Normal pressure hydrocephalus pathophysiology

To assess automated volumetric analysis as a potential presurgical diagnostic tool or as a method to potentially shed light on normal pressure hydrocephalus pathophysiology. MRI imaging according to a protocol was performed in 29 NPH patients, 45 non-NPH (but suspected) patients and 15 controls. Twenty patients underwent a second MRI 3 months after ventriculoperitoneal (VP) shunt surgery. All structures relevant to NPH diagnosis were automatically segmented using commercial software. The results were subsequently tested using ANOVA analysis. Significant differences in the volumes of the corpus callosum, left hippocampus, internal globus pallidus, grey and white matter and ventricular volumes were observed between NPH group and healthy controls. However, the differences between NPH and non-NPH groups were non-significant. Three months after, VP shunt insertion decreased ventricular volume was the only clearly significant result (p value 0.0001). Even though a detailed volumetric study shows several significant differences, volumetric analysis as a standalone method does not provide a simple diagnostic biomarker, nor does it shed a light on an unknown NPH aetiology [1].

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Vlasák A, Skalický P, Mládek A, Vrána J, Beneš V, Bradáč O. Structural volumetry in NPH diagnostics and treatment-future or dead end? Neurosurg Rev. 2020 Jan 24. doi: 10.1007/s10143-020-01245-y. [Epub ahead of print] PubMed PMID: 31980974.