Case report

A 42-year-old man with no significant past medical history was admitted to the emergency room with a complaint of severe headache and nausea for the last 24 hours. Lower limbs weakness was noted upon physical examination.

A non-contrast followed by a contrast-enhanced computed tomography (CT) examination of the head was performed (Fig. 1 and 2) and revealed severely dilated lateral and third ventricles, with an Evans’ index estimated at 0.42, effacement of cortical sulci over the convexity and periventricular halo-shaped hypodensity. Sylvius aqueduct was found to be also enlarged, but the fourth ventricle appeared within normal limits. No mass or other density abnormality was seen.

These findings were in keeping with chronic hydrocephalus related to the major enlargement of the lateral and third ventricles and signs of cerebrospinal fluid (CSF) transependymal resorption, in acute decompen-sation, presenting with intracranial hypertension symptoms.

The patient underwent emergent right ventricular catheterization with a subcutaneous Rickham’s reservoir as to relieve the acute symptoms.

Etiologic workup performed a few days later comprised a CT ventriculography with injection of a watersoluble contrast medium (Omnipaque 240, GE Healthcare) through the Rickham’s reservoir (Fig. 3 and 4) and a magnetic resonance imaging (MRI) including time-of-flight, gradient echo and flow-sensitive sequences (Fig. 5 and 6).

It revealed a Sylvius aqueduct stenosis by a membrane-like obstacle at its junction with the 4th ventricle. The tectal plate is displaced posteriorly, as typically seen in distal aqueduct stenosis (1).

Moreover, these post-surgical head examinations showed significant re-enlargement of cortical sulci and decreased third ventricle floor bulging, accounting for diminished intracranial pressure and treatment success.

Opacification of the 4th ventricle during ventriculography demonstrates permeability of the membra-nous obstacle, at least when ventri-cles are in a less dilated state.

MRI ruled out other local abnormalities; especially there was no evidence of vascular pathologies, tumors or signs of micro-bleeds. CSF flow through the Sylvius aqueduct after ventricular derivation is shown to be non hyperdynamic as suggest-ed by the absence of flow void on the sagittal T2w images and the absence of flow intensity on the flow-sensi-tive sequence.

The patient fared well and under-went an endoscopic third ventricul-ocysternostomy a few weeks later with no early complications.

Discussion

Sylvius aqueduct is the most common site of blockade of CSF flow through the ventricles (1).
Presentations of benign aqueduct stenosis in adulthood is not infrequent (2) and constitutes the first cause of obstructive hydrocephalus in adults (3).

Differential diagnosis may be classified into primary and secondary causes. Secondary causes encompass extrinsic space occupying lesions while primary causes are intrinsic lesions of the aqueduct and have been classified by Russell into four types (1): stenosis (normal aqueduct cells within one abnormally narrow aqueduct), forking (division into two or more channels), gliosis (reaction to injuries such as infection, hemorrhage or toxins) and membranous occlusion.

The latter is usually distally located and is formed by a gliotic membrane. Our patient had no history of congenital infection, meningitis or subarachnoid hemorrhage. MRI
We presented a case of chronic hydrocephalus discovered in adulthood through an episode of acute decompensation. Multimodal imaging revealed the cause of this hydrocephalus to be a membranous septum of the aqueduct of Sylvius, a condition for which few reports exist.

We think that partial permeability of the membrane and compensation mechanisms explain the late presentation of the patient, with no previous obvious symptoms. The acute episode is likely to be due to functional worsening of the obstacle by ventricular deformation.

### References