

Our experience at KKH

Like other parts of the world, we see many patients with arachnoid cysts. Surgery is usually unnecessary. For a few selected patients, their cysts are closely monitored with imaging tests for any changes, and treatment may be recommended later, if required. A recent retrospective clinical study from our Neurosurgical Service shows that we share many similarities in the epidemiology, symptom presentations and operative outcomes with other paediatric hospitals worldwide. We hope to better understand the natural history, clinical condition and treatment outcomes of children with arachnoid cysts in the near future.

Reference

Chan JL, Tan ALJ, Ng LP, Low DCY, Wan Tew S, Low SYY. Paediatric arachnoid cysts: Surgical outcomes from a Singapore children's hospital. *J Clin Neurosci.* 2021 Mar;85:122-131. doi: 10.1016/j.jocn.2020.12.030. Epub 2021 Jan 21. PMID: 33581782.

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Arachnoid Cysts in Children

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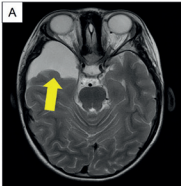
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What are 'Arachnoid Cysts'?

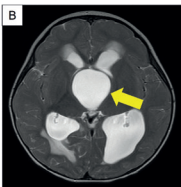
Arachnoid cysts are benign, fluid-filled sacs found in different locations of the brain or spine. They are the most common type of cysts in the brain. For most people, arachnoid cysts are congenital (also known as primary arachnoid cysts). Sometimes, they are due to previous brain injury from infection or trauma. When this occurs, they are called secondary arachnoid cysts.

At this point in time, the underlying cause of arachnoid cysts is uncertain. For unknown reasons, they tend to be more common in males than females. Research suggests that these cysts form when one of the brain layers (known as the arachnoid membrane) splits as a result of development (congenital) or injury (secondary). Subsequently, these areas become filled with cerebrospinal fluid that is trapped, forming a fluid-filled sac ('cyst'). There are some studies that report arachnoid cysts may run in families and certain conditions such as arachnoiditis predispose people to form arachnoid cysts. Nonetheless, it is not possible to prevent arachnoid cysts from developing.

Examples of common locations of arachnoid cysts as seen on brain imaging



A: Illustrative example of a right middle cranial fossa arachnoid cyst (yellow arrow) as depicted on an MRI brain scan.



B: Illustrative example of a suprasellar cyst (yellow arrow) with resultant obstructive hydrocephalus as depicted on an MRI brain scan.



C: Illustrative example of a posterior fossa arachnoid cyst (yellow arrow) as depicted on an MRI brain scan.

Symptoms and diagnosis

Brain imaging studies such as computed tomographic (CT) or magnetic resonance imaging (MRI) scans are the main components of the diagnosis of arachnoid cysts. They may be found anywhere in the brain. Common locations include the skull base, in the region of the hindbrain or next to the spinal cord. Many patients often discover that they have an incidental arachnoid cyst when they undergo scans for other health concerns.

Occasionally, arachnoid cysts can cause symptoms by pressing directly on the surrounding brain, spinal cord, or nerve tissue. Large arachnoid cysts may cause an enlarging head circumference or skull bone deformity, especially in young children. Sometimes, they rupture or bleed, causing the cyst to increase in size. Affected patients may complain of headaches which are often worse in the morning upon waking, nausea/vomiting, developmental delay, visual disturbances, seizures, and or hemiparesis. Other symptoms vary depending on the patient's age and location of the arachnoid cyst. Under such circumstances, surgery may be necessary.

How are arachnoid cysts treated?

Most arachnoid cysts do not require treatment. If surgery is necessary, there are different types of neurosurgical approaches for patients with symptomatic arachnoid cysts. These include endoscopic procedures, open surgery or shunting. Nonetheless, the final choice of surgery is dependent on the patient's clinical condition, location and size of the arachnoid cyst. With treatment, the majority of patients with arachnoid cysts have a good prognosis. Overall, our emphasis is on a personalised approach to each individual patient for the short- and long-term management of his/her arachnoid cyst.