Development of an arachnoid cyst after ventriculoperitoneal shunt placement

Case illustration

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Arachnoid cyst formation is a rare complication of shunting procedures. This case illustrates the rapid development of a symptomatic suprasellar arachnoid cyst after shunt insertion to treat hydrocephalus.

This healthy 4-month-old girl presented with communicating hydrocephalus (Fig. 1A). A ventriculoperitoneal (VP) shunt with a low-pressure valve was placed. The patient returned 2 months postoperatively with lateral and downward nystagmus. Repeated magnetic resonance (MR) imaging revealed a new suprasellar cyst (Fig. 1B and C) and an extraxial hematoma. She subsequently underwent a right-sided pterional craniotomy with multiple cyst fenestrations into the basilar cisterns, resulting in prolonged resolution of the cyst (Fig. 1D). Pathological examination of the cyst wall revealed tissues consistent with fibrotic leptomeninges. No epithelial lining was identified.

Arachnoid cysts probably arise by arachnoid reduplication during endomeningx development.1-3 Proposed mechanisms of cyst formation include one-way cerebrospinal fluid (CSF) flow into the diverticulum (ball-valve mechanism), slow distention by CSF pulsations, or active fluid secretion by the cyst wall.4 The appearance of an arachnoid cyst following VP shunt placement has been reported once2 and should be recognized as a potential complication of shunting procedures. Ventricular decompression may alter CSF dynamics, allowing for rapid enlargement of a preexisting arachnoid diverticulum. Overshunting may play a role, as indicated by the extraxial hematoma.

Therapy for suprasellar arachnoid cysts includes open fenestration, neuroendoscopic exploration, or shunting of the cyst fluid. Shunt revision with a higher pressure valve or an antisiphon device could be beneficial.

References


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