Misdiagnosis of bilateral isodense chronic subdural haematomas

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INTRODUCTION

Chronic subdural haematoma is a collection of blood developing between the dura and the arachnoid meninx which usually appears 3 weeks after head injury. Its occurrence in older patients causes diagnostic and therapeutic problems. The non-specificity of the symptoms, presence of negligible focal neurological deficits and accompanying diseases often lead to a diagnosis of dementia, transient ischaemic attacks or even psychiatric illnesses. There is no history of head injury or the trauma is described as mild in 25–50% of patients.

The diagnostic procedure most commonly used in general hospitals for the diagnosis of chronic subdural haematoma is the computed tomography (CT) scan because of its cost, rapidity, availability and sensitivity. Bilateral isodense chronic subdural haematoma, however, can very often be a source of false-negative results on CT, thus leading to misdiagnosis and to delayed or erroneous treatment.

DISCUSSION

Subdural haematomas are usually caused by the rupture of bridging veins of the subdural space. A significant proportion of patients are predisposed to chronic subdural haematomas by epilepsy, alcoholism, brain atrophy and coagulopathy (Chen and Levy, 2000). The incidence of chronic subdural haematomas is 0.001–0.002% per year and they most commonly appear in patients over 50 years old (Samudrala and Cooper, 1996).

Figure 1. Computed tomography scan of the brain 1 day before admission to the authors' hospital.

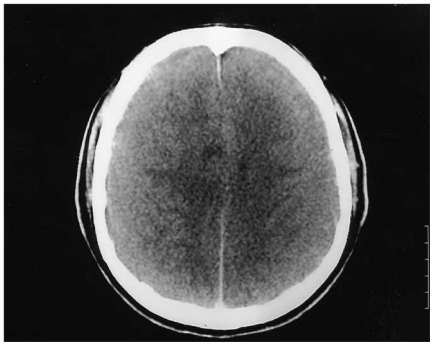
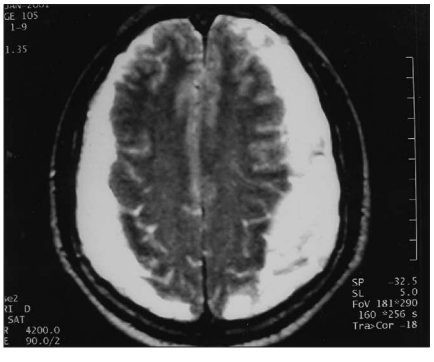


Figure 2. Magnetic resonance image, on admission, showing bilateral chronic subdural haematomas.



CASE REPORT

A 67-year-old man was admitted to the authors' hospital, complaining of headache, dizziness and gait instability for the past 7 days. His past medical history was remarkable only for hypertension. He did not mention any kind of injury during the last few months.

Clinical examination revealed normal cranial nerves function, strength, sensation and tendon reflexes in upper and lower extremities. Dysmetria and dysdiadochokinesia were noticed along with a positive Romberg test to the right.

A brain computed tomography (CT) scan the previous day had been pronounced as normal at a district hospital (*Figure 1*). After the patient's admission, a review of the CT did not yield definitive evidence for pathology. The possibility of chronic subdural haematoma, however, was raised and the patient was evaluated with a magnetic resonance imaging scan. This revealed bilateral chronic subdural haematomas expanding from the frontal to the parietal lobe, with a maximum width of 3 cm (*Figure 2*). Both haematomas were evacuated through a single burr hole. Recovery was uneventful and the patient was free of symptoms within 48 hours.

The outcome without appropriate surgical treatment is often fatal, either by haematoma-induced cerebral compression or as a result of concomitant diseases (Ernestus et al, 1997), but early diagnosis and surgery allow complete recovery in most cases (Fogelholm et al, 1975). Outcome relates to the patient's neurological state at the time of treatment; the mortality is 13% in patients who were comatose or stuporous at the time of operation and 5% in patients who were alert or drowsy (McKissock et al, 1960).

Symptoms and signs of chronic subdural haematomas are not typical (*Table 1*) and in elderly patients can be similar to those of dementia, cerebrovascular accident, transient ischaemic attack or a space-occupying lesion (Iantosca and Simon, 2000).

CT is the examination of choice for the diagnosis of chronic subdural haematoma. In most cases it is easily detected by the presence of a hypodense area and the midline shift produced by the mass of the haematoma. However, a diagnostic problem arises in cases of bilateral isodense chronic

TABLE 1.
Symptoms and signs of chronic subdural haematomas

Symptoms	Frequency (%)
Hemiparesis	45
Impaired consciousness	53
Papilloedema	24
Cranial nerve 3 abnormality	11
Hemianopsia	7
Other (dementia, headache, vomiting)	9

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subdural haematoma. In these cases, the bilateral haematomas cause bilateral effacement of the cerebral sulci and produce no midline shift because of equivalent compression of the brain parenchyma on both sides; this, along with the isodensity of the lesion, can lead to misdiagnosis (Moseley, 1994).

If an isodense bilateral chronic subdural haematoma is suspected, and CT is not conclusive, then magnetic resonance imaging (MRI) is the method of choice for diagnosis. MRI identifies subdural haematomas and characterizes them as chronic in both T1 and T2 weighted images, where they appear hyperintense in relation to the brain and CSF. MRI provides accurate estimation of the size of the haematoma and guides the neurosurgeon in the urgency of surgical intervention and on where to position the burr holes to achieve the least traumatic and most effective evacuation (Williams and Hogg, 2000).

Before the introduction of MRI, the only method to corroborate the diagnosis was the electroencephalogram (EEG). EEG shows slow waves, which are monomorphous at the thickest part of the haematoma and polymorphous at its periphery. Another classic but rare EEG finding with significant localization value is the local expansion of the EEG curves at the centre of the haematoma and the recording of slow waves at its periphery, which may reach an isoelectric line. This is not the result of necrosis of the cortex but is caused by the presence of the haematoma between the cortex and the electrodes. The EEG may still be useful in hospitals where an MRI is not available.

CONCLUSION

Bilateral chronic subdural haematomas should always be suspected as a possible cause of mild neurological deficit or progressive dementia, in older patients especially when there is a history of mild head injury or coagulopathy. If a CT scan is inconclusive, either EEG or a brain MRI is mandatory. HM

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IN THE PUBLIC'S VIEW...

Get SARS in perspective

As I write, the UK has been declared a SARS-free zone by the WHO. SARS is an important disease that we need to get serious about: unlike malaria, AIDS and TB it kills people like us. The media have verged on the hysterical, stressing that SARS has no cure but failing to mention that few viral diseases do, including influenza, which it most resembles. Tories trying to gain cheap points in parliament when so far the risk to this country from SARS is negligible was almost, although not quite, as bad as listening to pro Iraqi-war politicians say, 'I told you so'. In Iraq, the fat lady has not yet sung.

There's an odd epidemiological tendency about SARS that I've not yet seen reported in print. It was the journal *Nature* that drew my attention to it. Above one of their news stories was a photograph of a street somewhere in the Far East. Almost everyone in the photograph was wearing a facemask, nothing exceptional about that; but almost everyone in the photograph was also female and young. And I realized that this is the way it's been in most of the pictures in the press. There are a number of possible inferences. Perhaps young women are more frightened of the disease, or take more care of their health. Or perhaps picture editors like pretty young women.

The same phenomenon will be seen when the latest GCSE and A level results are published in the summer. Accompanying the stories of the scandal of falling standards (if pass marks are better than last year) or of failing schools (if pass marks are worse) will be photographs of almost exclusively pretty girls, hugging one another with delight as with open-mouthed glee they realize their successes. If it wasn't that discrimination against women is still a serious problem in our society, it might be something worth protesting about.

The coincidence of SARS and the Iraqi war is – I'm not sure what word to use. The religious or superstitious may imbue it with purpose, as if some higher authority is reminding humans that anything we can do, nature (in a different sense from the journal) can do better. The parallel of the First World War and the Spanish influenza pandemic has not been missed. Both recent events have been depressing not just in their occurrence, but in the reactions, which drive home just how unpleasant the human race can be. In Canada, Chinese restaurants have been attacked. The people in Toronto caught SARS in a hospital not in a restaurant. In the US, which prides itself on a democracy it is trying to impose on Iraq, a successful country music band the Dixie Chicks lost almost all their sales for being openly anti-war. Our world, in which actors playing soap stars can be abused sometimes physically for actions their characters have undertaken on the screen, is a fragile place. It doesn't need the anarchy that followed the disappearance of police from the streets of Baghdad to remind us of that. HM

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