BENIGN INTRACRANIAL HYPOTENSION WITH INCIDENTAL PARASAGITTAL MENINGIOMA

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ABSTRACT

Benign intracranial hypotension, otherwise called as idiopathic intracranial hypotension is caused by CSF leaks due to disruption in spinal meninges. It is most commonly caused by disruption and leak at cervical and thoracic spine. Imaging is sometimes the most important key to the diagnosis of idiopathic intracranial hypotension, which helps in appropriate treatment of the patient. Here, we are presenting a case of benign intracranial hypotension associated with incidental parasagittal meningioma. The presence of benign intracranial hypotension was confirmed by taking MR myelogram.

KEYWORDS

Benign Intracranial Hypotension, Parasagittal Meningioma, Magnetic Resonant Imaging, MR Myelogram.

HOW TO CITE THIS ARTICLE: R. Sukumar, S. Sumathy, S. Ravichandran, E. Ezhilarasi. "Benign Intracranial Hypotension with Incidental Parasagittal Meningioma." Journal of Evolution of Medical and Dental Sciences 2015; Vol. 4, Issue 98, December 07; Page: 16392-16394, DOI: 10.14260/jemds/2015/2426

INTRODUCTION

Benign intracranial hypotension otherwise called as Idiopathic Intracranial Hypotension (IIH) is one of the poorly understood entity. Patient may present with variety of clinical symptoms, which makes the diagnosis difficult clinically. It can mimic many other CNS disease. Most of the time imaging only helps in the prompt diagnosis and hence helps the clinician in giving the correct treatment. We are presenting a case of benign intracranial hypotension with incidental finding of parasagittal meningioma. In some cases of parasagittal meningioma, intracranial hypertension have been reported.[1] But benign intracranial hypotension with parasagittal meningioma is a very rare presentation.

CASE HISTORY

A 31-year-old female came to our institute with complaints of headache and neck pain for past 2 months after trivial head trauma following a road traffic accident. Headache, which is aggravating more when standing from sitting or from sleeping posture (Postural headache). H/o projectile vomiting present for past one month. No H/o fever, giddiness, ENT infection, previous surgeries. No h/o any focal neurological deficit, seizure episodes. MRI brain plain and contrast was taken in our department. MRI shows 3.9*3*2.06 cm measuring T1/T2 isointense extra-axial lesion noted in left frontal parasagittal region (Fig. 1) compressing the left frontal lobe and abutting falx cerebri, which shows intense homogenous enhancement on T1 post contrast study (Fig. 2). No superior sagittal sinus involvement. No bony involvement. No calcification or haemorrhage. S/o left frontal parasagittal meningioma. There is e/o mild inferior displacement of mid brain with flattening of pons (Fig. 3) and effacement of suprasellar cisterns (Fig. 4). Mild degree of tonsillar herniation (Fig. 3) noted with slit like lateral ventricles. Minimal bilateral subdural fluid collection (Fig. 5) seen. Post contrast study shows mild dural thickening and enhancement (Fig. 6). No e/o significant cervical plexus enhancement noted. P/O benign intracranial hypotension to be considered.

Financial or Other, Competing Interest: None.
Submission 17-11-2015, Peer Review 18-11-2015,
Acceptance 01-12-2015, Published 07-12-2015.
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DOI:10.14260/jemds/2015/2426

One week later MR Myelogram was performed. T2 sagittal section of cervical and thorax spine shows CSF space expansion around the nerve roots with mild dilatation of root sleeves is seen on the right side of D4-D5 levels, which could represent sites of dural leak (Fig. 7). High intensity streaks are observed along extraspinal nerve bundles. Perineural cyst or meningocele are not seen. S/o leak. An epidural blood patch was performed at the level of D4 by Department of Anaesthesia (Fig. 8). and now patient has recovered from the symptoms.

DISCUSSION

Benign intracranial hypotension is caused by one or more spinal CSF leaks. Prevalence all over world estimated to be 5 per 100,000 per year.[2] In a community based study conducted in 1994, the prevalence of benign intracranial hypotension was estimated at 1 per 50,000.[2] Once it was considered as rare disorder but with the clinical symptoms and imaging, it has been considered as one of the important diagnosis of persistent headaches, particularly among the young and middle aged patients. The prevalence of the disease now increased not due to the increased incidence, but due to the prompt diagnosis by imaging. More commonly seen in females.

It is frequently misdiagnosed as the patients may present with variety of symptoms. It can be spontaneous or acquired. Mostly, sudden rupture of spinal arachnoid diverticula result in spontaneous intracranial hypotension.[3] Though spontaneous intracranial hypotension can occur at any age, it is most commonly seen in third and fourth decade.[3]

As said earlier, patient may present with variety of symptoms ranging from headache to coma. Most common symptom which leads to the suspicion of the spontaneous intracranial hypotension is orthostatic headache, i.e. patient will have severe headache when standing or sitting and will be relieved of symptoms while lying down.[4] This may be due to more leak through the tear due to gravitational force, results in more sagging down of brain stem and other pain sensitive structures results in headache. For orthostatic headache to occur, there has to be at least 10% loss of CSF through spinal leak has to occur.[3] Sometimes patient may complain neck pain/rigidity, non-orthostatic headache and occasionally visual disturbances. Other rare manifestations of spontaneous intracranial hypotension include parkinsonism, ataxia and cerebellar haemorrhage.[5] Dementia is a rare complication of spontaneous intracranial hypotension.[6]

Some causes for acquired intracranial hypotension are spinal trauma, lumbar puncture, vigorous cough, exercise, severe dehydration and some connective tissue disorders such as Marfan syndrome and Ehlers-Danlos syndrome.[3] Spontaneous intracranial hypotension is diagnosed only after all of the above secondary causes are ruled out.

Magnetic resonance imaging helps in arriving at the diagnosis without any need of invasive procedures, such as intracranial pressure monitoring. An incomplete understanding of the variability of MRI findings resulted in the diagnosis of spontaneous intracranial hypotension being excluded in patients with normal findings.[2] The imaging features of MRI characteristic of the spontaneous intracranial hypotension are, 1. Bilateral subdural hygroma, 2. Post contrast enhancement of pachymeninges, 3. Engorgement of venous structures, 4. Pituitary hyperemia and 5. Sagging of the brain (Mnemonic: SEEPS).[2]

Myelography with iodinated contrast followed by thin–cut computed tomography of the entire spine or by using gadolinium contrast in MRI can be done to accurately define the location and extent of a CSF leak. The leak may vary from a small amount of contrast tracking along a single nerve root to extensive bilateral collections of contrast within the paraspinal soft tissues.[2] The majority of CSF leaks are found at the cervicothoracic junction or along the thoracic spine. Frequently, multiple simultaneous CSF leaks are demonstrated. Delayed imaging may be required to visualize slow or intermittent leaks.

Prompt diagnosis of the spontaneous intracranial hypotension results in proper treatment, which may be simple in the form of bed rest to epidural blood patch or by spinal tear closure. Meningioma are extra-axial CNS tumours, whose association with spontaneous intracranial hypotension is very rare. Prevalence of association could not be able to be exactly ascertained.

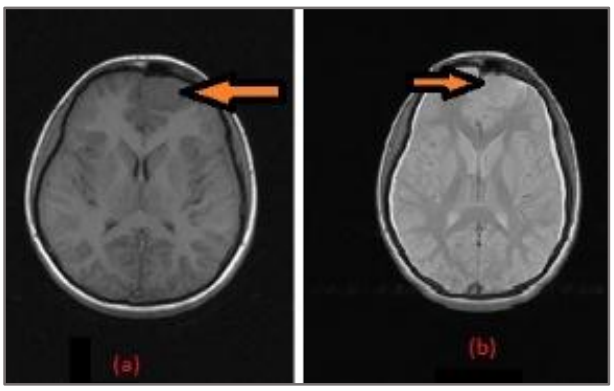

Fig. 1: (a) T1W Axial Section and (b) T2W Axial Section shows Extra Axial Mass Lesion at Left Frontal Parasagittal Region (Arrow).

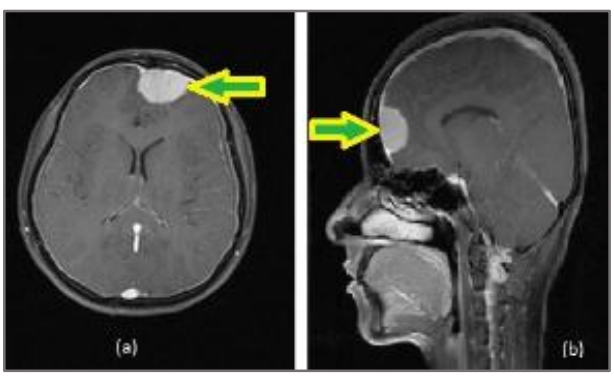

Fig. 2: (a) T1C+ Axial Section and (b) T1C+ Sagittal Section shows Homogenously Enhancing Extra Axial Parasagittal Meningioma. (Arrow).

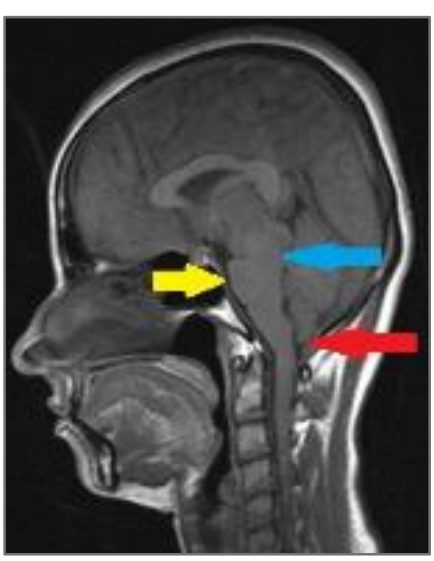

Fig. 3: T1W Sagittal Section shows (a) Sagging of Mid Brain (Blue arrow) (b) Flattening of Pons (Yellow Arrow) and (c) Tonsillar Herniation (Red Arrow).

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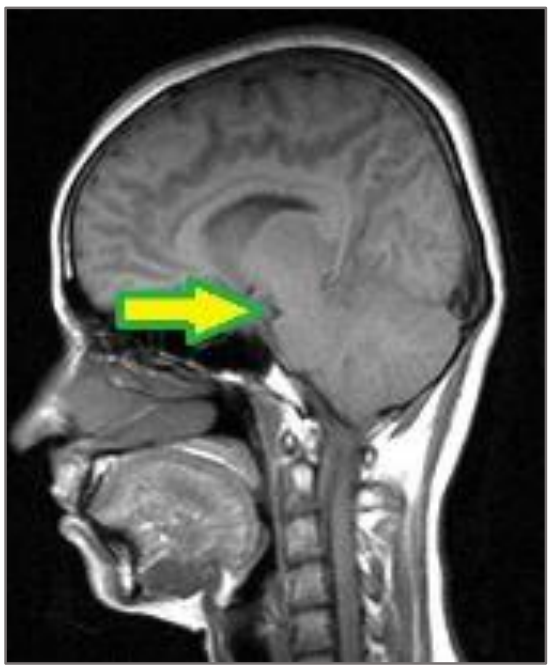

Fig. 4: T1W Sagittal Section shows Effacement of Suprasellar Cistern (Arrow)

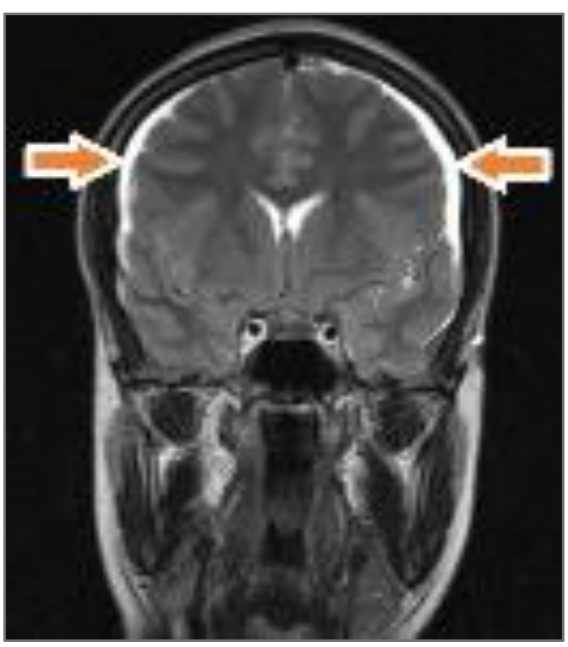

Fig. 5: T2W Coronal Section shows Mild Bilateral Subdural Collection (Arrows)

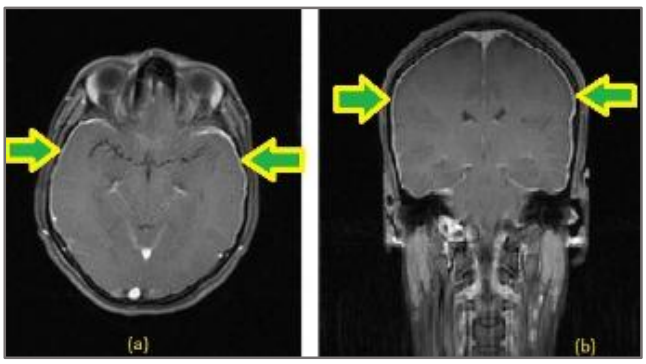

Fig. 6: (a) T1C+ Axial Section and (b) T1C+ Coronal Section shows Diffuse Enhancement of Dura (Arrows)

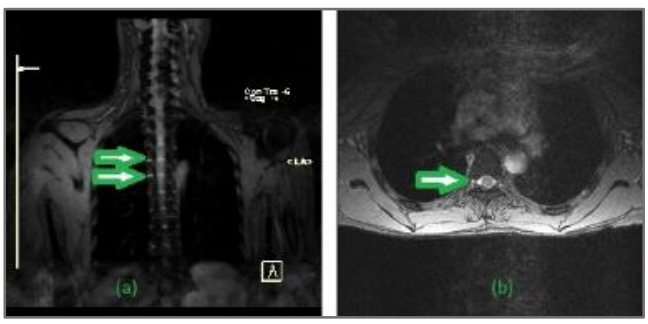

Fig. 7: (a) Shows Dural Leak in D4 and D5 Spinal Level in T2W Coronal Section (Arrows). and (b) shows Dural Leak in T2W Axial Section (Arrow).

Fig. 8: Epidural Blood Patch was being Performed at the Level of D4 for the Patient.