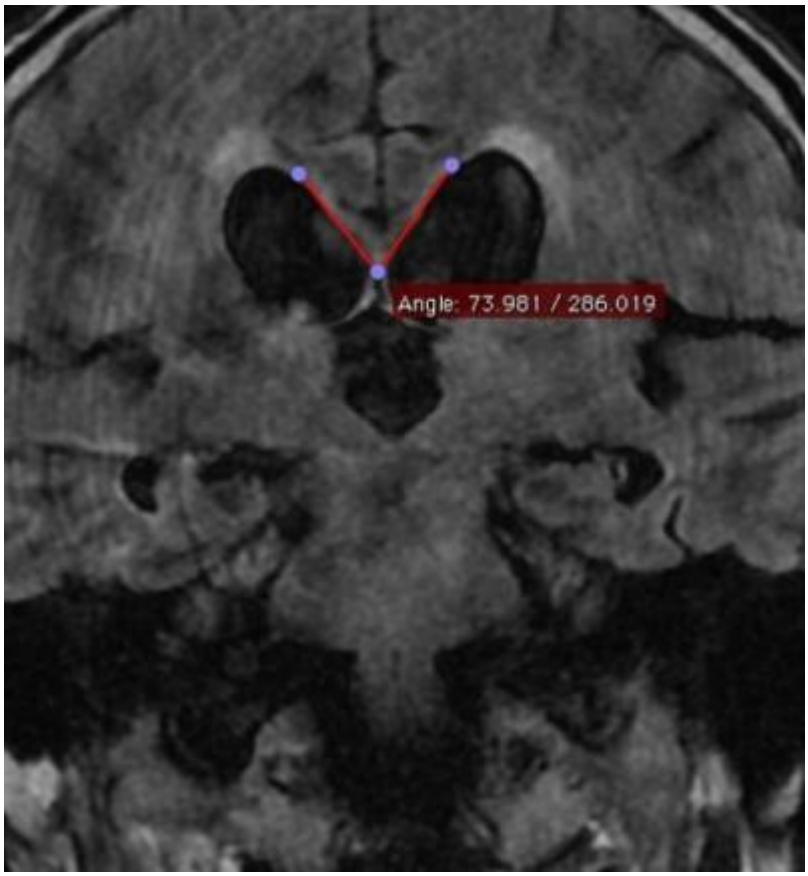
Callosal angle

see also Evans index, DESH, Cingulate sulcus sign.

Ideally the angle should be measured on a coronal image perpendicular to the anterior commissure-posterior commissure (AC-PC) plane at the level of the posterior commissure [1) 2)].



Indications

The shapes of the ventricles, the ventricular index and a callosal angle of 110 degrees or less provided supporting evidence of obstruction in a study. Recognition of an obstructive element in ventricular dilatation following head injury is important, since in a small carefully selected group of patients a ventricular shunting operation may favourably affect recovery [3)].

Measuring the Callosal angle (CA) helps in differentiating INPH patients from Alzheimer's disease (AD) and normally aged subjects [4)].

In iNPH, Evans' index, which indicates external enlargement, is not appropriate for evaluating ventricular enlargement; alternatively, the size of cerebral ventricles estimated by coronal sections can be used [5)].

The callosal angle has been proposed as a useful marker of patients with idiopathic normal pressure hydrocephalus (iNPH) [6)].

It is helpful in distinguishing these patients from those with ex-vacuo ventriculomegaly.

A small callosal angle, wide temporal horns, and occurrence of disproportionately enlarged subarachnoid space hydrocephalus are common in patients with idiopathic normal pressure hydrocephalus and were significant predictors of a positive shunt outcome. These noninvasive and easily assessed radiologic markers could aid in the selection of candidates for shunt surgery [7].

Values

In general patients with iNPH have smaller angles than those with ventriculomegaly from atrophy or normal controls.

A normal value is typically between 100-120°. In patients with iNPH that value is lower, between 50-80°.

In one study, symptomatic iNPH patients who responded to shunting had a significantly smaller mean preoperative callosal angle (59° (95% CI 56°-63°)) compared with those who did not respond (68° (95% CI 61°-75°)).

CA and Evans Index (EI) may serve as a screening tool to help the radiologist differentiate patients with NPH from patients without NPH, which would allow for designation of patients for further volumetric assessment [8].

Simple linear regression analyses demonstrated that presurgical high-convexity tightness, callosal angle, and Sylvian fissure dilation were significantly associated with the 1-year changes in the clinical symptoms. A multiple linear regression analysis demonstrated that presurgical high-convexity tightness alone predicted the improvement of the clinical symptoms 1 year after surgery [9].

In a retrospective cohort study, Kojoukhova et al evaluated brain CT or MRI scans of 390 patients with suspected iNPH. Based on a 24-h intraventricular pressure monitoring session, patients were classified into a non-NPH (n = 161) or probable iNPH (n = 229) group. Volumes of cerebrospinal fluid compartments (lateral ventricles, sylvian and suprasylvian subarachnoid spaces and basal cisterns) were visually assessed. Disproportionally enlarged subarachnoid spaces, flow void, white matter changes, medial temporal lobe atrophy and focally dilated sulci were evaluated. Moreover, we measured quantitative markers: Evans' index (EI), the modified cella media index, mean width of the temporal horns and callosal angle.

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