Radial Nerve Palsy after Humeral Fracture: To Explore or Not to Explore? - A Case Report

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Abstract

The incidence of radial nerve injuries varies from 2-17%, and humeral fracture is the most common cause in young adults. The treatment of radial nerve damage, especially in cases of fracture, remains a challenge.

The authors report a case of radial nerve palsy related to humeral shaft fracture and shall revise the literature about their treatment. Whether fracture or associated radial nerve injury, were treated conservatively, and the patient referred, of course, to Physiatry, to start intensive functional recovery of the affected upper limb. At 5-6 months after fracture, patient maintains radial sensory and motor deficits, and it was proposed surgical exploration of the radial nerve, which was scheduled, because a week before the alleged scheduled surgery, he demonstrated a recovery, and has fully function of the radial nerve after 2 weeks.

Humeral shaft fractures are treated mostly conservatively, the radial nerve usually suffers neuropraxia and their function returns spontaneously after fracture healing, as happened in this case.

The nerve exploration is reserved for cases in which there is no recovery of nerve function 3-4 months or a little more, after the fracture consolidation. Thus, nerve routine operation would subject many patients to unnecessary complications of surgery.

Keywords: Palsy; Radial nerve injury; Humeral fractures; Radial neuropathy/etiology; Radial neuropathy/therapy; Treatment outcome

Introduction

The incidence of radial nerve injuries varies from 2-17%, and humeral fracture is the most common cause in young adults [1]. The treatment of radial nerve damage, especially in cases related to fracture, still remains a challenge [1,2]. Neuropraxia is the most common injury in closed humeral fractures while neuromtisis is more associated with open fractures [3,4]. It is known that 85-90% of radial nerve lesions express spontaneous recovery within 3 months, on average, after seven week [5]. So if nerve function does not return within three to four months, nerve surgical exploration should be performed [3].

The authors report a case of radial nerve palsy associated with humeral shaft fracture where both lesions were treated conservatively, taking the patient initiated the recovery of radial nerve function after 6 months of the initial injury. It is also reviewed the literature on the treatment of these lesions.

Case Report

Male patient, 16 years old, without pathological antecedents. He appealed to the Emergency Service (ES) after falling from heights (about a meter), which resulted in fracture of the right humerus (Figure 1). It was made pending plaster cast immobilization (Figure 2) and he was discharged to continue treatment on an outpatient basis. It has not been registered neurological status or reduction maneuvers in the ES. Three days after fracture he appealed to the ES for very severe edema of the right forearm and hand, verifying radial nerve palsy, with no other signs of compartment syndrome. In the absence of knowledge about their treatment. Whether fracture or associated radial nerve injury, were treated conservatively, and the patient referred, of course, to Physiatry, to start intensive functional recovery of the affected upper limb. At 5-6 months after fracture, patient maintains radial sensory and motor deficits, and it was proposed surgical exploration of the radial nerve, which was scheduled, because a week before the alleged scheduled surgery, he demonstrated a recovery, and has fully function of the radial nerve after 2 weeks.

The nerve exploration is reserved for cases in which there is no recovery of nerve function 3-4 months or a little more, after the fracture consolidation. Thus, nerve routine operation would subject many patients to unnecessary complications of surgery.
Figure 1: Right humeral shaft fracture at the entrance to the ER, AP and perfil.

Figure 2: It was performed closed reduction and upper limb cast immobilization.

Figure 3: X-ray performed after 6 weeks of cast immobilization, during follow-up.

Today, 14 months after the trauma, the patient presents with mobilization and range of motion for daily living activities, professional and recreational (keeper in federated football team).

Figure 4: Radiography performed after four months of injury, during follow-up, showing fracture healing.
Table 1 presents a treatment algorithm for humeral shaft fractures associated with paresis of the radial nerve, based on the literature review performed.

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Table 1 presents a treatment algorithm for humeral shaft fractures associated with paresis of the radial nerve, based on the literature review performed.

The objective of this study is to alert the medical community that following the guidelines does not always lead to the expected results in the expected time period, because in this case the functional recovery of the member occurred only six months after the initial trauma. It exceeds even the importance of a thorough physical examination of the patient in the ES, so that we can make the diagnosis and assess the degree of initial nerve damage to accompany the further development of radial injury and processed thus the most appropriate treatment.

It also alert highlights the importance of making the neurological examination all humeral fractures, since, for example, the differentiation between previous paresis or subsequent radial nerve fracture reduction may be relevant in the direction of the most appropriate treatment, which today is controversial.

References


