Low-pressure hydrocephalus

- Unveiling the Possibility of Subclinically Present Congenital Hydrocephalus Triggered by Thalamic Hemorrhage in Late-onset Years: A Case Report
- Idiopathic Normal-Pressure Hydrocephalus Revealed by Systemic Infection: Clinical Observations of Two Cases
- Postoperative changes in ventricular cerebrospinal fluid biomarkers with correlation to clinical outcome in idiopathic normal pressure hydrocephalus
- Low- and negative-pressure hydrocephalus in children, clinical features, treatment, prognosis and proposed mechanisms
- Deformation of brain in normal pressure hydrocephalus is more readily associated with slow vasomotion rather than heartbeat related pulsations of intracranial pressure
- Implications of the glymphatic system in the diagnostic and surgical workup of normal pressure hydrocephalus
- Instrument-supported gait analysis characterizes gait domain changes in patients with suspected normal pressure hydrocephalus
- Risk analysis index-measured frailty as a critical predictor of outcomes in patients with non-normal pressure hydrocephalus undergoing first-time shunt surgery: A nationwide study

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Low- or very-low-pressure hydrocephalus is a serious and rare phenomenon, which is becoming better known since it was first described in 1994 by Pang and Altschuler. Forced drainage at negative pressures can, in most cases, restore the ventricles to their original size, thus achieving neurological recovery.

Godoy Hurtado et al. from the Department of Neurosurgery, Jaén present six new cases that suffered this syndrome from 2015 to 2020: two of them after medulloblastoma surgery; a third one as a consequence of a severe traumatic brain injury that required bifrontal craniectomy; another one after craniopharyngioma surgery; a fifth one with leptomeningeal glioneuronal tumor; and, finally, a patient carrier a shunt for normal pressure hydrocephalus diagnosed ten years before. At the moment of development of this condition, four of them had mid-low-pressure cerebrospinal fluid shunts. Four patients required cerebrospinal fluid (CSF) drainage at negative pressures oscillating from zero to -15 mmHg by external ventricular drainage until ventricular size normalized, followed by the placement of a new definitive low-pressure shunt, one of them to the right atrium. The duration of drainage in negative pressures through external ventricular drainage (EVD) ranged from 10 to 40 days with concomitant intracranial pressure monitoring at the neurointensive care unit. Approximately 200 cases of this syndrome have been described in the literature. The causes are varied and superimposable to those of high-pressure hydrocephalus. Neurological impairment is due to ventricular size and not to pressure values. Subzero drainage is still the most commonly used method, but other treatments have been described, such as neck wrapping, ventriculostomy of the third ventricle, and lumbar blood patches when associated with lumbar puncture. Its pathophysiology is not clear, although it seems to involve changes in the permeability and viscoelasticity of the brain parenchyma together with an imbalance in cerebrospinal fluid circulation in the craniospinal subarachnoid space [1)].

Godoy Hurtado et al. present an informative case series that contributes to the growing awareness and understanding of LoVLPH. Their emphasis on forced CSF drainage as a primary treatment aligns with current practices, but further clarity is needed on the pathophysiology, long-term outcomes, and standardized diagnostic approaches. Future research should focus on larger cohort studies with extended follow-up to better delineate prognosis and refine treatment protocols. Despite its limitations, this study serves as a valuable addition to the literature and highlights the need for continued investigation into this rare but clinically significant condition.

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Godoy Hurtado A, Barstchi P, Brea Salvago JF, Al-Ghanem R, Galicia Bulnes JM, El Rubaidi O. Low- and Negative-Pressure Hydrocephalus: New Report of Six Cases and Literature Review. J Clin Med. 2023 Jun 18;12(12):4112. doi: 10.3390/jcm12124112. Erratum in: J Clin Med. 2025 Feb 02;14(3):959. doi: 10.3390/jcm14030959. PMID: 37373809; PMCID: PMC10299038.

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