Transient obstructive hydrocephalus

Obstructive hydrocephalus is a neurological emergency that needs to be immediately identified and treated. It very rarely resolves without treatment.

Epidemiology

While obstructive hydrocephalus is a relatively common and potentially life-threatening condition, transient obstructive hydrocephalus is a rare condition in adults.

Etiology

Transient obstruction of cerebrospinal fluid (CSF) flow through the ventricular system has been reported to result from systemic causes such as lead and carbon monoxide poisoning as well as CNS infections and meningitis [1)].

Previous case reports have also described spontaneous resolution of obstructive hydrocephalus after intraventricular hemorrhage (IVH) in neonates and adults.

Transient acute hydrocephalus after spontaneous intracranial bleeding in adults [2)].

Obstructive hydrocephalus with deterioration of consciousness from a ruptured arteriovenous malformation (AVM) requires urgent decompression, but also vigilance during the preoperative stage in case of rare spontaneous resolution [3)].

The acute phase in a cerebellar infarction may become complicated with transient obstructive hydrocephalus, subsequent intracranial hypertension, and the need for surgical management. Although many patients respond well to medical treatment, clinical findings and neuroimaging methods must be considered to determine whether the hydrocephalus can be surgically treated in a timely fashion.

In fourteen patients, six required surgery for hydrocephalus management. Three of the cases had an endoscopic third ventriculostomy without complications, the rest were managed conservatively. As an average, patency was re-established in the aqueduct three months post ictus.

Management of obstructive hydrocephalus in the acute phase of a cerebellar stroke must be individualized. In cases with transient obstructive hydrocephalus, endoscopic third ventriculostomy is a good surgical treatment option that avoids the risks of a long-term ventricular shunt [4)].

Case reports

2016

Two cases of transient obstructive hydrocephalus caused by obstruction of mesencephalic duct in

patients that presented with altered consciousness which resolved spontaneously in a few hours [5].

A 66-year-old male was admitted with sudden onset right-sided hemiparesia. CT demonstrated a hematoma on the left basal ganglia with extension to all ventricles. The following day, the patient's neurological status progressed to coma and developed bilateral pyramidal signs. MRI demonstrated obstructive hydrocephalus and acute diffuse infarction accompanied by elevation of the CC. On the same day there was improvement in his neurological status with significant decrease in ventricular size and complete resolution of the clot in the third ventricle. The mechanism of signal abnormalities is probably related with the neural compression of the CC against the falx. Presumably, the clot causing obstruction in the third ventricle dissolved or decayed by the help of fibrinolytic activity of CSF, which was raised after IVH and caused spontaneous improvement of hydrocephalus. Bilateral neurological symptoms suggest diffuse axonal damage and normalization of the intracranial pressure should be performed on the early onset of clinical detorioration in order to prevent axonal injury [6].

2013

A 33-year-old man with a previously diagnosed Spetzler-Martin Grade 5 arteriovenous malformation presented with severe headache, which was found to be due to IVH. Forty hours after presentation he developed significant obstructive hydrocephalus due to the thrombus migrating to the cerebral aqueduct, and a ventriculostomy placement was planned. However, shortly thereafter his headache began to improve spontaneously. Within 4 hours after onset the headache had completely resolved, and an interval head CT scan revealed resolution of hydrocephalus.

In patients with IVH, acute obstructive hydrocephalus can develop at any time after the ictus. Though a delayed presentation of acute but transient obstructive hydrocephalus is unusual, it is important to be aware of this scenario and ensure that deterioration secondary to thrombus migration and subsequent obstructive hydrocephalus do not occur [7].

Transient obstructive hydrocephalus following traumatic brain injury [8].

2012

Transient obstructive hydrocephalus by intraventricular fat migration after surgery of the posterior fossa [9].

2011

A 86-year-old man with right frontal stroke developed obstructive hydrocephalus caused by blood in the cerebral aqueduct. The patient had sudden and immediate clinical improvement and a repeated head computed tomography (CT) scan showing spontaneous resolution of hydrocephalus. Spontaneous resolution of obstructive hydrocephalus is possible when the cause is minimal blood in the cerebral aqueduct without any blood in the fourth ventricle [10].

2001

Spontaneous resolution of acute hydrocephalus without aspiration of cerebral fluid is rare. In a neonate born at full term this has only been reported once before. Abubacker et al., report on one further case that was caused by intraventricular haemorrhage (IVH). The probable mechanism is resolution of the acute haemorrhage in the region of the aqueduct, resulting in resolution of the hydrocephalus itself. The importance of considering conservative management of acute hydrocephalus in the clinically stable neonate is emphasised [11].

1997

A 64-year-old woman presented with headache. Computerized tomography (CT) scan revealed hydrocephalus with tiny blood clots in the left foramen of Monro and in the aqueduct. Six hours after the onset, the signs and symptoms disappeared spontaneously. The second CT showed improvement of the hydrocephalus with migration of the clot into the i.v. ventricle. Aqueductal trapping and releasing of the clot formed by bleeding from the choroid plexus located in the left foramen of Monro was suspected for the origin of the transient hydrocephalus [12].

1993

Acute transient hydrocephalus in carbon monoxide poisoning: a case report [13].

1990

In the Sultanate of Oman acute lead encephalopathy in neonates is common. Brain oedema in acute lead encephalopathy occurs predominantly in the cerebellar vermis and may act as a midline posterior fossa mass, occluding the fourth ventricle. The resultant transient obstructive hydrocephalus may need emergency drainage of cerebro-spinal fluid. The hydrocephalus is transient as vermis oedema subsides with medical treatment. Two such cases are reported and discussed [14].

1982

Spontaneous resolution of acute hydrocephalus. A case report [15].

1981

One and a half years old boy was admitted with vomiting and somnolence four days after head injury. The first CT scans taken on admission showed high density areas in the prepontine and ambient cisterns and in the aqueduct. The lateral and third ventricles were dilated, while the fourth ventricle was normal. On the 2nd hospital day he was nearly asymptomatic. The second CT scans done seven days after injury no longer revealed the high density areas and the ventricular dilatation. Vomiting is one of the most important signs for intracranial mass lesions after head injury. But children often vomit even without having mass lesions, and CT scan is useful for evaluation of such cases. In our

case, vomiting was probably due to aqueductal obstruction by a small clot resulting acute hydrocephalus, as revealed by CT scans. This case suggested that transient obstructive hydrocephalus must be taken into consideration as one of causes for posttraumatic vomiting [16].

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