

Case Report

Third ventricle tumor with Bruns sign as the first manifestation: a case report

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Abstract: This article reported a case of a third ventricle tumor with Bruns syndrome sudden disturbance of consciousness as the first manifestation, to improve the clinician's understanding and awareness of the fatal signs. A 38-year-old healthy man was admitted to our hospital for a sudden onset coma for 2 hours. Head magnetic resonance imaging (MRI) showed midbrain aqueduct occlusion, intraductal abnormal nodule signal, considering space-occupying lesions. On the fourth day of admission, the patient was scheduled to undergo ventriculoscopic resection of the mass, but the patient had a small ventricular foramen, which was difficult to explore the posterior part of the third ventricle, and the possibility of injuring the vein was high. Finally, the third ventriculostomy was performed by ventriculoscope. 6 months later, the tumor grew slowly and the patient had no hydrocephalus.

Keywords: Bruns syndrome, third ventricle tumor, MRI

Background

Bruns syndrome is an unusual phenomenon characterized by a sudden onset of severe headaches, vomiting, and vertigo, triggered by an abrupt change in head position [1]. It is an episodic obstructive hydrocephalous caused by a remotely deformed ventricular lesion that acts like a ball-valve mechanism [2]. At present, reports related to Bruns syndrome are more common with cerebral cysticercosis [3], tumor is relatively rare. A case of third ventricle tumor with Bruns syndrome as its first symptom is reported in this paper.

Case report

A previously healthy 38-year-old man was admitted to our hospital for a sudden coma for 2 hours. Physical examination showed stable vital signs, thick breathing sounds in both lungs, no rhonchus and moist rales, heart rate was 96 beats/min, and there was no murmur in each valve auscultation area. The abdominal examination was not cooperative, the patient was in a coma, the Glasgow coma scale (GCS) score was 4 points. The bilateral pupil diameter was 5 mm and the light reflex disappeared. The

body strength of the extremities was not cooperative, no activity was found, and the reflex of the limbs was active. Both babinski signs were positive. The head computed tomography (CT) showed brain swelling and supratentorial dilatation of the ventricle (**Figure 1A, 1F**). Lumbar puncture showed clear appearance of cerebrospinal fluid (CSF) with pressure of 60 mm H₂O and there was no abnormality in routine and biochemistry examination of CSF. Head MRI showed midbrain aqueduct occlusion, abnormal signal of intraductal nodules, and space-occupying lesions were considered. Enhanced MRI showed supratentorial hydrocephalus, periventricular band interstitial edema, and increased intracranial pressure (**Figure 1B-E**). Lateral ventricular puncture drainage was refused by the patient's family members; mannitol was given to lower the intracranial pressure. On the third day of admission, the patient's consciousness was cleared up and he was able to open his eyes and complain of headache and nausea, but no vomiting. The examination showed the patient was lethargic. The GCS score was 12 points, the speech was fluent, and the reaction was slow. Bilateral frontal veins and nasolabial sulcus were symmetrical. The diameter of the bilateral pupil was 5 mm

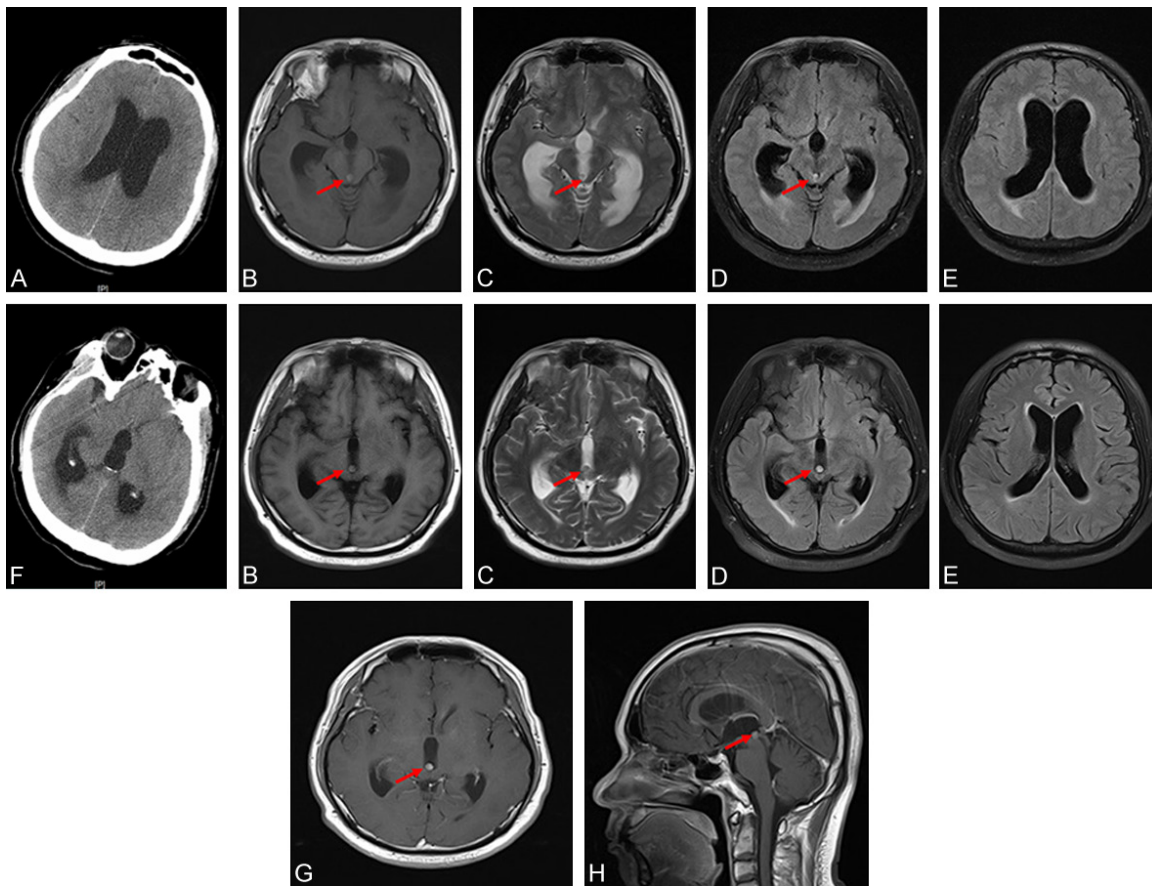


Figure 1. (A, F) Head CT showed brain swelling, lateral ventricle and the three ventricle expansion; (B) Head MRI (T1 sequence) showed the midbrain aqueduct occlusion and iso- or short T1 signal; (C) Head MRI (T2 sequence) showed the midbrain aqueduct occlusion and iso-or short T2 signal; (D) The head MRI (Flair sequence) showed the middle cerebral aqueduct occlusion and high signal on FLAIR sequences, as indicated by the arrows. (E) The head MRI (Flair sequence) showed the dilatation of the lateral ventricle. After the patient's consciousness turned clear, the reexamination head MRI showed an abnormal nodule out of the aqueduct, located at the entrance of the aqueduct (B-D) (see arrow). (E) showed that the lateral ventricular dilatation was improved from before. (G, H) The enhanced head MRI showed uniformly enhanced signals in the nodules at the entrance of the mesencephalic aqueduct (arrowhead is shown).

and the light reflex was slow. The muscle strength of the extremities was grade 4 and the tendon reflex of the extremities was active. Both Babinski signs were positive. Head MRI reexamination showed abnormal nodules at the bottom of the third ventricle and at the entrance of the aqueduct of the midbrain and gelatinous cysts were more likely to occur. Compared with the MRI results at admission, the lesion shifted from the aqueduct of the midbrain to the entrance of the aqueduct (Figure 1B-E). Enhanced MRI showed uniformly enhanced signals in the nodules at the entrance of the mesencephalic aqueduct (Figure 1G, 1H). On the fourth day of admission, the patient was scheduled to undergo ventriculoscopic

resection of the mass, but the patient had a small ventricular foramen, which made it difficult to explore the posterior part of the third ventricle, and the possibility of injury the venous was high. Finally, the third ventricle ostomy was performed by ventriculoscope. 6 months later, the tumor grew slowly and the patient had no hydrocephalus.

Discussion

Bruns syndrome is a relatively rare, urgent and fatal neurological syndrome. The severity of symptoms is related to the degree and duration of blockage of cerebrospinal fluid circulation, which can be manifested as headache, nausea and vomiting, unconsciousness or even death,

which is closely related to head activity. The first report of Bruns syndrome was closely related to the third ventricle cysticercosis [1], although third ventricle tumors can also lead to the same Bruns syndrome by similar mechanisms, but the reports are relatively rare. Bruns syndrome and its etiological diagnosis mainly depend on its typical clinical manifestations and neuroimaging. Head CT and MRI can clearly show the location of the third ventricle and its relationship with the aqueduct of the midbrain.

The patient was hospitalized with a sudden coma, lack of previous physical fitness and typical clinical manifestations of Bruns syndrome, such as paroxysmal headache, nausea and vomiting. Head CT showed obstructive hydrocephalus, third ventricle of lateral ventricle was mainly dilated, and there was no obvious expansion in the fourth ventricle. Lumbar puncture showed that the CSF pressure was not high and the possibility of midbrain aqueduct obstruction was considered. The further head MRI showed the mesencephalic aqueduct occlusion and the abnormal nodule signal in the tube. On the third day of admission, the patient's consciousness disorder was cleared. The head MRI showed that abnormal nodule moving from the midbrain aqueduct to the inlet of the aqueduct, which was consistent with the clinical and imaging manifestations of Bruns syndrome. Colloid cysts and choroidal papillomas are common in third ventricle tumors, but the latter is more common in children under 5 years of age. CT examination of colloid cysts is not specific. It can be characterized by high density, ISO density or low density shadow. MRI findings of colloid cysts showed equal or low signals, most of them are high signals. T2 sequence showed low signals or high signals. Enhanced MRI scan revealed mild lamellar enhancement of the capsule wall. The imaging features of the third ventricle occupied basically the same as those above, the possibility of colloid cysts was considered.

Emergency surgical treatment is necessary for patients with Bruns syndrome. Using a ventriculoperitoneal shunt or a temporary ventriculostomy for CSF diversion to relieve the obstruction

has been used in emergent situations [4]. The patient's family members refused ventricular puncture to relieve acute obstructive hydrocephalus and removal of the third ventricle mass was the ultimate treatment. The resection of the tumor was difficult. Finally, three ventriculostomy were performed through ventriculoscope. The prognosis was good.

Conclusion

Clinicians should be fully aware of the risk of Bruns syndrome and take early treatment measures to avoid the occurrence of malignant events.

Disclosure of conflict of interest

None.

Abbreviations

MRI, magnetic resonance imaging; GCS, glasgow coma scale; CT, computed tomography; CSF, cerebrospinal fluid.

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