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Ipsilateral elbow and shoulder dislocation: a case report

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Joint dislocations are very frequent injuries in the clinical practice of the orthopedic surgeons. Usually, the patients who suffer any joint dislocation are treated in the emergency departments given the significant pain and functional impairment this injury generates. After interphalangeal dislocations, shoulder and elbow dislocations are the most common joint dislocations, with shoulder dislocations being almost 5 times more frequent (24 per 100,000 person-years)[10] than elbow dislocations (5.2 per 100,000 person-years).[8]

The combination of these injuries is extremely infrequent with only 10 previous cases reported in the scientific literature, 6 of them presenting a fracture dislocation associated with the other joint dislocation.[2] The majority of cases occurred in relation to high-energy trauma injuries such as motor-vehicle accidents or falls from height.

Here we present a case of an elbow and shoulder dislocation without associated fractures, in the context of a medium-energy trauma. We achieved to complete a 12-month follow-up to the patient. The objective of this clinical case is to increase the awareness of this rare injury among emergency department healthcare professionals and show which precautions should be taken into account when managing this type of patients. It is mandatory to maintain a high suspicion level, even within unusual clinical context, and to properly execute the physical examination principles to avoid overlooking this condition and achieve the best clinical results.

Clinical case

A 54-year-old right-handed housewife was referred to the emergency department after being attended in a primary care emergency center. She was referred with the diagnosis of a right elbow dislocation to be evaluated and treated by the orthopedic surgeon. She stated that she fell from a 50-cm stool and landed on her right side. She said she did not present any blow in her head or neck or any other injuries. She stood up by herself, but due to intense pain around the right elbow area, she and her husband decided to go to the emergency service of a primary care facility. The patient reported to have a history of hypertension, coronary heart disease, and depression, all of which were being properly treated. She had no history of previous joint dislocations.

At the initial clinical evaluation, the patient complained of pain in the right upper extremity, specifically on the elbow region. At the physical examination, a characteristic posterolateral elbow dislocation deformity was noticeable. The neurovascular examination of the extremity showed adequate distal pulses and proper motor function of the median, anterior interosseous, ulnar, and radial nerves. The radiographs the patient brought from the initial evaluation confirmed a posterolateral right elbow dislocation (Fig. 1).

The study received institutional review board approval: ORD # 68-2018.

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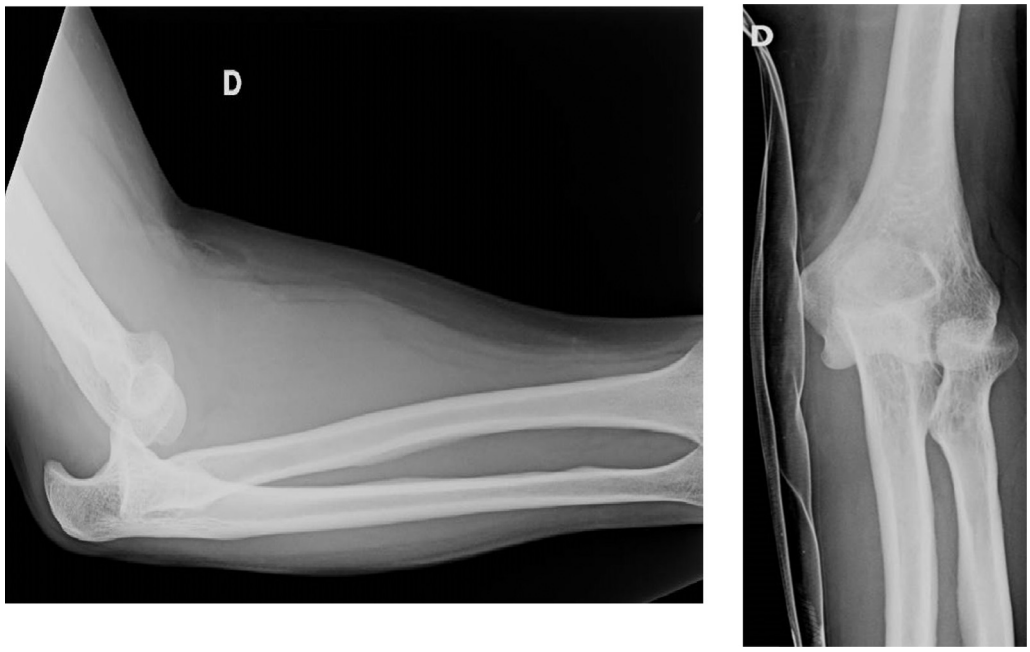

Figure 1 Anteroposterior and lateral x-rays from the initial evaluation showing a right posterolateral elbow dislocation.

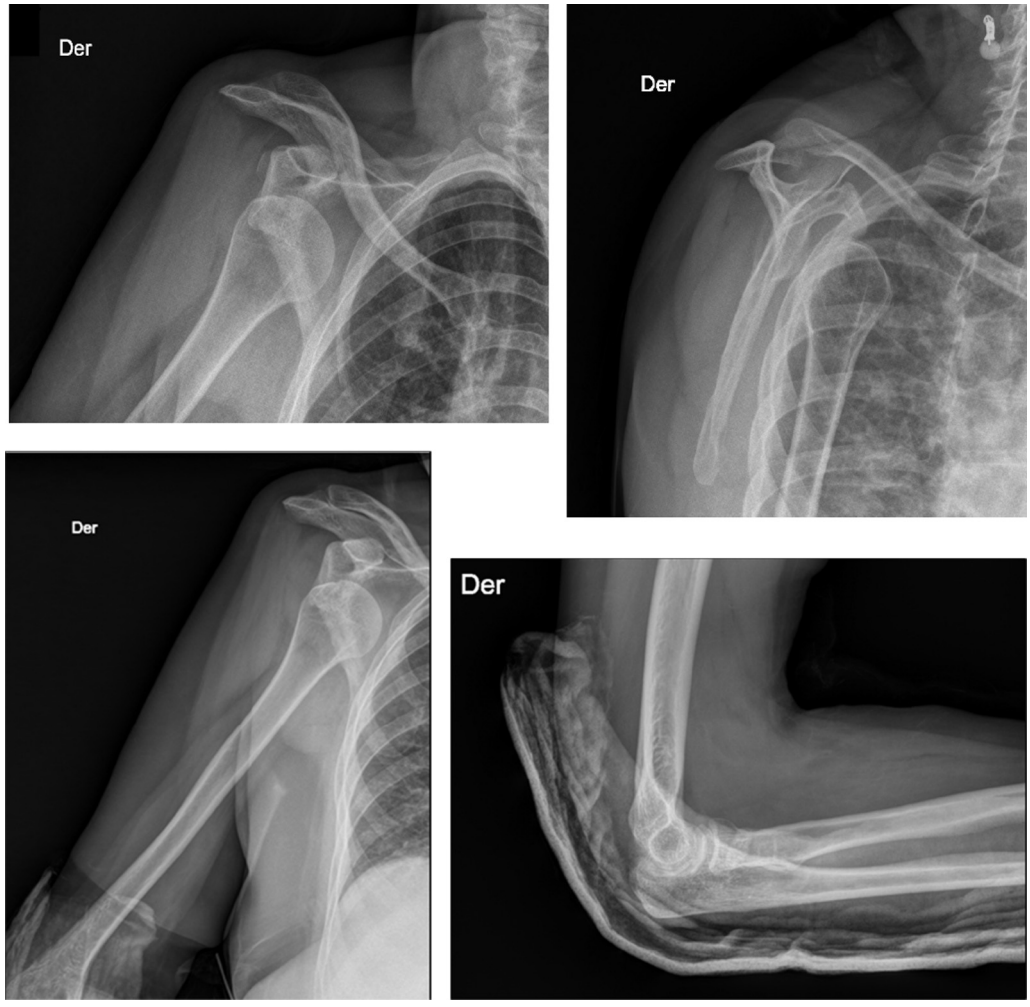

Figure 2 Right shoulder x-ray projections showing an anteroinferior shoulder dislocation. Lateral x-ray of the right elbow showing satisfactory reduction.

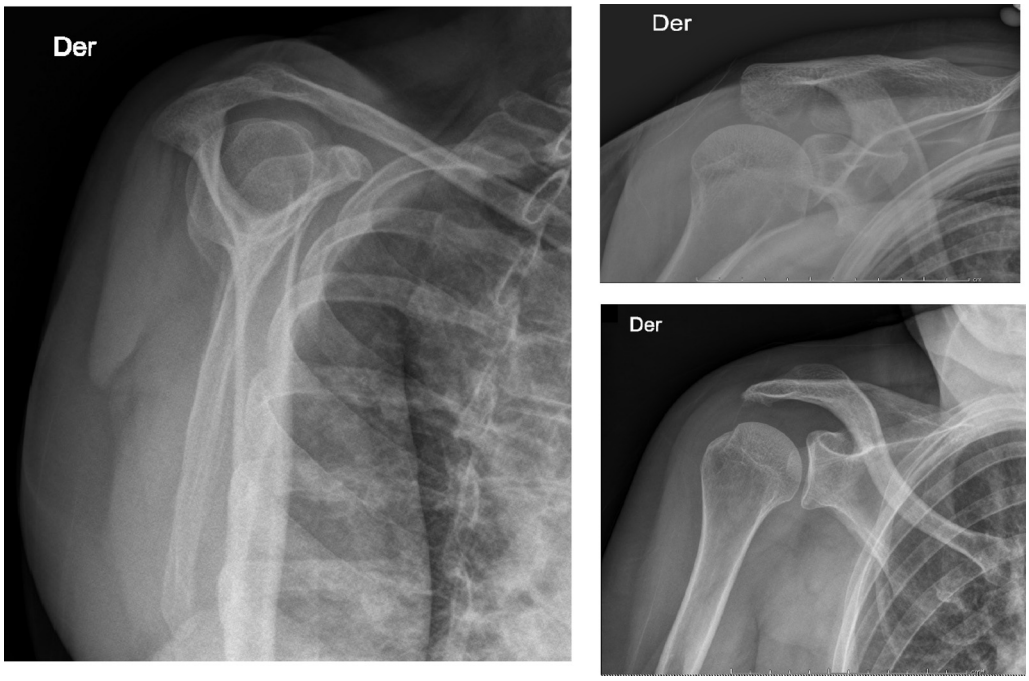

Figure 3 Right shoulder x-ray projections performed after closed reduction confirmed appropriate joint reduction.

A closed reduction was performed under conscious sedation at the emergency department. Reduction was accomplished at the first attempt, without incidents. Elbow stability was verified after reduction, and the elbow was placed in a braquiopalmar plaster slab. The patient's pain persisted to a lesser extent but still significant on her upper extremity. So, at that point, the shoulder area was addressed by taking off the patient's blouse that was covering the shoulder area. A deformity of the right shoulder was obvious, looking ''squared off,'' and the humeral head was palpated anterior and inferior in relation to the glenoid. A decreased sensation over the axillary nerve area was observed. No other neurological or vascular impairments was observed. The patient was sent to x-ray imaging to check the elbow reduction and to obtain diagnostic projections of the ipsilateral shoulder, which confirmed an anterior glenohumeral dislocation (Fig. 2). The shoulder was then reduced under conscious sedation using the Kocher technique on the first attempt. During the maneuver, the elbow was carefully kept on 90° of flexion to avoid further damage or loss of reduction. The patient reported almost complete pain relief after the maneuver was completed. She was sent to x-ray imaging again (special instructions were given to the x-ray technician that while obtaining the projections the elbow that had been left resting on a BP plaster slab should not be mobilized) to verify the postreduction status. The images showed adequate shoulder reduction (Fig. 3), so she was prescribed analgesia and was discharged with a shoulder immobilizer.

Two weeks later, during the follow-up visit, the patient expressed mild residual pain, and had an active range of motion (ROM) with a 15° deficit of elbow extension (Fig. 4) and some persistence of the axillary nerve neuropraxia, but with a slight recovery since the initial evaluation. The patient reported that she had always had greater laxity and mobility of her joints compared to normal population. Beighton criteria analysis was deferred to objectify the eventual presence of a joint hypermobility syndrome for the next evaluation given that the patient was not yet in optimal clinical conditions. She was also sent to physiotherapy to start joint rehabilitation.

A new follow-up visit was scheduled 3 months after the injury. Almost full ROM was achieved on both joints after having completed 20 sessions of physiotherapy (patient only remained with a 5° elbow extension deficit). The axillary nerve neuropraxia was resolved. She reported almost no pain, only referring occasional discomfort around the shoulder area when lifting objects from above the shoulder level. Beighton criteria evaluation showed a score of 6 (out of 9 points), which confirmed joint hypermobility syndrome. She was allowed to resume her normal activities, without restriction. She was also educated regarding what to expect during the following months and was told that a final follow-up appointment should be done after completing 12 months since the injury.

Her final evaluation was after 1 year of the injury. She did not have any shoulder or elbow instability sensation, she did not feel any restriction or difficulty for any of her daily life activities, and she had not had new episodes of shoulder or elbow dislocations. She regained full ROM both passively and actively in both joints. The articular range was also symmetrical with her contralateral limb (Fig. 5). The patient was discharged.

Figure 4 Shoulder and elbow range of motion at the 2-week follow-up visit.

Discussion

The occurrence of simultaneous shoulder and elbow dislocation is a very unusual clinical situation.[2] In most cases, it is associated with high-energy trauma. In 3 of the 10 previously reported cases, shoulder dislocations were overlooked during the first evaluation because patients, as in our case, presented a severe pain at the elbow area, which masked the shoulder dislocations initially.[1,4,6] In 2 of 3 reported cases in which the shoulder dislocation diagnosis was initially ignored, the patient's obesity was mentioned as a factor.[1,5] Although our patient was obese, in our case,

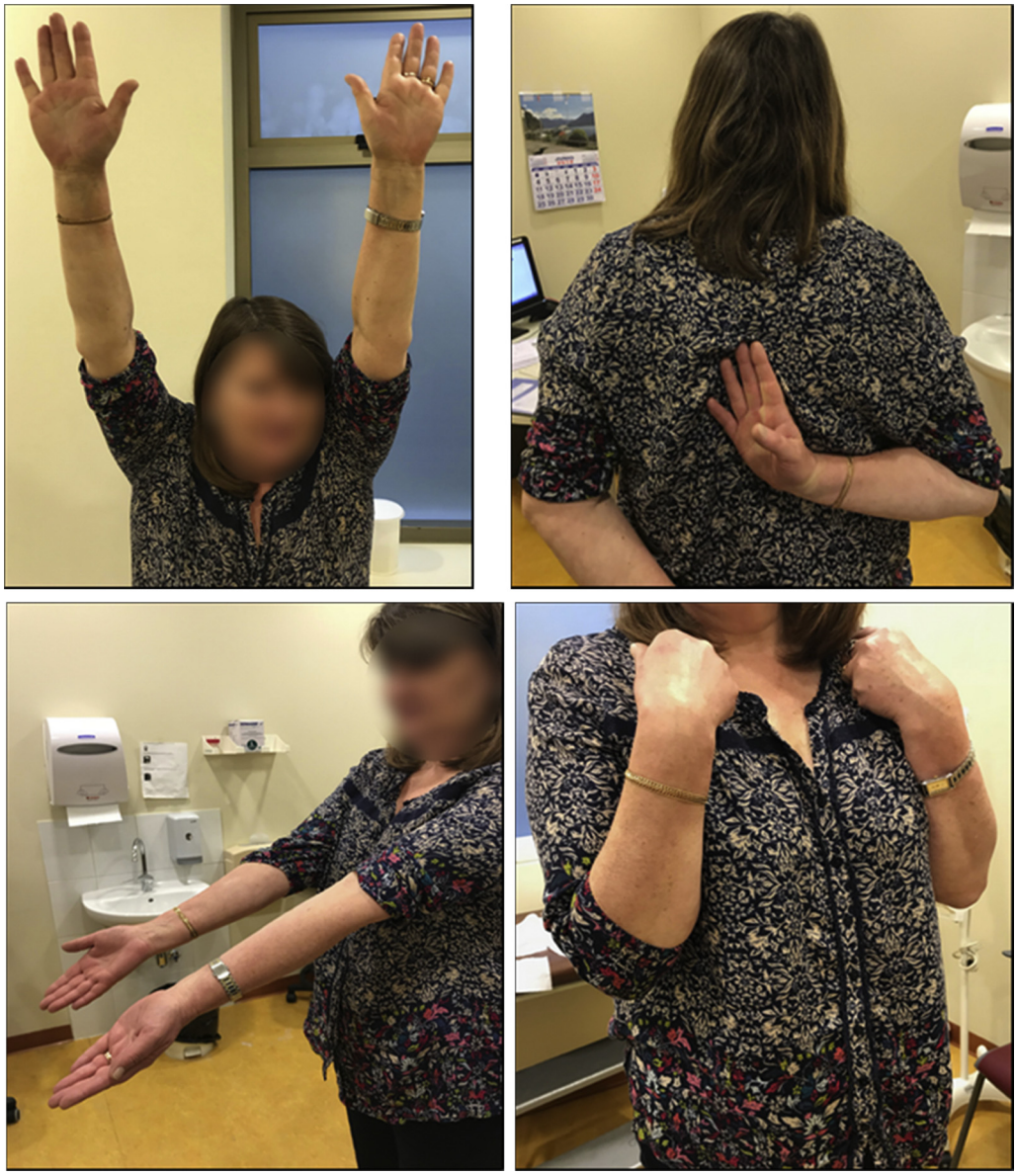

Figure 5 Shoulder and elbow range of motion at the 1-year follow-up visit.

the shoulder dislocation was overlooked at the initial assessment because of a misleading history as the elbow was the patient's painful area and the referral was performed as an elbow dislocation. Fortunately, we were able to identify the shoulder dislocation before the patient's discharge. Despite this, it is important to point out that this would not have happened if one of the physical examination basic principles had been followed from the beginning, which is to routinely examine the adjacent joints of an injured joint to avoid overlooking associated injuries.

The elbow dislocation reduction was performed first (although in our case because we did not initially identify shoulder dislocation) as how was done in most of the other previously described cases.[3,4,6,7] After this was performed, having achieved stability of the distal portion of the limb, the shoulder reduction was performed. To carry out the latter, it seems reasonable to choose one of the reduction maneuvers that keep the elbow in flexion while performing shoulder reduction and thus avoid maneuvers that can destabilize the elbow in extension, losing the initial reduction obtained and probably causing more damage.

Conclusion

Ipsilateral shoulder and elbow dislocation occurrence is a rare clinical condition associated with high-energy

mechanisms of trauma, or, as observed in 3 of the previously reported cases,[3,6,9] medium-energy mechanisms of trauma associated with muscle tone impairment[2] (1 patient fell from a ladder after losing consciousness because of a syncope, and the other 2 patients had medium-energy mechanisms of trauma with muscle tone impairment because of drug consumption). To our knowledge, this is the first report of an injury like this associated with the medium-energy mechanism of trauma and without muscle tone impairment. The patient's hypermobility may have predisposed her to this complex injury. This should alert clinicians in scenarios in which they have to face patients with this syndrome who suffer a trauma.

Disclaimer

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