

Appl Neuropsychol Child. 2024 Apr 11:1-11. doi: 10.1080/21622965.2024.2337208.

Online ahead of print.

The long-term impact of cerebellar tumor resection on executive functioning, anxiety, and fear of pain: A mixed methodology pilot study

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PMID: 38604218 DOI: [10.1080/21622965.2024.2337208](https://doi.org/10.1080/21622965.2024.2337208)

Abstract

This pilot study investigated the long-term impact of a surgery-only treatment (no exposure to other treatments, such as chemotherapy and radiation) for pediatric cerebellar low-grade gliomas on executive function, anxiety, and fear of pain (FOP) beliefs. Twelve patients who underwent surgical glioma resection during childhood (surgery age was 4-16 years, study visit age was 10-28 years), and 12 pain-free controls matched for age, sex, race, and handedness were tested. The spatial extent of resection was precisely mapped using magnetic resonance imaging (MRI). Executive function, anxiety, and FOP were assessed using validated self-report age-appropriate questionnaires for children and adults. Structured clinical interviews at a post-surgery follow-up visit were completed (average: 89 months, range: 20-99). No significant differences in FOP (FOPQ-C $t[14] = 1.81, p = 0.09$; FOPQ-III $t[4] = 0.29, p = 0.79$), executive function scores (BRIEF $t[20] = 0.30, p = 0.28$), or anxiety scores (MASC $t[16] = 0.19, p = 0.85$; MAQ $t[4] = 1.80, p = 0.15$) were found in pediatric or adult patients compared to pain-free controls. Clinical interviews mainly categorized pediatric patients as not anxious. One participant reported mild/subclinical anxiety, and one had moderate clinical anxiety. Neither psychologists nor patients endorsed impairments to executive functioning, anxiety, or FOP. Our pilot results suggest that pediatric cerebellar tumor survivors treated with surgery-only have favorable long-term functioning related to these themes. While these results are promising, they will need to be replicated in a larger patient sample.

Keywords: Anxiety; executive function; fear of pain; late effects; neuropsychology; posterior fossa low-grade glioma.

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