



Intracranial Arachnoid Cysts and Hemorrhage

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Learning Objectives

- 1) Recognize the clinical presentation of pediatric patients with arachnoid cysts with subdural hygroma or hematoma requiring surgery;
- 2) Recognize that the presence of blood on imaging is not as important as mass effect and clinical presentation in determining the course of action; and
- 3) Recognize that although initial surgery is effective in relief of symptoms, up to 20% of patients ultimately require shunt placement.

Introduction

Intracranial arachnoid cysts are a relatively common finding on neuroimaging studies in the pediatric population. Incidental lesions usually have a benign course and have been managed expectantly. On occasions, these cysts have presented with subdural hemorrhage and/or hygroma with significant mass effect. We reviewed the clinical presentation, radiographic findings, management decisions, and surgical outcome of a single institution series of patients with intracranial arachnoid cysts who presented with subdural hemorrhage and/or hygroma requiring surgical evacuation +/- shunting.

Methods

Retrospective chart review performed on all patients at Boston Children's Hospital who underwent surgery for intracranial arachnoid cyst between 1993 and 2014. Presentation, imaging, surgery, and outcome were examined. Appropriate IRB approval was obtained.

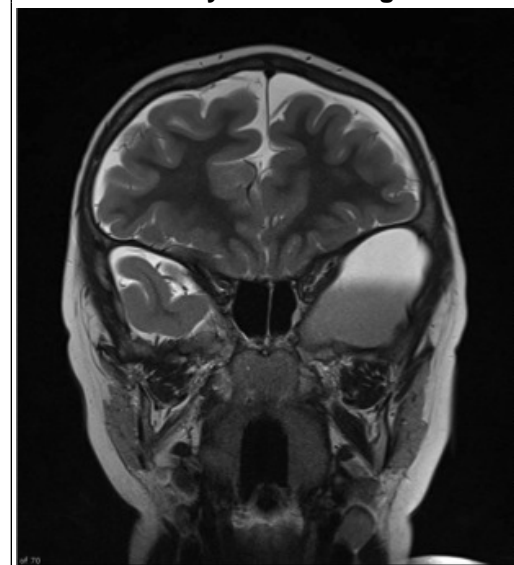
Results

Between 1993 and 2014, 226 patients underwent surgery for an intracranial arachnoid cyst, 21 cases were for subdural hematoma/hygroma. 20 were middle fossa arachnoid cysts (16 left and 4 right), and one a left frontal convexity cyst. 19 cases had subdural hematoma associated with the arachnoid cyst, 2 cases had hygromas only. Average age at presentation was 9.5 years, 95% were male. Mean follow-up period was 8.9 years (1-21.5 years). All, except for one, had a history of head trauma. The mean delay between the inciting trauma and clinical presentation was 40 days. The only non-traumatic case occurred after an elective arachnoid cyst fenestration resulting in subdural hematoma. Headache was present in all patients at presentation. Other presenting symptoms and findings included nausea and vomiting (81%), lethargy (48%), papilledema (29%), weakness (19%), memory deficit (9.5%), macrocephaly (9.5%), cranial nerve deficit (9.5%), and seizure (4.8%). After surgery, all had resolution of the initial symptoms. Four patients (19%) required subdural-peritoneal shunt placement, two have required shunt revisions. One patient had a cysto-peritoneal shunt that required two revisions before conversion to a subdural-peritoneal shunt. Another patient had initial placement of shunt followed by removal, fenestration of the cyst one year later and then required replacement of the shunt within one month of fenestration.

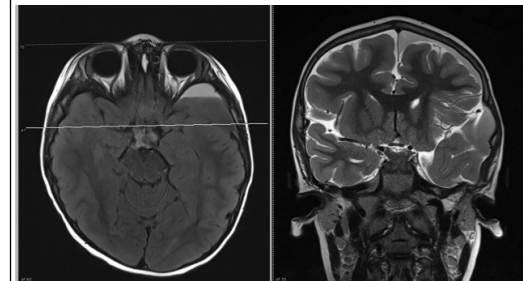
Conclusions

Trauma can lead to cyst rupture into the subdural spaces with subsequent subdural hygroma/hematoma formation. This can lead to low-pressure venous bleeding with clinical symptoms weeks to months after the inciting trauma. Hygroma under pressure, without hematoma on imaging, can be just as symptomatic as the ones with hemorrhage, and require surgical intervention. Some 'hygromas' had evidence of chronic hemorrhage intraoperatively. Chronic subdural hemorrhage can be associated with thick membranes, making cyst fenestration less successful, and the possibility of shunt (and subsequent revisions) should be discussed with parents at time of initial presentation.

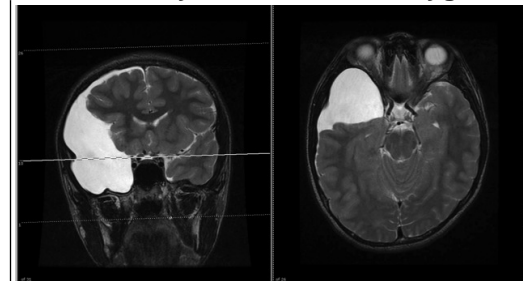
Intracyst Hemorrhage



Arachnoid Cyst with Subdural Hemorrhage



Arachnoid Cyst with Subdural Hygroma



Hygromas under pressure can be just as symptomatic as subdural hematomas.