Arrested hydrocephalus

see also: Longstanding overt ventriculomegaly in adult.

For some autors Arrested hydrocephalus is an asymptomatic condition with non-progressive ventriculomegaly, and compensated hydrocephalus is a symptomatic condition, with non progressive hydrocephalus ¹⁾.

'Arrested' hydrocephalus is said to have occurred when the intracranial pressure (ICP) returns to normal, despite the ventricles remaining dilated. The CSF absorption appears to have balanced production. In the infant, normal development resumes but any pre-existing damage remains.

Arrested hydrocephalus probably results from improvement of CSF circulation during growth. Although a generally accepted condition, its mode of onset, its presence in a given patient, and time required to establish the absence of progressive hydrocephalus have not been defined.

Complete spontaneous "arrest" of hydrocephalus occurs only rarely in infancy.

Etiology

Spontaneous arrest of hydrocephalus occurs most likely when the CSF obstruction is incomplete and when the block is distal (subarachnoid space) rather than proximal (intraventricular).

In about 10 percent of adults with hydrocephalus, aqueductal stenosis is the cause.

It is also possible that the increased expression of AQP4 seen in the 8-week-old hH-Tx animals was related to the development of alternative pathways of CSF circulation, which also may occur in instances of spontaneously arrested hydrocephalus².

Clinical features

Hydrocephalus symptoms that may come on gradually over time include:

Trouble walking, standing or balancing (gait)

Trouble remembering things or identifying familiar objects (cognition)

Trouble controlling your bladder (urinary incontinence)

Some patients also complain of headaches or dizziness, or problems with their eyesight.ç

Treatment

Garg et al., present the anaesthetic management of a child with arrested hydrocephalus along with CVJ anomaly leading to compression of cervicomedullary junction and myelopathy scheduled for decompression and fixation of craniovertebral junction.

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Case series

1978

Five patients with ostensibly arrested hydrocephalus due to: aqueductal stenosis, communicating hydrocephalus, and Dandy Walker malformation. In a period ranging from 4 to 13 years, they presented clinical signs of decompensation with intracranial hypertension. One had never had a shunt procedure. Another two were performing well in school until they suddenly deteriorated. The diagnosis of arrested hydrocephalus requires close follow-up well into adolescence, with periodical neurological and psychomotor evaluations. Sequential observation of the ventricular size with computed tomography (CT) is recommended ³⁾.

1977

Out of 60 consective cases with hydrocephalus of pediatric age group, 8 cases were found to be socalled "compensated" hydrocephalus and their clinical features were reported. "Compensation" of hydrocephalus in this cases was probably induced by increased ventricular absorption of cerebrospinal fluid since moderate to severe ventricular dilatation was present in all cases. Such "compensation" of hydrocephalus is apparently made at the expense of normal development of the brain function. Therefore, such "compensation" of hydrocephalus is not the condition to be aimed for, but to be avoided for preservation of normal brain function. In order to prevent such "compensation" of hydrocephalus, shunt function should be followed carefully especially in those whose initial shunts were placed at older age, and in whom symptoms of increased intracranial pressure were not so apparent before the initial shunt-placement. Further treatment for hydrocephalus was considered to be necessary in this cases since unrolling of the anterior cerebral artery was invariably present. Unrolling of the anterior cerebral artery was found even in such cases whose cerebrospinal fluid pressure was normal, head circumference did not show any increase, and IQ test was normal. In one case, "compensated" hydrocephalus became later "decompensated" with apparent signs of increased intracranial pressure. Other supplementary tests for cerebrospinal fluid dynamic such as saline infusion test or RISA cisternography were also discussed ⁴⁾.

1975

In suitable cases, intermittent cranial compression by means of an elastic bandage or a helmet with an inflatable inner-lining may be effective. There was arrested hydrocephalus in nine of 14 children treated with this method, eight of whom have developed normally. When cranial compression is contra-indicated or not successful, the preferred method of treatment is an 'on-off' type of valve which is used intermittently to drain a fixed volume of cerebrospinal fluid. Of 18 children who had such shunts inserted, 10 have become totally independent of their shunts and their hydrocephalus has become compensated. All are of normal intelligence. Subtemporal craniectomy was performed on seven shunt-dependent children with recurrent catheter obstruction. Four have been followed for six months and three for two years and in no case has there been further malfunction of the proximal catheter ⁵.

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Case reports

A 6-year-old girl with arrested hydrocephalus presented with a recent history of difficulty in walking despite no antecedent trauma or infection. An examination revealed macrocrania and features of cervical myelopathy, and magnetic resonance (MR) imaging revealed panventriculomegaly with evidence of the presyrinx state on both T1- and T2-weighted images of the cervical spine. The patient underwent a procedure to insert a ventriculoperitoneal shunt that used a mediumpressure system. After the shunt was inserted, the patient's myelopathic symptoms gradually improved over a period of 6 months. Postoperative MR images obtained 1 year later revealed decompression of the ventricular system and complete resolution of the presyrinx state in the cervical spinal cord. Decompensation in arrested hydrocephalus is a well-known phenomenon. This case illustrates the concept that the presyrinx state may be one of the manifestations of decompensated arrested hydrocephalus. The importance of early recognition of this condition and its implications for the pathogenesis of syringomyelia are discussed ⁶.

Di Rocco C, Caldarelli M, Maira G, Rossi GF. The study of cerebrospinal fluid dynamics in apparently arrested hydrocephalus in children. Childs Brain. 1977;3(6):359-74. PubMed PMID: 303979.

http://www.thamburaj.com/hydrocephalus.htm

Shen XQ, Miyajima M, Ogino I, Arai H. Expression of the water-channel protein aquaporin 4 in the H-Tx rat: possible compensatory role in spontaneously arrested hydrocephalus. J Neurosurg. 2006 Dec;105(6 Suppl):459-64. PubMed PMID: 17184078.

James HE, Schut L. Pitfalls in the diagnosis of arrested hydrocephalus. Acta Neurochir (Wien). 1978;43(1-2):13-7. PubMed PMID: 707170.

Osaka K, Hirayama A, Yamasaki S, Asada M, Matsumoto S. ["Compensated hydrocephalus" (author's transl)]. No Shinkei Geka. 1977 May;5(5):437-43. Japanese. PubMed PMID: 559956.

Epstein FJ, Hochwald GM, Wald A, Ransohoff J. Avoidance of shunt dependency in hydrocephalus. Dev Med Child Neurol Suppl. 1975;(35):71-7. PubMed PMID: 812752.

Muthukumar N, Venkatesh G, Thiruppathy S. Arrested hydrocephalus and the presyrinx state. Case report. J Neurosurg. 2005 Nov;103(5 Suppl):466-70. PubMed PMID: 16302623.

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