AMERICAN Journal of Pediatric Medicine and Health Sciences
*Volume 03, Issue 01, 2025 ISSN (E): 2993-2149*

# DIAGNOSTIC FEATURES OF BLAKE'S POCKET CYST

**Juraev Anvar Mamatmurodovich**
Assistant of the Department of Neurosurgery, Samarkand State Medical University

## Abstract
*Blake's pouch cyst is a cystic structure that is the posterior inferior cerebellar velum protruding into the cisterna magna occipitalis communicating with the fourth ventricle without obstructing it.*

Keywords: **epileptic seizures, severe traumatic brain injury.**

**Relevance.** In embryogenesis, Blake's pouch is a transitional finger-shaped protrusion of the posterior membrane space of the roof of the fourth ventricle. Initially, it is a closed cavity with an ependymal lining. Its connection with the subarachnoid space is formed starting from the 7th or 8th week and up to the 4th month of pregnancy. It is in Blake's pouch that the foramen of Magendie is formed. The absence of regression of Blake's pouch is a phenomenon secondary to atresia of the foramen of Magendie. The pathology is accompanied by an enlargement of the fourth ventricle and the supratentorial part of the ventricular system. Expansion of the ventricular system occurs up to the opening of the foramina of Luschka, which appear at the end of the 4th month of pregnancy [1, 2].

**Methods:** A detailed assessment of the cerebellar vermis can be performed using the midsagittal scanning plane [3]. This plane can be used to assess the vermis size [4]. Measuring the cerebellar vermis size is necessary if there is a suspicion of such abnormalities in the development of the posterior cranial fossa structures as hypoplasia, partial agenesis of the cerebellar vermis, or Blake's pouch cyst. Obtaining this plane is not always possible when performing an ultrasound examination in two-dimensional echography (2D) mode, since obtaining this plane can be difficult due to the position of the fetus. Using the three-dimensional reconstruction mode (3D) allows obtaining the midsagittal plane regardless of the initial position of the fetus [5]. With multiplanar reconstruction, fetal brain structures can be assessed simultaneously in three mutually perpendicular planes, both at any level and in any direction. In some cases, obtaining the midsagittal plane using the 3D mode takes less time than using only the 2D mode [6]. Moreover, the numerical values of the size of the cerebellar vermis do not depend on the method by which the image was obtained [7]. The midsagittal plane using volumetric echography can be obtained using both the multiplanar reconstruction mode and the VCI mode, a volume contrast imaging mode that increases contrast resolution in the scanning plane. Hydrocephalus (HC) is usually understood as an increase in the volume of the cerebral ventricles due to impaired cerebrospinal fluid (CSF) movement [8,9]. The etiology of HC varies and is usually established during the collection of the patient's anamnesis and its assessment, and analysis of neuroimaging data. In situations where the cause of HC cannot be established, it is considered idiopathic, i.e. the cause of the disease is unknown [10]. Diagnostic criteria for adult idiopathic hydrocephalus (AIH): 1) the onset of symptoms in adults (aged 18 years and older) who previously considered themselves healthy; Siberian Medical Review. 2021;(1):20-33 Adult idiopathic hydrocephalus: current state of the problem Shevchenko K. V., Shimansky V. N., Tanyashin S. V. et al. 21 2) no indications of the etiology of HC (tumor, subarachnoid hemorrhage, traumatic brain injury, neonatal intraventricular hemorrhage, meningitis, encephalocele or meningomyelocele, as well as no indications of congenital HC). The relationship between the cause of HC, the morphological substrate causing obstruction, and the diagnosis are shown in the figure. About 80% of CSF is produced by the choroid plexuses of the cerebral ventricles. 20% of the CSF composition is water, which is formed as a result of glycolysis and released from brain tissue [4]. Resorption of cerebrospinal fluid is carried out by arachnoid granulations falling into the venous sinuses of the brain, as well as by lymphatic vessels in the cuffs of the roots of spinal nerves. The distribution of the volumes of CSF absorption along these two pathways has not been unambiguously established [5]. The functions of cerebrospinal fluid are: protection of the brain from mechanical effects, maintenance of water-electrolyte homeostasis and intracranial pressure. One of the important functions of CSF is cleansing. The products of metabolism occurring in the brain and contributing to damage to brain tissue are excreted with cerebrospinal fluid [6, 7]. The significance of this link in pathogenesis is quite great, since its elimination is possible only by performing cerebrospinal fluid shunting operations (CSF) [4]. Classification of hydrocephalus The classification of HC developed simultaneously with the methods of diagnosis and treatment of the disease. In 1919, W. Dandy discovered and described the choroid plexus of the lateral ventricles of the brain as the main anatomical structure producing CSF. Later, having assessed the possibility of penetration of the contrast agent injected into the ventricles of the brain into the spinal subarachnoid space (SAS), he divided the vascular plexus into "communicating" and "non-communicating", or "occlusive" and "non-occlusive" [8]. In 1960, Ransohoff, in experimental "communicating" vascular plexus in animals, found obstacles to the flow of cerebrospinal fluid in all cases. He was the first to propose the term "extraventricular" obstructive vascular plexus, which he used to denote the obstruction of cerebrospinal fluid pathways outside the ventricular system of the brain.

**1. Blake's pouch cyst**

Modern tactics of treating CCM are to relieve various symptoms of the disease without clearly justified pathogenetic therapy. Often, gross structural changes in the central nervous system revealed by MRI and an unfavorable prognosis in general lead to the refusal of any form of palliative care for such patients. However, our observation shows that performing operations aimed at improving cerebrospinal fluid dynamics in patients with arachnoid cysts and CDU against the background of CCM can contribute to a significant regression of neurological symptoms and an improvement in the quality of life, despite the gross structural changes in the brain revealed by MRI. The neuroradiological characteristics of the well-known "idiopathic normal pressure hydrocephalus" (INPH) were described by Kitagaki in 1998. Using magnetic resonance imaging (MRI) with volumetry, the authors described the widening of the lateral (Sylvian) fissures of the brain and individual grooves on the convexital surface of the cerebral hemispheres with simultaneous compression of the SAP in the region of the superior sagittal sinus and in the interhemispheric fissure. This phenomenon was associated with SAP obstruction distal to the Sylvian fissures [10]. Subsequently, the SYNPHONI study showed the high prognostic significance of this symptom, its importance in the diagnosis of INPH. The symptom was called "disproportionately enlarged subarachnoid spaces hydrocephalus" (DESH) [3]. Classification of hydrocephalus helps to determine the indications and choose the treatment method. The most important classifying features of hydrocephalus are the etiology of the disease and the level of obstruction of the cerebrospinal fluid pathways [2]

**Conclusion:** Analysis of world literature has shown that there are many anomalies in the development of the brain, which in turn requires their identification.

**References**


1. Mori K, Shimada J, Kurisaka M, Sato K, Watanabe K. Classification of hydrocephalus and outcome of treatment. Brain Development. 1995;17(5):338-48.

2. Rekate HL. Th e definition and classification of hydrocephalus: a personal recommendation to stimulate debate. Cerebrospinal Fluid Research. 2008;(5):2. DOI: 10.1186/1743-8454-5-2

3. Mori E, Ishikawa M, Kato T, Kazui H, Miyake H, Miyajima M, Nakajima M, Hashimoto M, Kuriyama N, Tokuda T, Ishii K, Kaijima M, Hirata Y, Saito M, Arai H; Japanese Society of Normal Pressure Hydrocephalus. Guidelines for management of idiopathic normal pressure hydrocephalus: second edition. Neurologia Medico-chirurgica (Tokyo). 2012;52(11):775-809.

4. Rigamonti D. Adult hydrocephalus. 2014:344.

5. Johnston M, Zakharov A, Papaiconomou C, Salmasi G, Armstrong D. Evidence of connections between cerebrospinal fluid and nasal lymphatic vessels in humans, non-human primates and other mammalian species. Cerebrospinal Fluid Research. 2004;1(1):2.

6. Tarnaris A, Watkins LD, Kitchen ND. Biomarkers in chronic adult hydrocephalus. Cerebrospinal Fluid Research. 2006;(3):11.

7. Tarnaris A, Kitchen ND, Watkins LD. Noninvasive biomarkers in normal pressure hydrocephalus: evidence for the role of neuroimaging. Journal of Neurosurgery. 2009;110(5):837–51.

8. Dandy WE. Experimental hydrocephalus. Annals Surgery. 1919;70(2):129-42.

9. Li J, McAllister JP, Shen Y, Wagshul ME, Miller JM, Egnor MR, Johnston MG, Haacke EM, Walker ML. Communicating hydrocephalus in adult rats with kaolin obstruction of the basal cisterns or the cortical subarachnoid space. Experimental Neurology. 2008;211(2):351-61. DOI: 10.1016/j.expneurol.2007.12.030

10. Kitagaki H, Mori E, Ishii K, Yamaji S, Hirono N, Imamura T. CSF spaces in idiopathic normal pressure hydrocephalus: morphology and volumetry. American Journal of Neurorad