

ORIGINAL PAPER

Increasing incidence of chronic subdural haematoma in the elderly

V. Adhiyaman¹, I. Chattopadhyay¹, F. Irshad¹, D. Curran² and S. Abraham²

From the ¹Glan Clwyd Hospital, Rhyl, LL18 5UJ, UK and ²Wrexham Maelor Hospital, Wrexham, UK

Address correspondence to Dr V. Adhiyaman, Glan Clwyd Hospital, Rhyl, LL18 5UJ, UK. email: adhiyamanv@yahoo.co.uk

Summary

Background: Chronic subdural haematoma (CSDH) is a condition predominantly affecting the elderly. We reported an incidence of 8.2 per 100 000 per year in people above the age of 65 in 2002.

Aim: Since recent studies have demonstrated a higher incidence, we repeated our study to estimate the current incidence of CSDH amongst people above the age of 65 in North Wales.

Design: We used radiological reports to identify patients with CSDH over a 1-year period.

Methods: We collected data on demographics, clinical presentations, indications for brain imaging, drug history and 30-day outcome from the case notes and electronic records.

Results: The population of North Wales was 687 937 of which 138 325 (20%) were above 65. There were 66 cases of CSDH giving an incidence of 48 per 100 000 per year. Mean age was 81 and there were 32 males and 34 females. Falls and confusion were the commonest indications to request a CT scan (90%). Other indications were drowsiness (9%) and focal neurological deficit (4%). 17 were on antiplatelets and 20 were on warfarin. Ten underwent surgical intervention. At 30 days 28 were discharged, 22 were still in hospital and 16 died.

Conclusion: The incidence of CSDH is much higher than previously reported. Reasons include a low threshold for imaging patients with recurrent falls and confusion, increasing use of anti-thrombotics and ageing population. In many older patients CSDH is a marker of underlying co-morbidities rather than a primary event.

Introduction

Chronic subdural haematoma (CSDH) is a condition predominantly affecting the elderly. Many people do not recall any trauma to the head and even if they had one, it is often trivial. We reported an incidence of 8.2 per 100 000 per year in people above the age of 65 in North Wales 15 years ago, which was similar to many other studies published during that period.¹ However, as some recent reports have demonstrated a higher incidence,² we repeated our study to estimate the current incidence of CSDH amongst the elderly population in North Wales.

Methods

We sought ethical approval from the regional Research and Ethics Committee. After a careful review the committee decided that ethical approval was unnecessary as we were only assessing the current clinical practice and comparing it with our previous study. We identified patients above the age of 65 with CSDH from radiology reports on CT head scans across the three District General Hospitals in North Wales over a 1-year period (May 2014 to April 2015). We excluded patients with acute subdural haematoma based on radiological description and clinical history. We collected data on demographics, clinical

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presentations, indications for brain imaging, drug history and 30-day outcome from the case notes and patient electronic records.

Results

The population of North Wales in the 2011 census was 687 937 of whom 138 325 (20%) were above the age of 65.³ There were 66 patients with CSDH, 32 males and 34 females. The mean age was 81 years. A quarter of patients had bilateral CSDH. The overall incidence was 48 per 100 000 per year in people over the age of 65.

The suspected clinical diagnosis or problem list on admission before brain imaging included recurrent falls (50%), increasing confusion (45%), sepsis (15%), decreased mobility (12%) and stroke (5%) and many had more than one condition listed.

Falls and confusion were the commonest indications noted in the radiology request forms for a CT head scan (90%). Other indications were drowsiness (9%) and focal neurological deficit (4%). Many CT head requests indicated the need to exclude a stroke or CSDH. Interestingly headache as a symptom was not evident in our group.

Twenty patients were on warfarin and 17 were on antiplatelets. Only three patients on warfarin had an international normalized ratio (INR) of above 3. Ten patients underwent surgical intervention at a tertiary centre and one had a recurrence and needed a second craniotomy and drainage.

At 30 days, 28 were discharged to their primary destination, 22 were still in hospital and 16 had died. Four of these deaths were due to the direct consequence of CSDH and the rest were due to other co-morbidities. Only one patient died in the operated group. The mean age of the patients who had died was 88 years.

Discussion

This study confirmed a much higher incidence of CSDH in older people in North Wales compared with 2002. A Japanese study from a small island showed an incidence of 58 per 100 000 per year in people over the age of 70 as early as 1992.⁴ A recent American study demonstrated a progressive increase in incidence with age, quoting more than 200 per 100 000 per year in people above the age of 85.² We found a similar trend in our study group as shown in Table 1.

The mean age was slightly higher compared with our previous study (81 vs. 79). Cerebral atrophy associated with ageing is the major factor that makes the elderly susceptible to develop CSDH.⁵ Shrinkage of the brain leads to easier separation of dura from the arachnoid following a minor trauma or stress and lack of tamponade effect of the brain on the haematoma leads to expansion of the haematoma.⁶

Table 1. Age-specific incidence of CSDH

Age group	Number of cases	Incidence per 100 000 per year
65–74	14	19
75–84	22	47
85–94	26	153
Above 95	4	273

Recurrent falls, delirium and worsening cognition were the most common clinical features in the elderly in this study. Focal neurological deficit was seen in only 4% of the cases compared with 20% in our previous study. This is probably because majority had shallow or small CSDH without any mass effect. Our findings are similar to other studies which showed a lower frequency of neurological deficit in patients with bilateral CSDH⁷ and higher frequency of delirium in patients above the age of 70.⁸

In our group almost 50% of patients had a history of fall in the preceding 3 months and many had multiple falls. This was slightly lower than our previous study where 57% had a history of fall. Majority of the falls were trivial and did not lead to any external injury. It is likely that recurrent falls is probably a marker of the underlying disease rather than a direct cause of CSDH.

Recurrent falls were always thought to be a relative contraindication for anticoagulation in patients with atrial fibrillation. There was a misleading suggestion that a person needed to fall 300 times before developing CSDH⁹ and surprisingly this has been quoted in the European Society of Cardiology guidelines to promote judicious use of anticoagulation in atrial fibrillation.¹⁰ However, in a large series of 1000 patients with CSDH, >50% of patients above the age of 70 did not have a history of trauma.⁸ So one should be aware that patients do not need to fall in order to develop CSDH, and clinicians should use a prudent approach whilst advocating anticoagulation in the frail elderly.

More than half of our patients were delirious or had worsening confusion which was similar to other studies.^{1,11} A third of all patients had an established diagnosis of dementia on admission. In most of these patients the haematomas were small, did not cause any midline shift and hence did not require a surgical intervention. The incidence of CSDH in patients with dementia was reported to be 46/100 000 patients per year.¹²

There has been a dramatic increase in the use of anticoagulants and dual antiplatelets in modern day clinical practice. 30% of our patients were on warfarin and 25% were on antiplatelets compared with 7.5 and 25% respectively in our previous study.¹ This is likely to increase in the future with the advent of directly acting anticoagulants. CSDH can occur even when the INR is within the therapeutic range, as only a few patients had an elevated INR in our study.

Only 15% (10 out of 66) had surgical intervention compared with 60% in our previous study. However, there was no difference in 30-day mortality which was 24%, compared with 27% in the past. Only few deaths (3 out of 16) could be directly attributed to CSDH and the rest were due to underlying co-morbidities. Neurological status on admission has been shown to be the most important predictor of in-hospital mortality.¹³ Increasing age and presence of other co-morbidities increases mortality and morbidity.¹¹ Our numbers were too small to assess further variables.

In many older patients CSDH is a marker of underlying disease and advanced frailty rather than a primary event. This has been suggested by other authors who compared CSDH to hip fractures where the mortality is high even at 12 months.¹⁴

In the UK, the current practice is to offer surgery to patients with CSDH who have focal neurological deficit or midline shift on CT head scan and are deemed fit to undergo an invasive intervention. It is important to have a follow up CT scan for patients who are managed conservatively.¹⁵ Age alone shouldn't be a contraindication for surgery and a study on patients above the age of 90 showed a lower in-patient death and higher survival rates up to 12 months in the operated group.¹⁶

Table 2. Comparative data between 2002 and 2015

	2002 n = 40 (over 3 years)	2015 n = 66 (over 1 year)
Incidence—per 100 000 per year	8.2	48
Mean age	79	81
Falls	57%	50%
Delirium/worsening confusion	52%	45%
Focal neurology	20%	4%
Warfarin	7.5%	30%
Antiplatelets	25%	25%
Surgery	60%	15%
30-day mortality	27%	24%

The most common surgical interventions are burr hole irrigation under general anaesthetic or twist-drill drain using a local anaesthetic and craniotomy. Recurrence rate varies from 7 to 14% and is less if evacuation was followed by irrigation.¹⁷ Risk of recurrence is higher in patients with bilateral haematoma: 28 compared 11%.⁷

There are still many uncertainties in the operative and peri-operative management especially in the elderly and there is an urgent need for a multi-disciplinary approach to address these areas.^{18,19} Currently there is a proposal for a UK-wide multi-centre study to identify gaps and areas of best practice, which would hopefully establish standards in the management of CSDH.²⁰

In majority of places across the UK, deaths associated with CSDH are reportable to the Coroner or an equivalent. The reason for such referrals is due to the belief (and a fact in more than half the cases) that CSDH occurs as a result of a trauma, hence the death may potentially have been accidental requiring further medico-legal investigations. One study revealed that out of 32 post-mortem examinations carried out on the Coroner's instructions, 3 were due to falls associated with proven ante-mortem CSDH.²¹

Our study is retrospective and case finding was dependent on the radiological diagnosis of CSDH. We did not include the cases that may have been diagnosed with CSDH on autopsy or on MRI brain scans over the same period of time in this population. This may have potentially led to an under-estimation of the incidence. We were also limited by the information that was documented on the radiology request forms and the patient's case-notes for data collection.

Conclusion

The incidence of CSDH in North Wales is much higher than previously reported and increases with age—a trend that is consistent with other recent studies. The explanations for the high incidence include an ageing population, a low threshold for imaging patients with recurrent falls and confusion and increasing use of anti-thrombotics.

Recurrent falls, delirium and worsening cognition are the most common presenting features and focal neurological deficit is uncommon in the elderly with CSDH. In many older patients CSDH is a marker of underlying co-morbidities and carries high short- and long-term mortality. Many do not require surgical intervention, but may require prolonged hospitalization and eventual placement in long term care facilities.

Conflicts of interest: None declared.

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