Neuropsychological Correlates of Theory of Mind in Pediatric Onset Multiple Sclerosis

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Background: Social cognition may be impaired in Multiple Sclerosis (MS). It is linked to Theory of Mind (ToM), which refers to the ability to understand others' mental states. ToM includes cognitive and affective components and first- and second-order meta-representational attributions. Its relationship with neuropsychological features in Pediatric Onset Multiple Sclerosis (POMS) remains unclear.

Objective: To investigate the relationship between neuropsychological functioning and ToM in POMS.

Methods: We collected data from 30 adults (18 F, age 25.90 ± 4.87 years, disease duration 10.60 ± 5.83, median EDSS 2) with POMS. All subjects completed the Brief International Cognitive Assessment for Multiple Sclerosis (BICAMS), Modified Fatigue Impact Scale (MFIS), Beck Depression Inventory (BDI), Beck Anxiety Inventory (BAI), Pittsburgh Sleep Quality Index (PSQI) and Health Survey Short Form Survey 36 (SF-36). ToM was explored using 48-Yoni Task, a computer-based tool measuring accuracy (ACC) and response time (RT) across all ToM components and levels. Spearman's rank correlation was applied to examine associations between clinical, cognitive, life quality variables and ToM performance.

Results: ACC was 0.80 ± 0.11; 7 participants (23.3%) showed low ToM performance. Higher BAI significantly correlated with higher cognitive ToM RT (ρ=.40, p=.03), and lower total ToM RT performance (ρ=-.40, p=.03). Higher cognitive ACC correlated with lower first order RT (ρ=-.40, p=.03). Higher first order RT was significantly associated with lower GH (ρ=-.42, p=.02). Higher second order RT was significantly correlated with lower PF (ρ=-.46, p=.01), and lower GH (ρ=-.46, p=.01). Higher affective RT was significantly associated with lower PF(ρ=-.44, p=.01), and GH (ρ=-.41, p=.02). Higher cognitive RT significantly correlated with lower PF (ρ=-.38, p=.04), lower GH (ρ=-.51, p=.00), and lower MH (ρ=-.36, p=.05). Higher RT performance was significantly associated with higher PF (ρ=.41, p=.03), higher GH (ρ=.50, p=.00), and higher MH (ρ=.38, p=.04).

Conclusions: Higher levels of anxiety about task performance lead to a greater cognitive load, interfering with social cognitive processing. Slower ToM response times are linked to lower perceived quality of life, particularly in domains of physical functioning, general health and mental health, highlighting ToM response efficiency as a relevant marker of social processing, related to patients quality of life.

Bibliography:

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