Morphologic features and flow void phenomenon in normal pressure hydrocephalus and other dementias: are they really significant?

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RATIONALE AND OBJECTIVE:

The aim of this study was to determine the distinctive features of normal-pressure hydrocephalus (NPH) and other dementias on routine T1-weighted and T2-weighted magnetic resonance (MR) images. Also, the contribution of these parameters to the diagnosis and treatment of NPH was investigated.

MATERIALS AND METHODS:
Routine MR images were used to investigate the morphologic features (dilatation of Sylvian cisterns, narrowness of convexity sulci, thickness of corpus callosum (TCC), and dilatation of perihippocampal fissures) and the flow void phenomenon (FVP) in patients with idiopathic NPH (INPH) and other dementias. Routine MR images of 18 patients with INPH, 11 with dementias other than INPH, and 20 controls were retrospectively examined. Morphologic features and the FVP were graded subjectively. The TCC was measured quantitatively. Morphologic parameters, the FVP, and the shunt response were assessed using Kruskal-Wallis and Mann-Whitney U tests.

RESULTS:

The mean FVP score was significantly higher in patients with INPH (2.89 +/- 0.75) than in controls and patients with other dementias (1.1 +/- 0.85 and 1.09 +/- 0.83, respectively) (P < .001). There was significant difference in terms of TCC between patients with INPH (3 +/- 0.7 mm), those with other dementias (1.9 +/- 0.7 mm), and controls (5.2 +/- 0.8 mm) (P < .001). Significant differences in terms of other morphologic features were found between patients with INPH and those with other dementias (P < .05). No significant difference was found between morphologic parameters and the FVP and the outcome of cerebrospinal fluid diversion (P > .05).

CONCLUSIONS:

Intense FVP is a signature of but is not pathognomonic for INPH. The morphologic analysis of MR images can be distinctive for the diagnosis of INPH or dementias other than INPH. Detailed evaluation of morphologic features and the FVP in routine MR workup of dementia will be useful for accurate diagnosis.

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