Case Report

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Sinus pericranii (SP) is a rare venous varix in an extracranial location connected to the intracranial venous system through diploic emissary veins, resulting into the formation of a fluctuating visible scalp mass (2).

Noninvasive imaging modalities like Computerized Tomography (CT scan) and Magnetic Resonance Imaging (MRI) can readily diagnose this abnormality (1,5).

Case Report

A 12-year-old boy born to non-consanguineous parents presented with a history of a swelling on the right forehead, present since past few years [Fig.1]. There was no history of local trauma or surgery. It was insidious in onset and gradually became noticeable. The swelling was compressible, non-tender and increased in size when the child cried. It became more prominent when the child bowed his head, as during prayers [Fig. 2]. On inspection, the child had a normal sized head and built. Local physical examination revealed a 14 x 12 mm compressible right forehead mass with bony dents underneath. The anterior and posterior fontanels were closed. The child underwent Contrast CT imaging study to evaluate the swelling. NECT showed an iso-dense soft tissue swelling of 15 x 12 mm in the right frontal region located over a bony defect [Fig. 3] that was seen communicating intracranially with the superficial cortical vein [Fig. 4]. No other bony or soft tissue or vascular abnormality was seen. Thus, the diagnosis of right frontal sinus pericranii was made based on CT scan imaging findings. The child was referred to Neurosurgeon for further management.

Discussion

The intracranial and extra cranial venous drainages of the head are separate and usually do not show any obvious communication. But in Sinus Pericranii, an abnormal communication, either from the extra cranial system to the intracranial venous sinuses or from the intracranial venous system to the extra cranial draining veins is noted (3). This venous anomaly comprises of venous blood vessels that are non-muscular, adhering tightly to the outer cranial vault and directly communicating through diploic veins with an intracranial venous sinus. These dilated venous channels vary in size with variation in intracranial pressure and distend as well as collapse accordingly.

Clinically it presents as a soft and compressible mass on the scalp consisting of a direct communication to the intracranial dural sinuses through dilated diploic and emissary veins. Valsalva maneuver or raised intracranial pressures distend it while nondependent position collapses it (2). SP may be of congenital, traumatic or spontaneous in origin. In cases of trauma, the emissary veins get torn and later gradually form communicating blood cyst which ultimately develops into SP(2).

SP has been reported to occur at any age, although incidence before third decade of life is higher and is more common in males(1,3,5). It is mostly asymptomatic, but rarely may be accompanied by nausea, vomiting and vertigo.

Different scalp lesions like dermoid, lipoma, encephalocele and dural fistula may mimic SP. Subepicranial varix is a dilated venous scalp sac but without communication with intracranial dural...
Anomalies like systemic angiomas and craniosynostosis have also been reported to be associated with SP (1-3).

Timely clinical examination backed by cross sectional noninvasive imaging like CT or MRI scan can confirm the diagnosis. At times invasive conventional angiography may be needed to rule out other vascular malformations like dural fistula and arteriovenous malformation (1-3). On these cross sectional imaging modalities, the lesion is seen to be of slightly increased attenuation compared with brain parenchyma and is associated with cranial vault defect. The abnormal communication between dural sinuses and the cranial vault is seen enhancing to the same extent as cerebral venous structures in post contrast images, unless this channel is thrombosed. On occasions, Color Doppler Ultrasound may demonstrate the communicating channel. Treatment options consist of surgical resection or a transvenous endovascular approach, only if the patient becomes symptomatic. Adequate assessment of the drainage pattern of SP is necessary before treating it. If the brain is being drained through SP such that usual venous outflows are bypassed, then it is wise to avoid the treatment (4).

A word of caution here for general practitioners and...
general surgeons is that all compressible mobile scalp swellings may not be Lipoma or cyst. Direct biopsy or surgery without appropriate imaging investigations can be hazardous.

Conclusion

Sinus pericranii is an uncommon abnormality presenting as a benign looking scalp mass. Proper clinical examination supported by similar conclusion on imaging studies can confirm the diagnosis.

References


