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Efficacy of dual-task training on stability and function in children with ataxia after medulloblastoma resection: A randomized controlled trial

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Abstract

Background/objective: In children, medulloblastoma (MB) is the most prevalent posterior fossa tumor. The first line of treatment is maximal safe resection. Therefore, symptoms of ataxia are commonly seen. Training the brain on balance and cognitive tasks makes balance more automatic than without cognitive tasks. The goal was to assess the effectiveness of dual-task practice on balance after MB excision in children with ataxia.

Methods: Thirty children with ataxia after MB resection at Children Cancer Hospital Egypt were randomized into two equal groups. Exercises for mobility, balance, and gait training were given to both groups. The research group underwent a specific dual-task program (balance and cognitive). The program ran 3 days per week for 8 weeks. Children were evaluated before and after the treatment regimen using the Scale of Assessment and Rating of Ataxia (SARA), the HUMAC Balance System, Pediatric Balance Scale, and Functional Independent Measurement. All children's legal guardians signed an ethical agreement.

Results: A notable improvement in balance was found in the dual group in Pediatric Balance Scale (PBS) ($p = .028$) and stability test ($p = .0001$) in favor of the study group. No discernible difference was observed in the Functional Independent Measurement score among the two groups ($p = .158$), although there was a statistically significant increase in both groups after treatment.

Conclusion: Dual-task program is more effective than traditional physical therapy alone in improving balance in children with ataxia after MB resection.

Keywords: ataxia; children; dual-task training; medulloblastoma; physical therapy.

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