The Relationship between Retained Primitive Reflexes and Hemispheric Connectivity in Autism Spectrum Disorders

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Abstract

Objective: The study assessed autistic spectrum disordered (ASD) children and adults all possessing retained primitive reflexes compared with a control group that did not. Methods: qEEG spectral and qEEG functional connectivity analysis was performed. An examination was performed for the presence or absence of RPRs, before and after an intervention based on TENS unilateral stimulation. Results: The results support long-range under-connectivity and short-range over-connectivity in ASD, with abnormal lateralization in ASD, specifically an elevated left-over-right qEEG functional connectivity ratio. Conclusion: We hypothesize, based on these findings, that ASD is characterized by a general tendency toward an underexpression of low-band, wide-spread integrative processes that are compensated by more localized, high-frequency, regionally dispersed activity. Clinical improvement and the absence of RPRs may be linked to variations in qEEG frequency bands and a more optimized brain networks, resulting in more developmentally appropriate long-range connectivity links, primarily in the right hemisphere. Significance: Clinical improvement and the disappearance of RPRs may be associated with a new balance in qEEG frequency bands and a more optimized organization of the brain networks, improving long-range connectivities, mainly in the right hemisphere.

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DELTA ABSOLUTE POWER

Significant threshold -2.55 to +2.55 for < 0.05

Before treatment

After treatment

THETA ABSOLUTE POWER

Significant threshold -2.55 to +2.55 for < 0.05

Before treatment

After treatment

ALPHA ABSOLUTE POWER

Significant threshold -2.55 to +2.55 for < 0.05

Before treatment

After treatment
GAMMA ABSOLUTE POWER

Significant threshold -2.55 to +2.55 for < 0.05

+5.01

-2.55

Before treatment

After treatment

DELTA BAND

Before treatment

After Treatment

THETA BAND

Before treatment

After Treatment