ROLE OF CONVENTIONAL MRI AND MRI CSF FLOWMETRY IN THE EVALUATION OF PATIENTS WITH CLINICAL LY SUSPECTED NORMAL PRESSURE HYDROCEPHALUS

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Introduction

Normal-pressure hydrocephalus is considered treatable form of dementia primarily affecting elderly, characterized by a classic triad of symptoms: gait impairment, cognitive decline, and urinary incontinence.

iNPH rad scale using T2 axial and coronal MRI imaging was used to assess the morphological pattern of patient with normal pressure hydrocephalus, serving as a diagnostic screening tool for discriminating normal pressure hydrocephalus patients for other diseases with overlapping symptoms as Alzheimer disease and vascular dementias, where iNPH score more than 8 is highly specific for normal pressure hydrocephalus diagnosis.

3D-CISS is a gradient-echo imaging technique with high CSF-to-aqueduct contrast. It provides anatomical information about morphology relationships of aqueduct before shunt surgery. It can be used to discriminate in determination of stroke volume across the aqueduct highlight patients whom would benefit from the shunt surgery.

The definitive treatment for iNPH is shunt surgery, thus its crucial to choose shunt candidates adequately

Aim of the work

The aim of the work was to evaluate patients with clinically suspected normal pressure hydrocephalus

Subjects and Methods

PATIENTS: This study was conducted on 40 patients with clinically suspected normal pressure hydrocephalus referred to the Radiology Department fromNeurology department and clinic for further MRI assessment

METHODS: Thirty patients were examined using Magnetic resonance imaging (MRI) which was performed at 1.5 Tesla MR System using a standard head coil: (Ingenia-CX, Philips, Healthcare, Best, Netherlands).

Patients were subjected to the following MRI protocols:

•Conventional MRI sequences and calculation of iNPH score

•Thin cuts midline sagittal 3D-CISS

•Cine PC-MR imaging

Results

Out of 40 patients included in our study, 16 patients had iNPH score >8, All of them proved to be iNPH by neurological assessment and CSF tap test. Whereas 14 patients had an equivocal iNPH score between 6 and 8, Only 4 of them proved to be iNPH by neurological assessment and response to CSF tap test. The rest of the patients, 18 in number were proved to have involutional brain changes due to aging

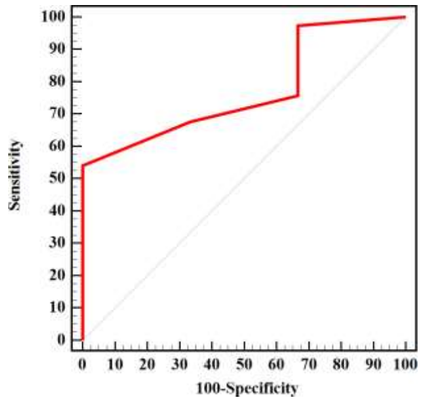

Figure 1:
ROCcurveforiNPHscoretop redictNPHcases(n=3vs.37)

Table 1: Distribution according to the iNPH radscore

iNPHscore	No	%
Lessthan 6	10	25
6-8	14	35
Morethan8	16	40

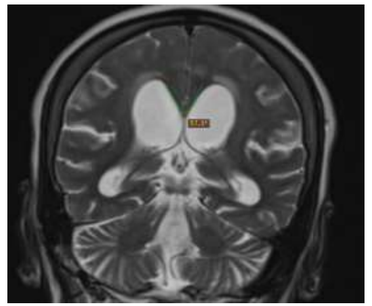

Figure 3:
Coronal T2 showing narrow callosal angle(57 degrees) and narrowing of parafalcine sulci

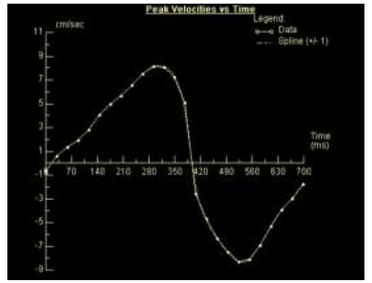

Figure 4:
Curve showing CSF in both diastole (above the base line) and systole (below the base line) with increased PSV = 8.7cm/s.

Conclusion

•Idiopathic normal pressure hydrocephalus should be suspected for elderly patients presenting with unexplained, symmetric gait disturbance.

•Neuroimaging with MRI is required for the diagnosis of idiopathic normal pressure hydrocephalus.

•CSF tap test should be done for shunt candidates as early as possible