



An unusual peripheral facial paralysis onset

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ABSTRACT

Peripheral facial paralysis may be observed primary or secondary causes. Firearm injuries may cause facial paralysis via direct injury or ballistic effects. Ballistic effects may be observed far beyond the bullet trace. In this article we present an unusual late peripheral facial paralysis onset related with ballistic effect a firearm injury to the left maxillary sinus. Due to late onset of facial paralysis after firearm injury; differential diagnosis and ballistic effects have been discussed.

Keywords: Ballistic trauma, peripheral facial paralysis, firearm injury

INTRODUCTION

Peripheral facial paralysis occurs with any lesion or injury to postnuclear portion of the facial nerve. Facial paralysis can be primary or secondary (1). Unilateral peripheral facial paralysis may be observed at any ages and has incidence of 20-30 / 100000 (2), (3).

Firearm traumas accounts an important amount of the traumatic peripheral facial paralysis. In firearm injuries paralysis may result with direct bullet injury to the nerve as well as indirect nerve injury due to ballistic effect of the bullet. Firearm injuries are classified as low speed injury (< 2000 ft/sec) and high speed (>2000 ft/sec) injury. The severity of the injury depends on the bullet speed, bullet trace, heat radiation, and the entrance point (4).

Late traumatic facial paralysis and Bell Paralysis has common properties. The paralysis occurs due to the inflammation around the nerve ischemia or edema of the nerve itself (5).

CASE REPORT

31 years old male patient with a complaint of a firearm shot in the face refers to an emergency department in a foreign country. The coronal and axial computer tomography of the face revealed a bullet in the left maxillary sinus (Figure 1). He was observed for two days without any medication. The second day House Brackmann Grade V peripheral facial paralysis developed with no accompanying neurological disorder. (Figure 2) And he was transferred to our clinic. He was interned and 1mg/kg methyl prednisolone therapy for peripheral facial paralysis was administered. A Caldwell-Well-Luc procedure was planned for the bullet removal. The bullet was extracted and the patient was discharged postoperatively (Figure 3). The paralysis recovered on the 14th day of the surgery. One year follow up showed no sign of sequel or recurrence.

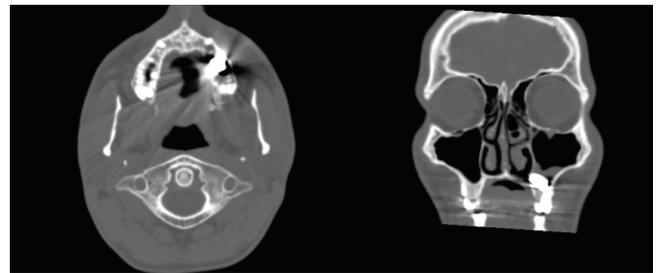


Figure 1: Axial and Coronal CT sections of the patient

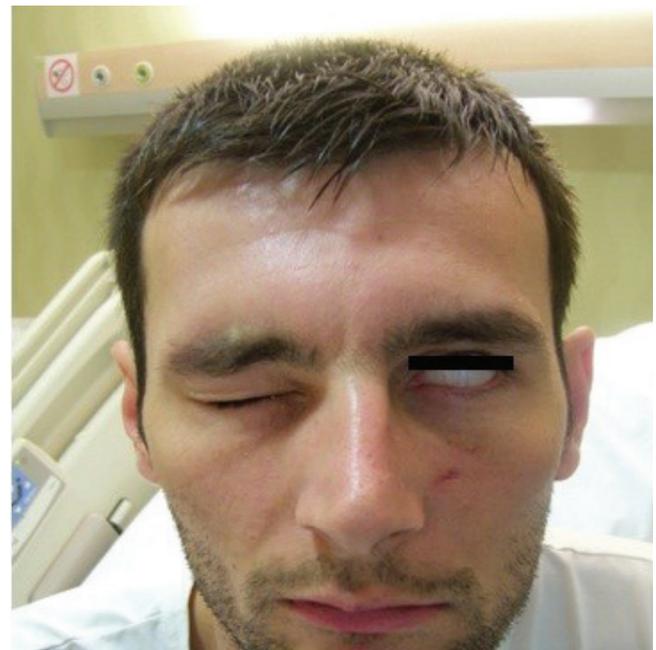


Figure 2: Facial Paralysis onset on the second day of the injury

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Figure 3: The bullet core removed from maxillary sinus

DISCUSSION

Ballistic injury may occur beyond the bullet trace. Ballistic effect depends on the velocity, heat and the time between the exit from weapon to target impact (6). Thus, the tissue injury may be observed beyond the trace as a result of ballistic effect. A bullet targeted on the head and neck region travels the trace approximately in 5-10 milliseconds and forms a temporary cavity up to its 30 times bullet diameter which is directly proportional with the kinetic energy of the bullet. After this circular expansion, cavity collapses regarding to the negative pressure. The size of the cavity is related with the velocity of the bullet and the formation of this cavity results with tissue injury far beyond the bullet trace (7), (8).

After penetrating head injuries generally intracranial pressure increases and the pathophysiology of this condition is not clear. Fortunately, our patient did not show any sign of intracranial pressure increase and the neurological follow up was normal except the peripheric facial paralysis.

In this case although trace of the bullet has no intersection with the facial nerve course a late onset of peripheral facial paralysis was observed. The paralysis mechanism is not clear and the paralysis may be related with the ballistic effect of the bullet or a synchrony onset of Bell palsy. It is difficult to make this differential diagnosis. Because swelling, compression edema of the facial nerve in the facial canal and also response to the steroid therapy are the similarities between late facial paralysis triggered by ballistic injury and Bells palsy.

In conclusion, it is essential to keep in mind probable late complications of a ballistic injury and a close follow up is recommended.

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