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Normal-pressure hydrocephalus: A critical review

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Abstract in [English](#), [Portuguese](#)

Normal-pressure hydrocephalus (NPH) is a potentially reversible syndrome characterized by enlarged cerebral ventricles (ventriculomegaly), cognitive impairment, gait apraxia and urinary incontinence. A critical review of the concept, pathophysiology, diagnosis, and treatment of both idiopathic and secondary NPH was conducted. We searched Medline and PubMed databases from January 2012 to December 2018 using the keywords "normal-pressure hydrocephalus" / "idiopathic normal-pressure hydrocephalus" / "secondary normal-pressure hydrocephalus" / "NPH" / "ventriculoperitoneal shunt". The initial search produced 341 hits. After careful selection, a total of 54 articles were chosen and additional relevant studies were included during the process of writing this article. NPH is an important cause of potentially reversible dementia, frequent falls and recurrent urinary infections in the elderly. The clinical and imaging features of NPH may be incomplete or nonspecific, posing a diagnostic challenge for medical doctors and often requiring expert assessment to minimize unsuccessful surgical treatments. Recent advances resulting from the use of non-invasive MRI methods for quantifying cerebral blood flow, in particular arterial spin-labeling (ASL), and the frequent association of NPH and obstructive sleep apnea (OSA), offer new avenues to understand and treat NPH.

Keywords: cerebral blood flow; falls; incontinence; normal-pressure hydrocephalus; reversible dementia; spinal tap test.

Figures

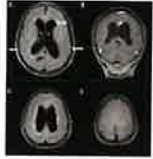


Figure 1. Neuroimaging in NPH (A) Axial...



Figure 2. An example of ASL-MRI illustrating...

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