

Neuroimages of persistent falcine sinus in children

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The falcine sinus is a normal anatomic structure located in the falx cerebri and it closes usually before birth. In this paper, we report two patients with persistent falcine sinus with emphasis on the neuroimages.

Case 1

A 14-year-old girl with a known diagnosis of systemic lupus erythematosus came to our department with the initial complaint of headache. Brain MRI revealed a normal brain parenchyma in all sequences. In addition, an incidental falcine sinus was observed in its entire length in sagittal images (Fig. 1A). The sinus connected the junction of the middle and posterior thirds of the superior sagittal sinus with the origin of the straight sinus. The straight sinus was also seen (Fig. 1B, 1C). MR venography confirmed the presence of the persistent falcine sinus with the straight sinus (Fig. 1D).

Case 2

A full-term male neonate was admitted to our department because of respiratory distress and mild cyanosis for 4 hours (20 hours after birth). Head CT revealed a markedly dilated vein of Galen and dilated vessels in the right Sylvian fissure (Fig. 2A). Brain MRI and MR angiography (MRA) revealed aneurysmal dilatation of the vein of Galen with a persistent falcine sinus reaching the superior sagittal sinus in its posterior third and arteriovenous malformation in

the right hemisphere. The straight sinus was patent with terminal stenosis (Fig. 2B-F). The neonate died 36 hours after birth due to the high-output congestive heart failure.

Summary

The falcine sinus is a normal intrauterine venous structure located between the dural leaves of the falx cerebri, normally involutes before birth.^[1-3] It develops from the mesenchyme in the mesencephalic flexure, the same area that gives rise to the straight sinus.^[2] There are a few known conditions associated with a persistent falcine sinus, including malformation of the vein of Galen, arteriovenous malformation, corpus callosum agenesis, bifid cranium, osteogenesis imperfecta, acrocephalosyndactyly (Apert syndrome), Chiari II malformations, absent tentorium, and occipital

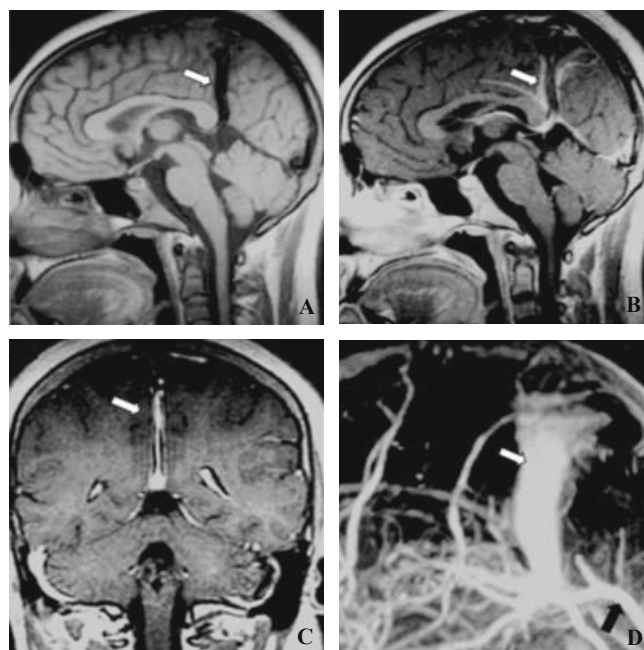


Fig. 1. Persistent falcine sinus without associated anomalies. Precontrast sagittal (A), postcontrast sagittal (B) and postcontrast coronal (C) T1 weighted images showing a falcine sinus in its entire length (white arrow). MR venography (D) showing the falcine sinus (white arrow) and the straight sinus (black arrow).

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encephalocele. There are few reported acquired lesions in association with persistent falcine sinus including venous sinus thrombosis or obstruction of the straight sinus by a mass lesion.^[4-9] Our first case represents a persistent falcine sinus without associated anomalies, which is an extremely rare condition to our knowledge. The association of aneurysmal dilatation of the vein of Galen and arteriovenous malformation with persistent falcine sinus in our second case has not been reported.

Attention should be paid to the brain to exclude anomalies and also obstruction of the deep venous system in the presence of persistent falcine sinus.

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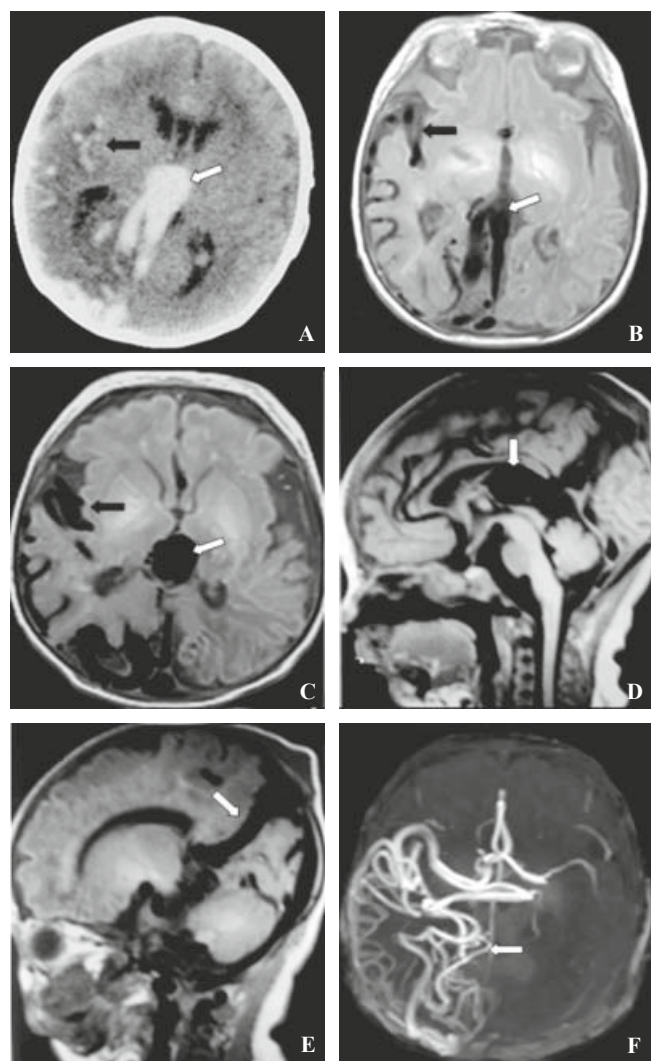


Fig. 2. Persistent falcine sinus associated with aneurysmal dilatation of the vein of Galen and arteriovenous malformation. **A:** Brain CT showing a markedly dilated vein of Galen (white arrow) and dilated vessels in the right Sylvian fissure (black arrow). **B, C, D:** Brain MRI showing dilations of the vein of Galen (white arrow) and arteriovenous malformation (black arrow) in the right hemisphere. The straight sinus is patent and has a terminal stenosis. **E:** Brain MRI showing a persistent falcine sinus (white arrow) reaching the superior sagittal sinus in its posterior third. The patent straight sinus is associated with terminal stenosis. **F:** Brain MRA showing arteriovenous malformation (white arrow).

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