

## Bristol Stool Test support to explore potential dysbiosis in children with epilepsy

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**Background** Gut-brain-microbiota (GBM) axis is a bidirectional communication pathway between gut bacteria and the central nervous system (CNS) that exerts an important influence on key brain processes. Patients with neuropsychiatric disorders often show abnormal intestinal microbiota, according with disease severity. We evaluated epileptic patients by using the Bristol Stool Test (BST), a commonly used tool to assess potential GBM dysfunction.

**Methods** We enrolled children with epilepsy of different aetiology including subjects with neuropsychiatric comorbidities (intellectual disability, autism spectrum disorder, movement disorders) and healthy controls. Clinical data including gastrointestinal (GI) discomfort (abdominal pain, constipation, diarrhea, reflux, bloating, dyspepsia) were collected referring to Rome IV Criteria.

**Results:** A total of 148 individuals (mean age: 9,4±3,9 SD) were recruited. Patients group included 30 children with isolated epilepsy (IE) and 54 with complicated epilepsy (Epi+). Controls group included 64 individuals (mean age: 9,4±3,1 SD). BST scores were abnormal in 5 patients from IE group and 26 patients from Epi+. Nine controls showed abnormal BST. BST scores were significantly abnormal in patients compared with controls ( $p=.0026$ ) and in patients with Epi+ compared with IE patients ( $p=.0047$ ). BST scores were compared between IE and Epi+ patients in monotherapy ( $p=.038$ ). Finally, BST scores were compared between patients with or without GI discomfort ( $p=.0001$ ).

**Conclusions:** BST is an easy, cost-free tool to evaluate the intestinal transit and may be a surrogate for indicating potential dysbiosis in epilepsy patients. Children with comorbidities could have deep imbalances of their GBM axis. Abnormal scores positively correlate with presence of GI discomfort. Antiepileptic treatment did not influence the risk for abnormal BST scores. Nevertheless, the relationship between abnormal BST scores and the degree of intestinal dysbiosis should be addressed by further research.