Arnold–Chiari malformation

A 65-year-old man, with a past medical history of appendicectomy and bowel resection for volvulus, presented with a 2-day history of acute abdominal pain. The patient was diagnosed as having small bowel obstruction secondary to adhesion which did not settle with conservative management. He required a laparotomy, adhesiolysis and resection of 2 inches of small bowel. Five days after his laparotomy, he suffered a brief episode of loss of consciousness, so a computed tomography scan and subsequent magnetic resonance imaging scan of the head were performed.

The computed tomography scan of the head (*Figure 1*) demonstrated hydrocephalus with severe dilatation of the lateral, third ventricles and temporal horns. There is no periventricular oedema suggesting that this is longstanding hydrocephalus.

The magnetic resonance imaging scan also demonstrated hydrocephalus (*Figure 2*), with dilatation of the lateral, third ventricles and temporal horns. The fourth ventricle is not dilated. Similar to the computed tomography scan, there is no periventricular oedema, suggesting that this is longstanding hydrocephalus. Thickening of the mucosa of the maxillary and frontal sinuses is seen suggesting sinusitis. There is no herniation of the cerebellar tonsils into the foramen magnum. Severe hydrocephalus in this case is probably caused by aqueduct stenosis, also known as Arnold–Chiari malformation. The case was discussed with neurosurgeons and no surgery was recommended at that time.

Hydrocephalus is an excess accumulation of CSF in the ventricles of the brain. It may be classified as congenital or acquired, and communicating or non-communicating. In the communicating type there is a disparity between secretion and absorption of CSF. Arnold–Chiari malformation is one type of congenital hydrocephalus. There are four types of Arnold–Chiari malformation based upon the associated anatomical abnormalities.

The increase in CSF pressure may compress the brain and brainstem, which are enclosed with in the fixed volume skull. Hydrocephalus manifests as headache, vomiting, blurring of vision, urinary incontinence and may affect the gait. There may be papilloedema on fundal examination. Ultrasound, computed tomography and magnetic resonance imaging all are used in the diagnosis, although ultrasound is used only in the newborn. Ventriculoperitoneal shunt (Rajshekhar, 2009) and third ventriculostomy (Kulkarni et al, 2010) may be used to relieve the pressure of hydrocephalus. BJHM

Mr Rajaraman Durai *is Specialist Registrar in General Surgery,* **Dr Carl Fernandes** *is Foundation Trainee in General Surgery and* **Mr Philip CH Ng** *is Consultant in General Surgery in the Department of Surgery, University Hospital Lewisham, London SE13 6LH*

Correspondence to: Mr R Durai

Kulkarni AV, Hui S, Shams I, Donnelly R (2010) Quality of life in obstructive hydrocephalus: endoscopic third ventriculostomy compared to cerebrospinal fluid shunt. *Childs Nerv Syst* **26**(1): 75–9

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Figure 1. Transverse computed tomography scan of the head demonstrating hydrocephalus.

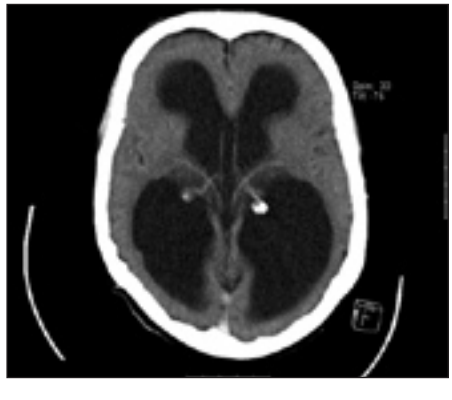

Figure 2. Sagittal magnetic resonance imaging scan demonstrating hydrocephalus.