

The outcome of the patients with chronic subdural hematoma referred to a major trauma centre and review of non-operative management

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The main objective of this study is to review the outcome of chronic subdural hematomas (CSDH) and patients' characteristics in a cohort referred to a major tertiary trauma centre. Subdural hematoma (SDH) is a familiar disease thing treated by neurosurgical intervention. Although the incidence increases in the elderly population, there is a paucity of studies examining their surgical outcomes. To conclude the neurological and functional outcomes of patients over 70 years of age undergoing surgical decompression for subdural hematoma. We retrospectively verified data on 45 patients above 70 years who undergo craniotomy or burr holes for acute, chronic or mixed subdural hematomas. We have examined both neurological and functional status before and after surgery. Subdural hematoma (SDH) is a ordinary disease pathology amongst elderly patients. Data collected from the US census bureau shows that the occurrence of SDH almost doubles from age 65 to 75, and continues to increase to an incidence of 286/100000 in people over age 80. Despite this, studies on the management of acute and chronic SDH in the elderly are limited. The paucity of data is particularly apparent for chronic SDH, and currently there are no treatment guidelines for its management. This may largely be due to the general perception that chronic subdural hematomas are relatively benign pathology with minimal morbidity and mortality. However, previous research has questioned this paradigm, and suggests that chronic subdural hematomas might confer long-term increases in both morbidity and mortality in this population.

While acute subdural hematomas have been considered more in depth, the guidelines pertaining to management are still based solely on class C evidence gleaned from case series, case studies, retrospective reviews, and expert opinion. However, multiple studies do suggest that age is closely associated with increased morbidity and mortality after acute SDH; although, more recent evidence has not showed a correlation. In spite of, the role of age in both acute and chronic subdural hematoma management and outcome remains ill defined.

Previous research on subdural hematomas (especially chronic subdural hematomas) within the elderly typically focus on the type of surgical treatment, the role of anticoagulant and epidemiology. However, the long-term outcome of elderly patients and the role of conservative management versus surgery cannot be determined based on the limited data available. In this study, we assess the neurologic and functional outcome of patients age 70 or older who underwent craniotomy

or burr hole drainage for acute subdural hematoma (aSDH), chronic subdural hematoma (cSDH) or mixed acute and chronic subdural hematoma (a/cSDH).

All follow-up visits were scheduled for 4 to 6 weeks from the time of discharge and most patients were followed up at the Emory Neurosurgery clinic. A small minority of patients followed up with their primary care physician, and data was pulled from their follow-up clinic certification. In total, the follow-up data was available in all but 5 patients. Inclusion criteria were based on imaging analysis of subdural hematoma, age 70 or older and initial surgical drainage of subdural hematoma; either via burr hole or craniotomy. The conclusion to perform burr hole drainage or craniotomy was based on the patient's physical exam, neurologic exam, medical status and image findings.

While an overall improvement of neurological function was seen in our patients, this did not translate into functional improvements after discharge. Importantly, the initial GOS score assigned to patients was based on functional status at admission and not their baseline function before subdural hematoma onset. Thus, while there was no difference in the functional status from admission to follow-up, this likely represents either an overall decline from the patient's baseline before SDH onset or more likely a lower baseline functional status in this population. The discrepancy between neurological and functional outcome likely has several underlying factors. First, there was a trend of patients presenting from home and later discharged to rehab facilities despite returning to their neurological baseline or even improving. This suggests precautionary measures by the healthcare team given the known recurrence of subdural hematomas and desire to have patients closely monitored because of other medical comorbidities, despite returning to their neurological baseline. This is in line with previous studies showing the morbidity of subdural hematomas in elderly patients, beyond just neurological deficits. It must be noted that most patients were followed up 4 to 6 weeks after discharge, and thus it is uncertain what functional gains they may have made long term. However, previous studies suggest that the presence of subdural hematoma likely confers a morbidity and mortality risk well beyond 6 weeks post discharge.

Interestingly, patients over 80 years old had an overall greater improvement of neurological function than those aged 70-79. This is in contrast to past research, but more recent studies have shown a similar trend to our results. In our study, patients over

80 initially presented with worse neurological function. Given the greater neurological improvement overall, this may represent less ability to compensate for the initial neurological insult compared to younger patients. However, it is possible that improved treatment for subdural hematomas and greater life expectancy may reduce the significance of age on SDH outcome. Thus, while patients over 80 initially presented at a lower baseline, they may have had more function to regain with the benefit of better treatment and perhaps better health than was observed in older studies.

The results indicated that 88 patients with CSDH were identified during the study period. Twenty (20%) underwent surgery immediately. Forty-eight (55%) were managed conservatively, and 20 (20%) were managed medically with dexamethasone. Subsequently, one of the patients managed conservatively, and one with dexamethasone underwent surgery. Forty-four (54%) out of 88 patients were on various forms of anticoagulation. This study confirms that operative management was deemed suitable for a small portion of patients referred with CSDH. Medical management with dexamethasone is an option for the patients for whom surgery is not warranted or when a patient is unfit for surgery with good outcome.