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Role of imaging in the management of lateral sinus thrombosis

Keywords: lateral sinus,thrombosis,imaging

Abbreviations: LST, llateral sinus thrombosis MRI, magnetic resonance imaging; CT, computed tomography

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Introduction

Lateral sinus thrombosis (LST) is a major intracranial complication of otitis media. In preantibiotic era, prognosis was bad and it usually occurred in association with other intracranial complications.[1,2] LST occurs by following mechanisms:

i. by thrombophlebitis of the venules surrounding the external dural sinus wall

ii. by erosion of the bone over the sigmoid sinus by cholesteatoma

iii. by the infection that spreads to the sigmoid sinus through a bony dehiscence

It usually occurs as a complication of attico antral type of chronic otitis media and here direct dissemination of the infection will occur through the adjacent eroded bone. Many authors have reported lateral sinus thrombosis in patients with intact bony sinus plate. This suggests thrombophlebitic spread through the small emissary vein.[3–7] Its incidence LST is decreased because of the availability of good broad-spectrum antibiotics, availability of CT and MRI scans and micro surgical treatment. Now LST is a rare complication of otitis media. Otologist should be familiar with this clinical entity and it should be diagnosed early for good outcome.[1,8] Radiological investigations play an important role in the diagnosis of LST. Definitive diagnosis of LST is made at surgery. CT and MRI are the investigations that are needed for correct diagnosis. In LST, CT scan with contrast shows a classic 'delta sign' of perisinus dural enhancement and filling defect of the lateral sinus (Figure 1). The 'delta sign' is not always detectable in CT.In patients with LST, along with MRI, CT scan also should be done to rule out other associated extra cranial and intracranial complications of otitis media.[9–14]

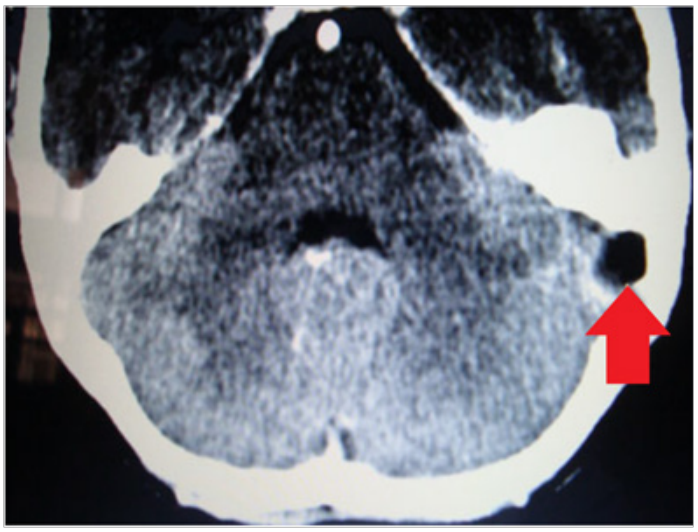

Figure 1 CT with contrast showing (arrow) absence of enhancement in the thrombosed left lateral sinus and enhancement of the dura surrounding the sinus (delta sign).

MRI is more accurate than CT in detecting the thrombus. It demonstrates blood flow and accurately shows the site of sinus obstruction (Figure 2). It also shows subsequent reversal of flow. On MRI with contrast (gadolinium), thrombus appears as soft tissue signal associated with vascular bright appearance of the dural wall. This is known as the "delta-sign" (Figure 3).[10,11,15,16] In addition, MR venography will also show the loss of signal and the absence of flow in the sinus (Figure 4). It has proven to be a valuable diagnostic tool in identifying LST.[13] In cases of LST, MRI is the investigation of choice. It should be done in along with CT, to rule out any associated otologic extracranial and intracranial complication.[16,17]

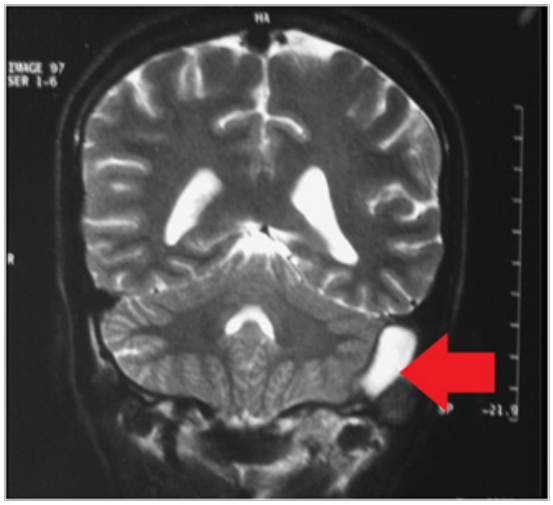

Figure 2 MRI showing (arrow) occlusion and dilatation of left lateral sinus.

Figure 3 MRI showing (arrow) post contrast enhancement of the sinus wall on the left side.

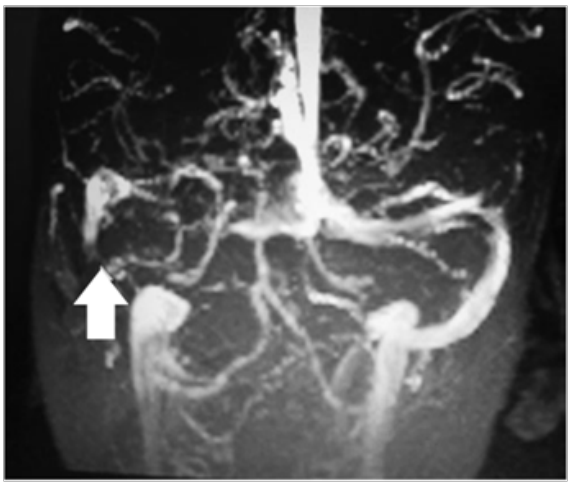

Figure 4 MRI venography showing (arrow) absence of flow in the right lateral sinus.

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None.

Conflict of interest

Author declares that there is no conflict of interest.

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