Spontaneous rupture of a subarachnoid cyst with subdural hygroma formation.

A 35-year-old male patient who recently started to develop progressive headache. The patient denies any history of recallable head trauma.

Imaging Findings:

The initial MRI examination revealed a large-sized left temporal arachnoid cyst communicating with the left frontotemporal-parietal subdural hygroma with significant mass effects and midline shift to the right side. The differentiation between the arachnoid cyst and subdural hygroma can be based on the presence of the cortical veins sign, where the cortical veins can be seen traversing or superficial to the arachnoid cyst, but will always be deep to the subdural collection being compressed against the cortical brain surface.

The fluid contents of the hygroma are CSF-like in all pulse sequences with no haemorrhagic contents as seen notably at the SWI-sequence with no evidence of blooming observed. Post-operative CT examination revealed adequate decompression of the hygroma and the cyst.

Discussion:

Rupture of an arachnoid cyst is a very rare complication and it was reported in less than 50 cases in the literature. [3] A majority of cases were reported in children and young adults, and almost all cases were related to arachnoid cysts at the middle cranial fossa with the related hygroma formation almost always at the same side, or much less common bilaterally, but never isolatedly, on the contralateral side. [3]

The most common clinical presentation was a progressive headache and the most common clinical findings were bilateral papilloedema and hemiparesis.[3]

The arachnoid cyst rupture may occur following head trauma, or it might happen spontaneously following transient increase of the intracranial pressure, notably during Valsalva maneuver with the tearing of the cyst wall, and communication with the subdural space by a valve-like mechanism, which results in accumulation of CSF progressively with the formation of progressive hygroma and the resultant mass effects. [1]

In clinically stable patients, conservative treatment with acetazolamide can result in good response with regression
of the hygroma, yet most of the cases eventually were treated surgically. The most recommended technique is cyst fenestration with the creation of a connection between the cyst and the normal CSF-circulation. The other alternative surgical procedure is cyst-peritoneal shunting, which may be preferred due to diminished risk of sudden decompression, yet it carries higher risks of obstruction and infection. [2, 4]

All patients who have silent arachnoid cysts should be informed about the very rare possibility of cyst rupture, the predisposing causes and the possible clinical presentations for such rare events. [4]

**Differential Diagnosis List:** Spontaneous ruptured arachnoid cyst with subdural hygroma formation., Isolated subdural hygroma, Large epidermoid cyst

**Final Diagnosis:** Spontaneous ruptured arachnoid cyst with subdural hygroma formation.

**References:**


Figure 1

Description: Axial T2 MRI revealed left temporal large Arachnoid cyst. Origin: Mediclinic Airport Road Hospital, Abu Dhabi, UAE
Description: Axial T2 revealed bright left subdural collection with associated mass effects and midline shift. **Origin:** Mediclinic Airport Road Hospital

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Description: Coronal T2 MRI revealed the original Arachnoid cyst and the associated subdural hygroma differentiated by the cortical veins (red arrows) and both exerts CSF intensity pattern. **Origin:** Mediclinic Airport Road Hospital
**Description:** Coronal T1 MRI with the cortical veins (red arrows) demarcating the borders between the original Arachnoid cyst and the subdural hygroma. **Origin:** Mediclinic Airport Road Hospital

**Description:** Axial SWI revealed cortical veins traversing the original Arachnoid cyst (red arrows). No evidence of haemorrhagic changes seen. **Origin:** Mediclinic Airport Road Hospital
Description: Axial SWI at the level of the subdural hygroma revealed cortical veins compressed against the brain surface (arrows). No evidence of haemorrhage within the subdural collection. Origin: Mediclinic Airport Road
Description: Post management Coronal MPR CT revealed adequate decompression of the subdural hygroma with evacuation of the left subarachnoid cyst. Origin: Mediclinic Airport Road Hospital