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Nutritional status and functional gastrointestinal disorders in pediatric patients with drug-resistant epilepsy: Impact of vagus nerve stimulation

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Abstract

Purpose: To evaluate the nutritional status and functional gastrointestinal disorders (FGIDs) in children with drug-resistant epilepsy (DRE) and determine whether vagus nerve stimulation (VNS) influences gastrointestinal outcomes.

Methods: This cross-sectional study included 98 pediatric patients with DRE (30 with VNS and 68 without). Anthropometric status was assessed using LMS-derived Z-scores, and FGIDs were diagnosed according to the Rome IV criteria. Logistic regression and ROC analyses were used to investigate the relationship between antiseizure medication (ASM) burden and constipation.

Results: Each additional ASM increased the odds of constipation by 1.63 (95 % CI: 1.08-2.47; p = 0.021). A cutoff of ≥3 ASMs demonstrated a moderate predictive value for constipation (AUC 0.63). Earlier epilepsy onset was significantly associated with lower weight, height, and BMI Z-scores (all p < 0.05). Despite the higher ASM burden, children treated with VNS did not exhibit an increased frequency of gastrointestinal adverse effects.

Conclusion: ASM polytherapy is a measurable risk factor for constipation in pediatric DRE, and early epilepsy onset is associated with impaired growth. The absence of increased gastrointestinal symptoms among VNS recipients, despite a higher medication load, suggests a potential modulatory role of vagal neuromodulation. These findings highlight the need for routine nutritional surveillance and structured gastrointestinal assessments and support future longitudinal studies incorporating objective GI measures and biomarker-based evaluations.

Keywords: Constipation; Drug-resistant epilepsy; Functional gastrointestinal disorders; Nutritional status; Vagus nerve stimulation.

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