ASPECTS

https://www.mdcalc.com/calc/3164/alberta-stroke-program-early-ct-score-aspects

The Alberta stroke program early CT score (ASPECTS) is a 10-point quantitative topographic CT scan score used for middle cerebral artery (MCA) stroke patients. It has also been adjusted for posterior circulation.

ASPECTS was developed to offer the reliability and utility of a standard CT examination with a reproducible grading system to assess early ischemic changes on pretreatment CT studies in patients with acute ischemic stroke of the anterior circulation

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EVT was associated with improved 90-day functional outcomes in patients with acute large vessel occlusion stroke and ASPECTS was 4 to 5 but not in those with ASPECTS 3 or less [1)].

ASPECTS is determined from evaluation of two standardized regions of the MCA territory: the basal ganglia level, where the thalamus, basal ganglia, and caudate are visible, and the supraganglionic level, which includes the corona radiata and centrum semiovale

All cuts with basal ganglionic or supraganglionic structures visible are required to determine if an area is involved. The abnormality should be visible on at least two consecutive cuts to ensure that it is truly abnormal rather than a volume averaging effect

To compute the ASPECTS, 1 point is subtracted from 10 for any evidence of early ischemic change for each of the defined regions.

A normal CT scan receives ASPECTS of 10 points.

A score of 0 indicates diffuse involvement throughout the MCA territory

Axial NCCT images showing the MCA territory regions as defined by ASPECTS. C- Caudate, I-Insularribbon, IC- Internal Capsule, L- Lentiform nucleus, M1- Anterior MCAcortex, M2- MCA cortex lateral to the insular ribbon, M3- PosteriorMCA cortex, M4, M5, M6 are the anterior, lateral and posterior MCAterritories immediately superior to M1, M2 and M3, rostral to basalganglia. Subcortical structures are allotted 3 points (C, L, and IC).MCA cortex is allotted 7 points (insular cortex, M1, M2, M3, M4, M5and M6)

Studies assessing agreement using ASPECTS published from 2000 to 2015 were reviewed. Fifteen raters reviewed and scored the anonymized CT scans of 30 patients recruited in a local thrombectomy trial during 2 independent sessions, in order to study intrarater and interrater agreement. Agreement was measured using intraclass correlation coefficients (ICCs) and Fleiss kappa statistics for ASPECTS and dichotomized ASPECTS at various cutoff values.

The review yielded 30 articles reporting 40 measures of agreement. Populations, methods, analyses, and results were heterogeneous (slight to excellent agreement), precluding a meta-analysis. When analyzed as a categorical variable, intrarater agreement was slight to moderate (κ = 0.042-0.469); it reached a substantial level (κ > 0.6) in 11/15 raters when the score was dichotomized (0-5 vs 6-10). The interrater ICCs varied between 0.672 and 0.811, but agreement was slight to moderate (κ = 0.129-0.315). Even in the best of cases, when ASPECTS was dichotomized as 0-5 vs 6-10, interrater agreement did not reach a substantial level (κ = 0.561), which translates into at least 5 of 15 raters not giving the same dichotomized verdict in 15% of patients.

In patients considered for thrombectomy, there may be insufficient agreement between clinicians for ASPECTS to be reliably used as a criterion for treatment decisions [2].

ASPECTS ≤7 on initial brain CT in a patient with MCA infarction is associated with the development of malignant MCA infarction. We recommend close monitoring of, and early consideration of decompressive hemicraniectomy for, acute stroke patients with ASPECTS ≤7 [3].

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2)
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