Introduction

Recently, guidelines on head injury prevention have been suggested for various sports [1]. The characteristics of head injuries sustained in sports are as follows: 1) repetitive concussions and 2) acute subdural hematoma caused by concussions, which can be potentially fatal [2]. In addition, fractures of the facial and maxillary bones due to head injuries that occur during sports account for nearly 7%–38% of all injuries [3-6]. However, there is little published literature regarding asymptomatic facial injuries. Here we report a case of an asymptomatic facial bone fracture after a sports-related facial injury, in which periorbital emphysema was caused by coughing.

Case Presentation

In June, 2011, an 18-year-old man presented to our hospital with facial puffiness of his left lower periorbital area. He had been playing baseball, and the ball had hit the left side of his face several hours previously. Physical examination revealed that there was neither severe pain nor any visual disturbance, and he was directly discharged. Three hours after the injury, the patient experienced a sudden bout of coughing, his left lower periorbital area became swollen but without pain (Figure 1). Physical examination revealed that there was neither severe pain nor any visual disturbance, and he was directly discharged. Three hours after the injury, the patient experienced a sudden bout of coughing, his left lower periorbital area became swollen but without pain (Figure 1).

Examinations of the heart, lungs, penetrating trauma, eye movements, as well as the results of laboratory tests, were normal. The patient had no medical history of acute dacryocystitis, chalazion, and tooth extraction. Computed tomography (CT) of the head revealed a fracture of the left orbital floor. We put him on a course of prophylactic antibiotics (Cefditoren pivoxil, 200 mg) for 5 days. On the following day, the orbital emphysema decreased and the swelling disappeared. We presumed that the increased intramaxillary pressure permitted subsequent air flow under the periosteum of the left orbit. Therefore, the left orbit was inflamed with a sudden and marked appearance of emphysema after coughing. This case clearly demonstrates that patients must be carefully evaluated in asymptomatic sports-related facial injuries.

Discussion

Facial and maxillary bone injuries due to sports have a large influence on the quality of life, which is established by disease mechanisms such as that of head injuries [3-6]. However, there is a gap in the literature with respect to problems resulting from asymptomatic injuries to the face. Emphysema is a well-documented condition in the chest and cervical area, which may occur secondary to tonsillectomy, dental treatment, oropharyngeal barotrauma, scaling and root planning.
therapy, punch biopsy, endotracheal intubation, orthognathic surgery, extraction of impacted teeth, and/or after maxillofacial injury. There are also unusual cases of focal orbital emphysema that develops when a fracture or perforation occurs in the lamina papyracea due to direct [7] or indirect trauma [8,9], resulting in elevated intraorbital pressure [10]. In general, an orbital fracture can occur in patients who have suffered blunt trauma due to traffic accidents, falls, violence, or sports. Diplopia and ocular motility restriction are the most common symptoms, with notable signs appearing at the time of the injury. These symptoms can be promptly relieved with surgery, and asymptomatic cases show good recovery with conservative medical management and antimicrobial therapy. In this case, the patient had no neurological symptoms. We presumed that the increased intramaxillary pressure was permitting the subsequent air flow under the periosteum of the left orbit, resulting in the marked appearance of emphysema after coughing. Orbital emphysema is generally a benign disease. However, emphysema should be closely monitored in case of potentially serious complications. Most reports have indicated the use of antimicrobial therapy similar to that in our case, as well as the use of nasal decongestants, air drainage, and direct decongestants, for treatment. Careful observation and a recommendation to avoid blowing the nose are the only treatments needed for orbital emphysema, and the condition typically resolves within 2 weeks. However, some reports have found that severe complications such as an intraorbital air mass may cause visual impairment due to central retinal artery occlusion [11]. Majority of outpatients are not diagnosed with orbital fractures because of the lack of clinical signs; diplopia and ocular motility disorders are treated based on clinical follow-up, and patients are discharged. Even in patients with less severe symptoms, the doctor needs to explain and ensure that the patient understands the potential symptoms of orbital fractures, such as facial emphysema, as described in this case. Additionally, the doctor should evaluate the patient’s history of facial trauma and facial bone fractures.

**Conclusion**

This case demonstrates that we must carefully observe patients who present with asymptomatic orbital fractures following sports-related facial injuries. Moreover, the rapid diagnosis and management of this condition are essential to avoiding potentially serious complications.

**Contributors**

YS, JM, and SO treated the patient and wrote this report; TI performed the investigation.

**References**