Acute subdural hematoma outcome

Acute subdural hematoma is a serious complication following traumatic brain injury. Large volume hematomas or those with underlying brain injury can cause mass effect, midline shift, and eventually herniation of the brain. Acute subdural hematomas in the young are associated with high-energy trauma and often have underlying contusions, while acute subdural hematomas in the elderly are associated with minor trauma and an absence of underlying contusions, even though the elderly are more likely to be on anticoagulants or anti-platelet therapy. In the young patients with high impact injuries the hematomas tend to be small and the underlying brain injury and swelling is responsible for the increased intracranial pressure and midline shift. In the elderly, the injuries are low impact (e.g fall from standing), the underlying brain is intact, and the volume of the hematoma itself produces symptoms. In addition the use of anticoagulants and antiplatelet agents in the elderly population has been thought to be a poor prognostic indicator and is considered to be responsible for larger hematomas and poor outcome.

see Chronification of acute subdural hematoma.

ASDH in the elderly

ASDH in the elderly is a common and increasing problem, and differs in its pathophysiology from ASDH in younger people. Admitting doctors may have difficulty identifying those elderly patients whose lesions may benefit from surgery.

All patients aged 65 years or greater referred to Salford Royal Foundation Trust with the diagnosis of ASDH between 01/01/2008 and 31/12/2011.

The initial presenting CT brain scans were reviewed. The linear dimensions, degree of midline shift and hematoma volume (using ABC/2 method) of all scans were measured and recorded. All presenting radiology was also assessed by a consultant neurosurgeon blind to clinical and CT scan measurement data and patients were categorised as having “surgical” lesions or not. Receiver operating characteristic (ROC) curves were generated and cut point value for 100% sensitivity and specificity were tabled to assess which combination of scan parameters best predicted a “surgical” ASDH.

212/483 patients were considered to have a 'surgical' lesion. All 'surgical' lesions had a volume of >35ml (range 35-435), maximum thickness of ≥10mm (range 10-49) and 99% had midline shift ≥1mm (range 0-32). The best predictor of a 'surgical' lesion was a combination of maximum haematoma thickness and midline shift which offered 100% (95% CI 98.3-100) sensitivity with 83% (95% CI 77.6-87) specificity.

Surgically relevant cases of ASDH in the elderly can be reliably and objectively identified by two easily performed scan measurements, haematoma thickness and midline shift. If used in routine practice, these measurements could clarify those patients who may need urgent neurosurgical referral and might avoid unnecessary transfer to neurosurgical units in this cohort [1)].

Complications

Cerebral infarction following acute subdural hematoma.

Seizure following acute subdural hematoma.

Patients with traumatic acute subdural hematoma were studied to determine the factors influencing outcome. Between January 1986 and August 1995, we collected 113 patients who underwent craniotomy for traumatic acute subdural hematoma. The relationship between initial clinical signs and the outcome 3 months after admission was studied retrospectively. Functional recovery was achieved in 38% of patients and the mortality was 60%. 91% of patients with a high Glasgow Coma Scale (GCS) score (9-15) and 23% of patients with a low GCS score (3-8) achieved functional recovery. All of 14 patients with a GCS score of 3 died. The mortality of patients with GCS scores of 4 and 5 was 95% to 75%, respectively. Patients over 61 years old had a mortality of 73% compared to 64% mortality for those aged 21-40 years. 97% of patients with bilateral unreactive pupil and 81% of patients with unilateral unreactive pupil died. The mortality rates of associated intracranial lesions were 91% in intracerebral hematoma, 87% in subarachnoid hemorrhage, 75% in contusion. Time from injury to surgical evacuation and type of surgical intervention did not affect mortality. Age and associated intracranial lesions were related to outcome. Severity of injury and pupillary response were the most important factors for predicting outcome [2].

1)
Evans JA, Bailey M, Vail A, Tyrrell PJ, Parry-Jones AR, Patel HC. A simple tool to identify elderly patients with a surgically important acute subdural haematoma. Injury. 2014 Jul 19. pii: S0020-1383(14)00337-4. doi: 10.1016/j.injury.2014.07.009. [Epub ahead of print] PubMed PMID: 25109659.
2)
Koç RK, Akdemir H, Oktem IS, Meral M, Menkü A. Acute subdural hematoma: outcome and outcome prediction. Neurosurg Rev. 1997;20(4):239-44. PubMed PMID: 9457718.