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Case report

Unusual location of developmental venous anomaly within fourth ventricle causing obstructive hydrocephalus – A case report

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ARTICLE INFO

Article history:
Received 22 March 2015
Accepted 26 November 2017
Available online xxx

1. Introduction

Most developmental venous anomalies (DVA) are asymptomatic and found incidentally during cranial imaging exams. However, though quite rare, symptomatic DVAs with manifestation of parenchymal hemorrhage, hydrocephalus, facial spasm, trigeminal neuralgia and venous congestion show its clinical significance and should not be ignored. Herein, we presented a case with obstructive hydrocephalus owing to fourth ventricle outlet obstruction by DVA and recovered well after cerebrospinal fluid (CSF) diversion.

2. Methods

A 28-year-old female from Vietnam with a history of chronic headache came to our clinic owing to worsening of the headache and unsteady gait for 6 months. Physical examination showed papilloedema with unremarkable lab tests. Brain magnetic resonance imaging (MRI) series showed obstructive hydrocephalus with dilated lateral ventricles, third ventricle and fourth ventricle and a DVA over right cerebellar hemisphere (Fig. 1). Magnetic resonance venography (MRV) showed tortuous vascular lesion occupying the outlet of fourth ventricle, so we arranged brain digital subtracting angiography (DSA) to exclude the possibility of cavernous malformation (CM) and arteriovenous malformation (AVM). The brain DSA showed right cerebellar DVA with typical caput medusae appearance and no other related vascular lesion (Fig. 2). Engorged transmedullary veins impeded the outlet of fourth ventricle, causing subsequent obstructive hydrocephalus. After thorough examination and pre-operative preparation, ventriculo-peritoneal shunt performed 2 days later. The patient recovered well with improved headache and walked steadily without further discomfort and received regular neurosurgical clinic visit.

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https://doi.org/10.1016/j.pjnns.2017.11.011

Please cite this article in press as: Kuo K-L, et al. Unusual location of developmental venous anomaly within fourth ventricle causing obstructive hydrocephalus – A case report. Neurol Neurochir Pol (2017), https://doi.org/10.1016/j.pjnns.2017.11.011

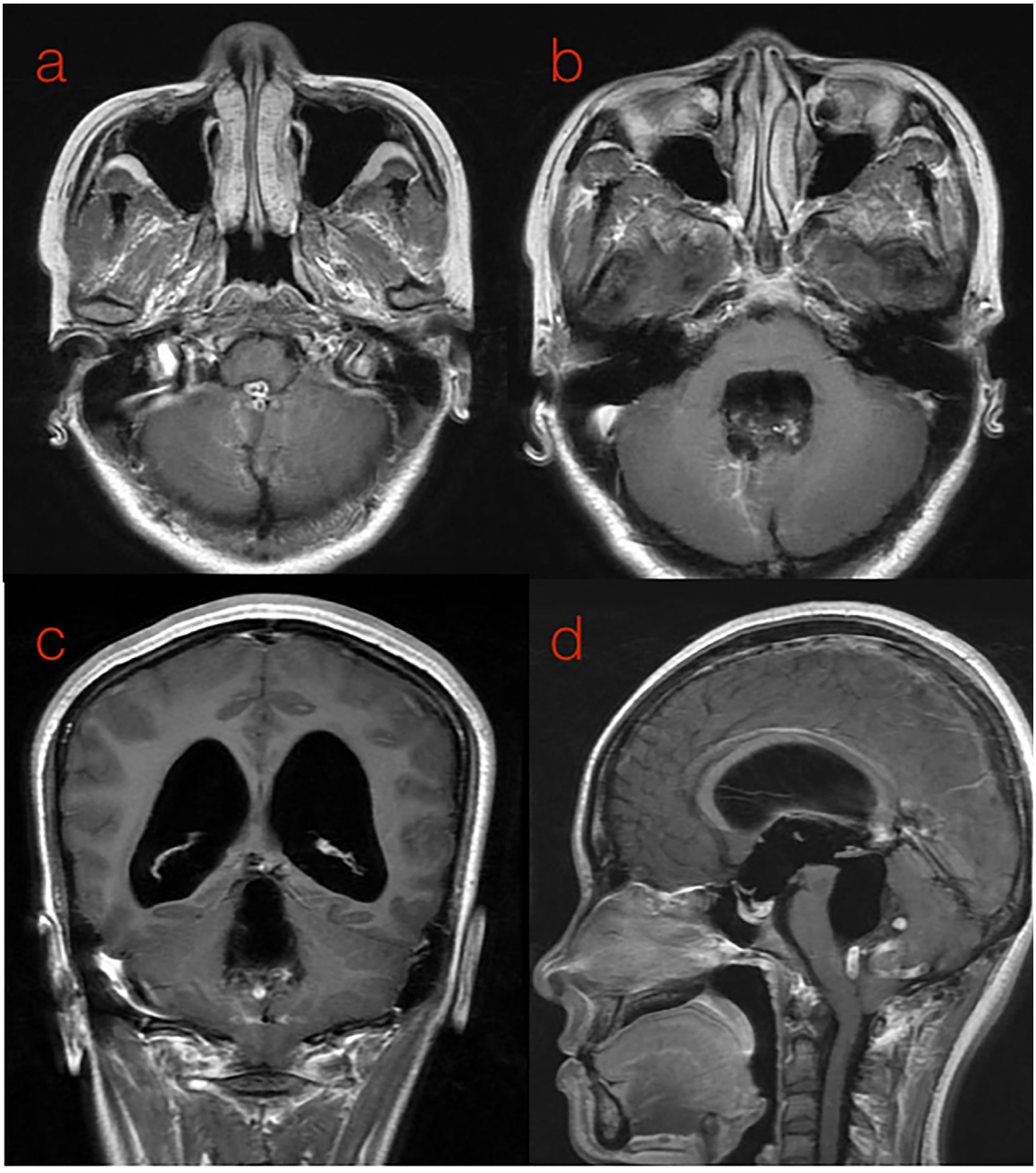

Fig. 1 – The upper column (a and b) showed contrast enhanced axial T1 weighed image, and the lower colum (c and d) showed contrast enhanced coronal and sagittal T1weighed image, separately. (a and d) Engorged and tortuous medullary veins fulfilled the outlet of fourth ventricle, at the level of occipital-cervical junction. (b–d) Diffusely dilated bilateral lateral ventricle, third ventricle, cerebral aqueduct Sylvius, and fourth ventricle, and right cerebellar developmental venous anomaly (DVA) with typical characteristics of "caput medusa" in (c).

3. Discussion

DVAs, accounting 63% of intracranial vascular malformation in autopsy series [1], are most common entity of the cerebrovascular malformation, and mostly found incidentally by brain computed tomography (CT) and magnetic resonance imaging (MRI). It is considered as a normal variation of the cerebral venous angioarchitecture rather than a pathological disease, with a cluster of transmedullary veins converging into a large caliber collecting vein, and further drain in the superficial or deep venous system after crossing the brain parenchyma. Most DVAs are asymptomatic, however, there are still complications caused by DVAs itself or accompanied vascular lesion, inclusive of parenchymal hemorrhage, venous

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