

Plasmatic leptin levels and sleep habits in children affected by autism spectrum disorder medication naïve

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Autism spectrum disorder (ASD) is a neurodevelopmental disorder characterized by lifelong deficits in both socializing and non-verbal behaviors. Parents often reported children's sleep disorders (about from 44% to 83% of cases), as difficulty in sleep onset at bedtime, and alterations in sleep stability and continuity.

The first aim of the present study is to evaluate the putative relationship between leptin plasmatic levels and sleep habits in a cohort of ASD children naïve to any antipsychotic drug treatment compared to a group of controls. The second aim is to investigate the relationship between social impairments and the leptin plasmatic levels.

Methodology and Theoretical Orientation: The ASD group included 76 ASD medication-naïve children (49 males/37 females) and the control group consisted of 105 typical developing children (40 males/65 females).

To evaluate sleep habits and disturbances, all children's mothers filled out the Sleep Disturbances Scale for Children (SDSC). Serum leptin levels were measured using the commercial ELISA kit.

Findings: The analyses of the mean scores on the sleep disorder scale (SDSC) and its subscales revealed a significant group effect. Specifically, the ASD group showed a significantly higher rate of sleep disorders in all subscales investigated by the SDSC scale (Table

1). Also measures of serum leptin levels showed significant effect group with a higher rate in the ASD group (ASD: 1.69 ng/ml ± 0.09; TDC: 0.95 ng/ml ± 0.20; p < .0001]. Correlations were all significant and positive in the overall sample. (Table 2)

Conclusion and Significance: The present study findings showed not only that ASD could be considered as a relevant risk factor for referred sleep troubles disorders, but that plasmatic leptin levels may be a putative biochemical marker for them.



Table 1. Average scores, standard deviation and t test of the ASD and TDC groups in the sleep disorder scale (SDSC) and its subscales.

SDSC scale	ASD _{naïve}	TDC _{naïve}	df	P
SDSC	20.9 (3.0)	11.1 ^a (3.0)	177	<.0001
SRO	6.77 (2.0)	7 (2.0)	177	4.82 <.0001
SA	7.81 (2.0)	4.47 (2.0)	177	16.97 <.0001
SWTD	10.05 (2.0)	11.17 (2.0)	177	1.67 <.0001
DOE	15.11 (2.0)	9.17 (2.0)	177	9.00 <.0001
SDSC _{cat}	76.04 (10.1)	47.63 (10.0)	177	15.78 <.0001

Legend:
ASD: children affected by autism spectrum disorder
TDC: typical developing children
SDSC: Sleep Disturbance Scale for Children
SRO: Sleep Onset Latency and Awakening Sleep
SA: Sleep Awakening Disorder
SWTD: Disorder of Awakened
SWTD: Sleep/Wake Transition Disorder
DOE: Disorder of Executive Organization
df: degrees of freedom
t: t-Test
p: p-value

Table 2. Pearson's correlations between serum leptin levels and sleep disorder scale and autism rating scales.

Scale	Overall sample	ASD	TDC
EQSAS	.68*	.70*	-.03
SDQ	.30*	.43*	.01
DA	.64*	.70*	-.03
SWTD	.72*	.73*	.05
EOSS	.57*	.68*	-.06
SDSCast	.77*	.80*	-.02
ADOS-I	.77*	.73*	-.03
ADI-R	.70*	.63*	.09
SES	.70*	.62*	-.03

Legend:

- ASD: children affected by autism spectrum disorder
 - TDC: typical developing children
 - SDQ: Strengths and Difficulties Scale for Children
 - EQSAS: Disorders in Breathing and Maintaining Sleep
 - SDQ: Sleep Disordering Disorder
 - DA: Disorders of Arousal
 - SWTD: Sleep-Wake Transition Disorder
 - EOSS: Disorders of Excessive Somnolence
 - ADOS-I: Autism Diagnostic Observation Schedule-I
 - ADI-R: Autism Diagnostic Interview-Revised
 - SES: Social Empowerment Scale
- * p value < 0.0001

Biography

Marco Carotenuto is Associate Professor and Chief of Clinic of Child and Adolescent Neuropsychiatry at the Università degli Studi della Campania Luigi Vanvitelli in Italy. Presently, he is currently involved in specific clinical research area such as pediatric sleep disorders, autism spectrum disorders neurochemistry, neurochemical alterations in neurodevelopmental disorders.

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