Computed Tomography for chronic subdural hematoma

The routine use of Head computed tomography in most emergency facilities has made the diagnosis of a chronic subdural hematoma commonplace [1].

Density

Density of the chronic subdural hematoma (cSDH) is variable. It often appears to be mixed density. Multiple densities of cSDH may result from multiple episodes of trauma, usually in the aged. It is hard to remember all the trivial traumas for the patients with the mixed density cSDHs.

CT-scan is able to provide the diagnosis of chronic subdural hematoma in more than 90% of the cases. It usually shows a peri-cerebral fluid collection along the convexity, with a convex outer border, and an irregular concave inner border. The density of the collection depends on the age of the intracranial hematoma. The main difficulties, in term of diagnosis, result from bilateral chronic isodense subdural hematoma, and differential diagnosis between hematoma, subdural hygroma, and subdural empyema. Some rare localisations can sometimes be seen (posterior fossa, skull base…). A double density with a sedimentation level, or heterogeneity of the hematoma, can sometimes be seen too [2].

Classification

Based on CT scans

Generally chronic subdural hematomas can be classified into four groups; hypodensity, homogeneous isodensity, layered type, and mixed density type on the basis of CT scans [3].

Chronic hypodense subdural hematoma.

Chronic isodense subdural hematoma.

Chronic hyperdense subdural hematoma.

Ossified chronic subdural hematoma.

Inhomogeneous Chronic Subdural Hematoma

Mixed density chronic subdural hematoma.

Septated chronic subdural hematoma.

see also Chronic subdural hematoma classification

Routine Brain Computed Tomography after Evacuation

A 2-month follow-up period after CSDH seems sufficient for most, and CT controls are advocated only for symptomatic patients [4].

Routine post-operative CT brain for burr hole drainage of CSDH may be unnecessary in view of the good predictive value of pre-operative volume, and also because it is not predictive of the clinical outcome [5].

A study of Ng et al. compared pre-operative and early post-operative CT findings to determine the factors affecting residual hematoma and evaluate if early post-operative CT scans are useful in the management of CSDH.

Forty-three patients who underwent burr hole drainage of unilateral CSDH from August 2006 to January 2013 and had routine post-operative CT scans within 48 hours of surgery were selected. Data regarding age, sex, neurological deficit, Glasgow Coma Scale (GCS), pre-existing medical conditions, use of antiplatelets or anticoagulation, operative time, usage of drains, and number of burr holes were obtained. The pre-operative CSDH volume, CSDH density, and midline shift were measured. Residual volume was calculated from early post-operative CT scans. Clinical outcome was evaluated with Glasgow Outcome Scale (GOS) at the time of discharge. Statistical analysis was performed to look for correlation between the pre-operative factors and residual volume, and the residual volume and GOS.

Pre-operative volume was found to correlate significantly with post-operative residual volume. There was no significant correlation between all other pre-operative factors and residual volume. There was also no correlation between residual volume and GOS at discharge [6].

Routinely postoperative control brain CT scan 4 to 6 weeks after the evacuation of a CSDH has no clinical value [7].

In a retrospective study Pedersen et al. examined 202 patients who during a 2-year period from 2011 and 2012 underwent surgical treatment for chronic subdural hematoma (CSDH). Information on patient age, sex, alcohol consumption, anticoagulant/antiplatelet treatment, history of head trauma, Glasgow coma scale (GCS), neurological symptoms, laterality of CSDH, and surgical technique was retrieved from patient charts.

Overall, 27 out of 202 patients had a recurrence of CSDH and re-evacuation of the hematoma was performed. In all patients recurrence of neurological symptoms preceded the planned postoperative control brain CT 4 to 6 weeks after primary surgery.

Routinely postoperative control brain CT scan 4 to 6 weeks after the evacuation of a CSDH has no clinical value [8].

1)

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2)

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3)

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4)

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5) , 6)

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7) , 8)

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Last update: **2024/06/07 02:58**