Arrested hydrocephalus treated with third ventriculostomy

Jennifer Hong MD; David F. Bauer MD; Benjamin Barrena B.A.; Stuart Scott Lollis MD
Dartmouth-Hitchcock Medical Center, Department of Surgery, Division of Neurosurgery
Lebanon, NH

Introduction

Arrested hydrocephalus is defined as stable ventriculomegaly without evidence of neurologic deterioration or symptoms. Management of arrested hydrocephalus in asymptomatic adults is controversial with little clinical data. This case report highlights the potential for decompensation in adults with arrested hydrocephalus and reviews the literature to date regarding pathophysiology and management of this clinical entity.

Methods

Case report.

Results

A 39 year-old gentleman with arrested hydrocephalus incidentally found during work-up for new-onset seizure and managed conservatively for ten years presented with increasing headache, memory loss, gait instability and urinary incontinence. Stable massive triventriculomegaly was documented on serial brain imaging, and ophthalmologic exam was negative for papilledema. After discussion of the benefits and risks of ICP monitoring, versus ventriculo-peritoneal shunting versus endoscopic third-ventriculostomy (ETV), the patient chose to undergo ETV. The patient underwent endoscopic third ventriculostomy without complication with post-operative improvement of headache and cognitive symptoms.

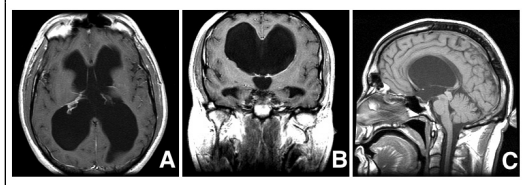
Discussion

Adults diagnosed with incidentally discovered arrested hydrocephalus are rare and can be challenging to manage. Very little is known abut the epidemiology, presentation and natural history of arrested hyrocephalus and it is not clear in many cases whether the ventriculomegaly is congenital or acquired. When and how best to treat these patients is a point of controversy. Our review of the literature revelaed that long-standing overt ventriculomegaly of adulthood (LOVA), although generally perceived as benign, can result in subtle cognitive and neurpsychological decline and even sudden death. Treatment of the hydrocephalus with ventriculo-peritoneal shunting or endoscopic third ventriculostomy can result in improvement of neuropsychologic testing results.

Conclusions

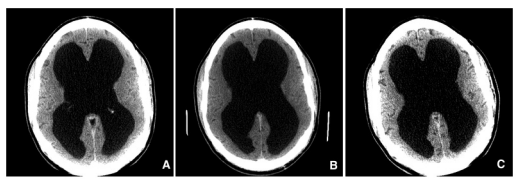
Early recognition of arrested hydrocephalus and its potential for decompensation may prompt more aggressive surgical treatment and prevent neurologic deterioration.

Pre-operative imaging demonstrating venticulomegaly with acqueductal stenosis



A. Axial T1 weighted MRI B. Conoral T1-weighted MRI C. Saggital T1-weighted MRI

Stable ventriculomegaly over a 9-year period



A. Head CT at presentation B. Head CT 2 years after presentation C. Head CT 9 years after initial presentation

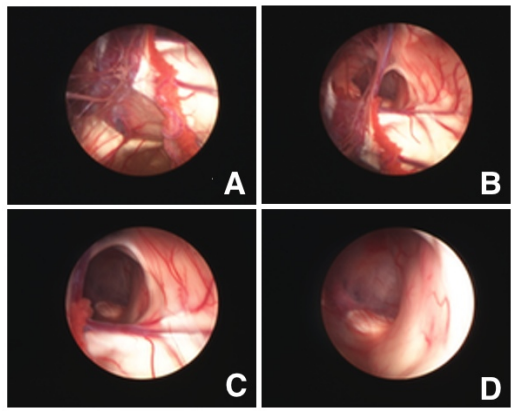
References

Al-Jumaily M, Jones B, Hayhusrt C, Jenkinson MD, Murphy P, Buxton N et al: Long term neuropsychological outcome and management of 'decompensated' longestanding overt ventriculomegaly in adults. **Br J Neurosurg 26:**717-721. 2012

Larrson A, Stephensen H, Wikkelso C: Adult patients with "asymptomatic" and "compensated" hydrocephalus benefit from surgery. **Acta Neurol Scand 99:** 81-90, 1999

Tisell M, Hellstrom P, Ahl-Borjesson G, Barrosws G, BLomsterwall E, Tullberg M et al: Long-term outcome in 109 adult patients operated on for hydrocephalus. **Br J Neurosurg 20:**214-221, 1006

Intra-operative images from third ventriculostomy



A. Tattered sail appearance of septum pellucidem B. Right foramen of Monro C. Closer look at right foramen of Monro C. Floor of the third ventricle

Learning Objectives

By the conclusion of this session participants should be able to

1. Define arrested hydrocephalus

2. Understand the presentation of decompensated arrested hydrocephalus

3. Understand the treatment options for arrested hydrocephalus