case 1



### Case 2



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

#### Case 2: Clinical measurements before and after treatment with CBM

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

\*The higher the score, the better the quality of life. \*\* 40-60% is considered normal result. YGTSS-TTS: Tourette Tic Severity Scale; YGTSS-IS: 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 – 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.)

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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: ClinicalGlobal Impression – Severity Scale; CGI-I: Clinical Global Impression – Improvement Scale; DIKJ: Depressioninventar für Kinder und Jugendliche, German instrument to measure intensity of depression in children and adolescents; PSS-P: Perceived Stress Scale; 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; 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