

Spontaneous Complete Regression of Congenital Brain Tumors: a Systematic Literature Review with a Case Report

INPLASY202650121

doi: 10.37766/inplasy2026.5.0121

Received: 22 May 2026

Published: 22 May 2026

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ADMINISTRATIVE INFORMATION**Support** - No financial support.**Review Stage at time of this submission** - Completed but not published.**Conflicts of interest** - None declared.**INPLASY registration number:** INPLASY202650121**Amendments** - This protocol was registered with the International Platform of Registered Systematic Review and Meta-Analysis Protocols (INPLASY) on 22 May 2026 and was last updated on 22 May 2026.**INTRODUCTION**

Review question / Objective The purpose of the present study was to systematically review the literature of case reports manifesting spontaneous complete regression of congenital brain tumors.

Condition being studied Spontaneous congenital brain tumor regression remains uncommon, with the currently available evidence limited almost exclusively to isolated case reports. The mechanisms underlying the spontaneous regression of congenital brain tumors are uncertain and likely multifactorial. Among suggested hypotheses are apoptosis, immune-mediated antitumor responses, genetic or epigenetic factors, and changes in the tumor microenvironment.

METHODS

Participant or population This study aimed to systematically review the available literature on spontaneous regression of congenital brain

tumors. Additionally, we report on our institutional case with a posterior fossa tumor that involuted at the age of 3 months.

Intervention This review evaluated the clinical course of completely regressed congenital brain tumors without prior tumor resection, chemotherapy, or radiotherapy.

Comparator Not applicable.

Study designs to be included This review comprised original studies, such as case series and case reports. In contrast, review articles, book chapters, and conference papers were excluded.

Eligibility criteria The study was considered eligible when it reported patients with brain tumors aged 6 months and younger with spontaneous complete regression without prior tumor resection, chemotherapy, or radiotherapy.

Information sources A systematic review of articles on spontaneous regression of congenital

brain tumors published from inception to 5 April 2026 in Web of Science, Scopus, PubMed (MEDLINE), and Embase was conducted.

Main outcome(s) This study aimed to determine the demographic characteristics of patients, their perinatal history, initial manifestation, lesion location, diagnostic imaging findings, histopathology, age at complete regression, treatment administered, and final neurological condition.

Quality assessment / Risk of bias analysis Not applicable.

Strategy of data synthesis The data synthesis was conducted using qualitative and quantitative methods on case-based studies. Narrative approach was used to summarize and integrate qualitative findings in the discussion. Meta-analysis wasn't feasible due to the high heterogeneity of included studies and insufficient data.

Subgroup analysis Not applicable.

Sensitivity analysis Not applicable.

Country(ies) involved Poland.

Keywords Prenatal Brain Tumors; Solitary Fibrous Tumor; Tumor Involution; Posterior Fossa Tumor.

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