

Chronic Subdural Hematoma Following Maxillofacial Fracture: Report of 2 Cases

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Chronic subdural hematoma generally occurs following craniocerebral trauma but is not a common complication following oral and maxillofacial trauma. In this report, we describe two cases of chronic subdural hematoma that appeared one month following maxillofacial trauma in elderly patients. Although the direct craniocerebral trauma was initially denied by emergency physicians through primary survey, oral and maxillofacial surgeons have found CSDH during post-trauma follow-up courses in both cases. Then neurosurgical intervention by neurosurgeons was required for them. These reports suggest that the risk of chronic subdural hematoma should be kept in mind in elderly patients who have sustained maxillofacial trauma and in those taking antiplatelet drugs. Follow-up computed tomography is important, even in patients without any abnormal neurologic signs or symptoms.

Keywords: chronic subdural hematoma, oral and maxillofacial trauma, maxillofacial fracture

INTRODUCTION

Chronic subdural hematoma (CSDH) is a common neurosurgical pathology that typically follows head injury in elderly patients but is not well described following oral and maxillofacial trauma [1-3]. Trauma and antithrombotic therapy are the most common risk factors [4-6]. A previous study demonstrated that 47.3% of patients who developed CSDH were on antithrombotic medication. Elderly patients who sustain traumatic head injury have the highest risk of developing CSDH [1-7].

The current understanding is that CSDH is common in elderly populations [6-8]. With increasing numbers of elderly individuals in the general population worldwide, the incidence of CSDH is expected to increase [5-7]. Medications that can cause coagulopathies, particularly anticoagulants and antiplatelet agents, are known to increase the risk of CSDH [6, 7]. Therefore, as the number of elderly people in the general population continues to increase, so too will the number of patients treated with anticoagulants and antiplatelet agents [6, 7].

Headache is the most common presenting clinical symptom, occurring in up to 90% of cases. Other common symptoms include nausea, unilateral paralysis, aphasia, and neurologic manifestations, the most common of which is a decreased level of consciousness [1, 5-7]. Antithrombotic agents are often used for prophylaxis against cerebral ischemic stroke, myocardial infarction, valvular heart disease, and deep venous thrombosis.

To our knowledge, there have been few reports on the relationship between CSDH and maxillofacial fracture [1]. Here, we report the clinical course in

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two elderly patients who were found to have CSDH one month after oral and maxillofacial fractures that had been treated conservatively. Neurosurgical intervention was required in both cases.

Case 1

An 85-year-old Japanese woman presented to the Emergency and Critical Care Center with a chief complaint of hematoma extending from the left eyelid to the buccal region after a fall down a flight of stairs earlier in the day. After detailed examination, in which the direct craniocerebral trauma was initially denied by emergency physicians through primary survey, facial injury was diagnosed and the patient was referred to our Department of Oral and Maxillofacial Surgery for further treatment and care. Her past medical history was unremarkable, and hematology, electrolyte, and coagulation profiles were normal. General examination revealed a clear sensorium, stable vital signs, and no abnormal neurologic findings. External examination of her face showed abrasions on the left eyelid and buccal region and periorbital edema in the left eye. There was no evidence to suspect the bruises on head. Computed tomography (CT) scanning revealed fractures of the left orbit and left zygoma with slight bony displacement. There was no impairment of mobility in the left eye or obstruction of the rectus inferior muscle

(Fig. 1) and no intracranial lesion (Fig. 2a). The clinical diagnosis was fracture of the left orbit and zygoma. Conservative treatment with a follow-up examination was indicated because there was no functional disorder and wound healing was considered uneventful on evaluation at our outpatient clinic.

One month later, we performed a follow-up CT scan of the maxillofacial fractures and found a high-density subdural fluid collection on the left frontal convexity, which had a maximum width of 12 mm, with midline shift (Fig. 2b). She had motor aphasia, but no other abnormal neurologic findings.

We then consulted our Department of Neurosurgery, and burr hole drainage surgery was performed promptly for CSDH. The patient made an uneventful recovery and regained her pre-accident maxillofacial function and neurologic status. CT scan taken 6 months postoperatively showed that the hematoma had been completely evacuated without any functional deficit (Fig. 2c).

Case 2

An 85-year-old Japanese man presented to the Emergency and Critical Care Center with chief complaints of pain and swelling in the temporomandibular joint and intraoral bleeding after a fall while walking outdoors and he was injured in the left midface. After detailed examination, in which

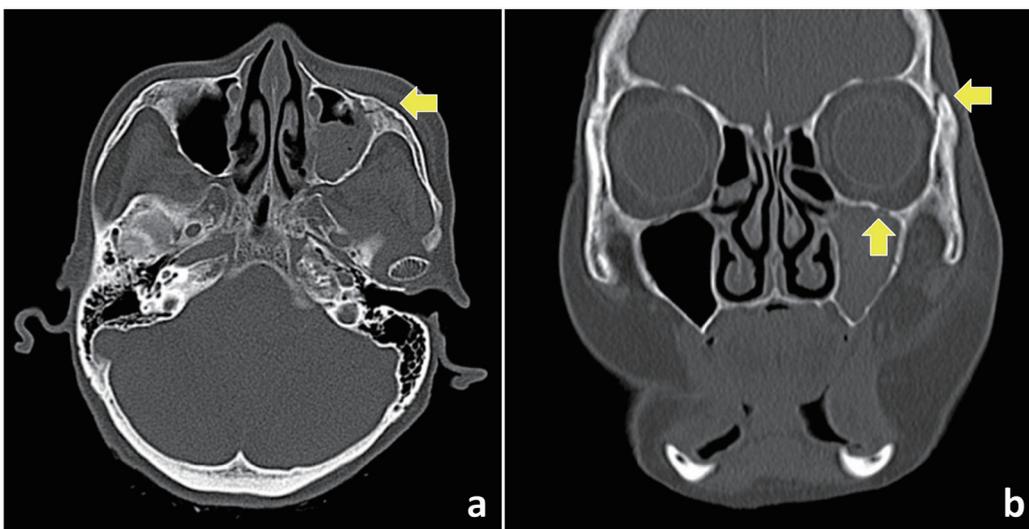


Fig. 1. Head computed tomography images of our first patient at the initial visit showing fractures of the left orbit and left zygoma with slight bony displacement (arrow). (a) Axial view (b) Coronal view.

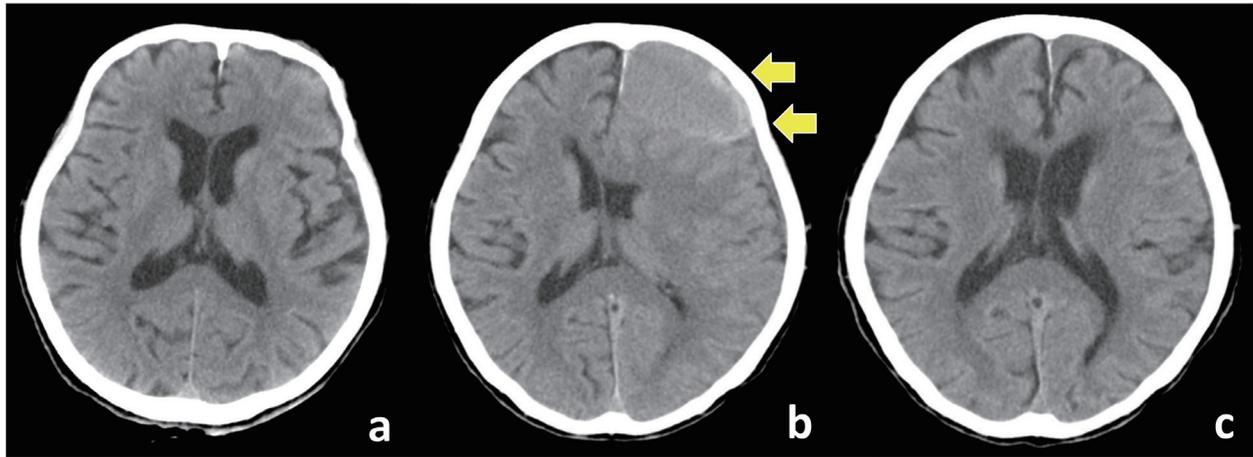


Fig. 2. Head CT images of our first patient. (a) CT scan at the first visit does not show any intracranial lesion. (b) CT scan taken 1 month later shows a high-density subdural fluid collection on the left frontal convexity with midline shift (arrow). (c) CT scan taken 6 months postoperatively shows that the hematoma had been completely evacuated. CT, computed tomography.

the direct craniocerebral trauma was initially denied by emergency physicians through primary survey, he was diagnosed to have a facial injury and referred to our Department of Oral and Maxillofacial Surgery. His past medical history included atrial fibrillation, congestive heart failure, and hypertension. He was taking oral antihypertensive and anticoagulant agents. His hematology profile was normal but renal function was decreased and international normalized ratio was slightly elevated at 1.73. He had a clear sensorium, stable vital signs, and no abnormal neurologic findings. External examination revealed an abrasion in the mental region, bruising on the lower lip, and bleeding from the oral cavity and left external auditory canal but there was no evidence to suspect the bruises on head. Radiographic evaluation revealed fractures of the left condylar head and the anterior wall of the left external auditory canal (Fig. 3). There was no intracranial lesion (Fig. 4a). The clinical diagnoses were fracture of the left condylar head and left external auditory canal and mild traumatic subarachnoid hemorrhage. Conservative treatment with subsequent follow-up examination was indicated because there was no functional disorder and there was no clear indication for surgery. One month later, follow-up CT scan revealed a high-density subdural fluid collection on the right convexity with a maximum width of 10 mm but no midline shift (Fig. 4b). There were no abnormal neurologic findings. After 2 weeks of observation and care, we

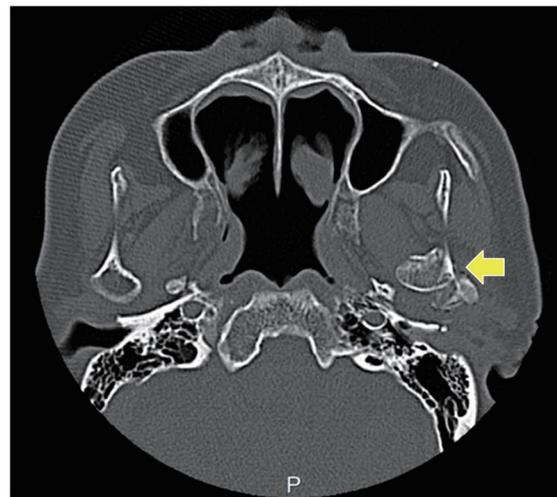


Fig. 3. Head CT images of our second patient taken at the first visit showing fractures of the left condylar head and the anterior wall of the left external auditory canal (arrow).

consulted the Department of Neurosurgery, and burr hole surgery was performed because of expansion of the persistent CSDH. CT scan taken 3 months postoperatively confirmed that the hematoma had been completely evacuated (Fig. 4c). The patient made an uneventful recovery and regained his pre-accident maxillofacial functional and neurologic status.

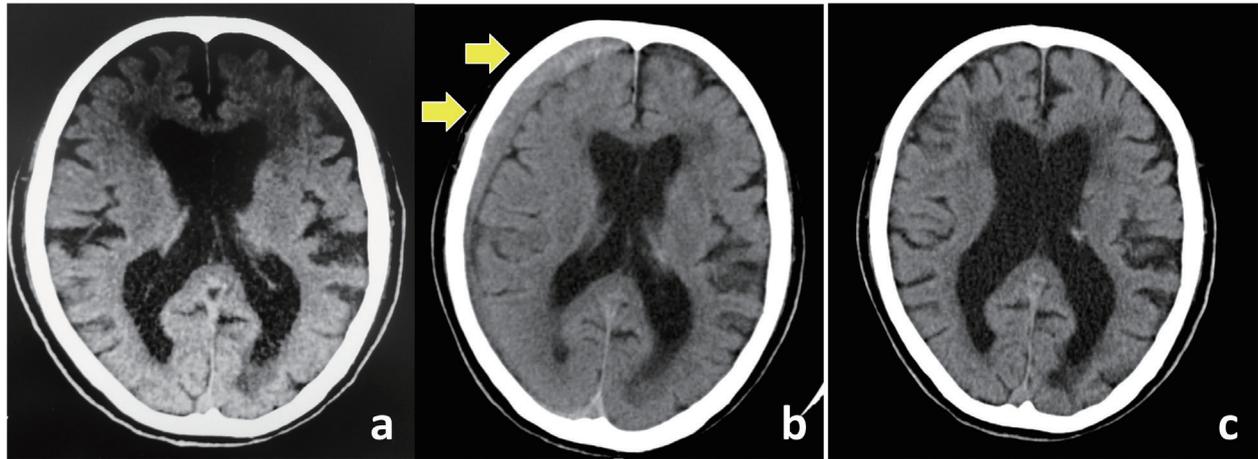


Fig. 4. Head CT images of our second patient. (a) CT scan at the first visit does not show any intracranial lesion. (b) CT scan taken 1 month later shows a high-density subdural fluid collection on the right convexity with no midline shift (arrow). (c) CT scan taken 3 months postoperatively shows that the hematoma had been completely evacuated. CT, computed tomography.

DISCUSSION

The hematomas in our patients were found incidentally on CT scans performed at their first follow-up visit. Both patients were elderly; one developed motor aphasia and the other patient had no symptoms. Symptoms of intracranial hypertension, such as headache and nausea, are common in young patients but not in the elderly because of latent cerebral atrophy [1, 5-7]. In the elderly, the cardinal symptoms are neurologic manifestations and unilateral paralysis followed by hypoperfusion of the affected cerebral hemisphere [1, 5-7]. CSDH is diagnosed by using CT scans [9]. Head CT is useful in the diagnosis of CSDH as well as for treatment and follow-up. An imaging study reported there is crescent-shaped enhancement in the subdural space [9].

Burr hole evacuation and drainage is the most common treatment modality used for CSDH, with all treatment strategies aiming at decompression of the cerebral hemispheres and preventing recurrence of CSDH with minimal morbidity and mortality [5-7]. However, burr hole surgery has been associated with significant rates of recurrence of CSDH that are roughly estimated to be between 5% and 30% [10].

Both cases described in this report involved elderly patients. Head CT scan was performed in our first patient because she developed motor aphasia.

However, our second patient had no neurologic signs, and CT was only performed for follow-up of the maxillofacial fracture and in view of the slight risk of CSDH because he was taking warfarin for atrial fibrillation. The National Institute for Health and Care Excellence guideline [11] recommends prompt CT of the head in patients who sustain high-energy trauma; however, no recommendation is made for simple maxillofacial fractures. We believe that we should be performing a neurologic evaluation and CT of the head in these elderly patients, particularly those who take antithrombotic drugs. Nakaoka et al reported that the median interval between injury and development of CSDH was 6 weeks; however, in patients with oral and maxillofacial trauma, the median interval is reported to be 8 weeks, although there are many reports of post-injury cases of CSDH at 4 weeks [1]. Therefore, CT evaluation of the head should be considered in high-risk patients at 4-8 weeks post injury.

There is a high rate of facial fractures and injuries at other sites in elderly people as a result of falls. Therefore, even if the external wound appears slight, these patients still require careful and systematic evaluation [12, 13]. Elderly patients, especially those who are taking warfarin or antiplatelet agents, should be carefully followed up for traumatic intracranial change, even if injury to the oral and maxillofacial region is slight. Maxillofacial surgeons should liaise with critical care centers and neuro-

surgeons when in doubt about neurologic symptoms and CSDH seen on head CT.

Clinicians who treat patients with oral and maxillofacial trauma should be able to make a prompt diagnosis and arrange for long-term follow-up of these patients as part of the treatment plan. This is because that the direct craniocerebral trauma had been initially denied by emergency physicians through primary survey, and oral and maxillofacial surgeons found CSDH during post-trauma follow-up courses and the neurosurgical intervention by neurosurgeons was required in both cases.

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