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MR Imaging in Unilateral Hydrocephalus in Adults

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Abstract

We present a case of a 19-year-old male who presented with history of headache and seizures of 3 years duration. There was unilateral lateral ventricle hydrocephalous. One of the two lateral ventricles was dilated. Idiopathic stenosis of foremen of Monro was found. It is one of the important causes, though it is a rare entity. Delayed clinical presentation may lead to delay in the diagnosis and thus causing delay in surgical planning if required.

Keywords

Neurology; Hydrocephalus; Tumors; Tomography

Introduction

Unilateral hydrocephalous implies to dilation of one of the lateral ventricles which may be progressive in nature resulting in compression of the cerebral nervous tissues [1,2]. Idiopathic occlusion seen at the level of foramen of Monro is the most common cause, however, underlying cause may be congenital web, haemorrhage, neoplasm, vascular anomalies, infection, trauma etc [3,4]. In this case report, we are reporting radiological features of idiopathic unilateral foramen of Monro stenosis with hydrocephalus.

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Case Report

A 19- year-old male presented to the neurology OPD with chief complaints of progressive headache and seizures for three years duration. After clinical assessment the patient was referred to our department for MRI brain and find out cause of fourth nerve palsy. We did routine MRI scan in GE 1.5 Tesla machine which included axial T1W, FLAIR, DWI, FIESTA, GRADIENT, axial and coronal T2W and T1W post contrast sequences. The MR images showed presence of uniformly dilated right lateral ventricle with peri-ventricle ooze of CSF, the rest of the ventricle system was normal. There was presence of narrowing at the level of foramen of Monro without any abnormal enhancing lesion (Fig. 1-7). Therefore, diagnosis of idiopathic unilateral right-sided foramen of Monro stenosis was made according to others [3-6].

Figure 1: MRI scan of the case in axial T1W.

Figure 2: MRI scan of the case in axial T2W.

Figure 3: MRI scan of the case in axial FLAIR.

Figure 4: MRI scan of the case in axial DWI.

Figure 5: MRI scan of the case in axial.

Figure 6: MRI scan of the case in sagittal.

Figure 7: MRI scan of the case in coronal T1W post contrast sequences.

It showed asymmetrical unilateral dilatation of right lateral ventricle without periventricular CSF seepage with normal appearance of rest of ventricular system. Stenosed right foramen of Monro with normal appearance of 3rd and 4th ventricles were noted. No abnormal enhancing lesion was seen in and around stenosed left foramen of Monro in post-gadolinium T1 weighted images.

Discussion

Imaging with magnetic resonance and computed tomography scan are important in timely diagnosis as well as in following-up cases of unilateral obstructed hydrocephalus after treatment. Though cranial neurosonogram can be helpful in perinatal period, however,

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computed tomography and MRI can more accurately detect the foramen of Monro stenosis and rule out other secondary causes of the obstruction as they provide cross sectional anatomical views [5,7-9].

The rare causes of idiopathic obstruction of foramen of Monro might be due to absence or narrowing of the foramen. In the narrowed foramen, a membrane appeared to block the normal sized foramen [10]. Our case of the present report was obviously falling in first group.

The congenital and adult variants of presentation are reported in these cases and congenital hydrocephalus which is mostly bilateral may have variable prenatal causes such as obstruction of aqueduct of Sylvius, congenital malformations of Dandy-Walker or Arnold-Chiari and infection involving the central nervous system, especially congenital toxoplasmosis and cytomegalovirus [3,9,11-13]. Hegazy and Hegazy stated that distension of brain ventricles of hydrocephalus before cranial suture closure could result in enlargement of the skull size, however, after closure such as in our case, it might press the nervous tissue resulting in neurological manifestations [1,2].

Unilateral hydrocephalus commonly due to postnatal causes such as tumors in the region of the foramen of Monro may grow in size to occlude one of the foramina and usually cause bilateral obstruction. On the other hand, infections such as intrauterine mumps infection and intraventricular hemorrhage can also lead to prenatal obstruction to the flow of CSF at the level of the foramen of Monro [3,4,6].

Conclusion

Unilateral obstructive hydrocephalous of idiopathic cause is a rare entity and potential a treatable condition in which cross-sectional imaging with magnetic resonance and computed tomography plays important role in establishing diagnosis.

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