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CASE REPORT

Combined anterior and posterior shoulder dislocation as a manifestation of a brain tumour

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Seizures are sometimes the first manifestation of a brain tumour. They may give rise to shoulder fractures or fracture-dislocations. When bilateral, these lesions tend to be symmetrical. The patient reported here suffered from a previously undiagnosed brain tumour, the first manifestation of which were seizures, which provoked a bilateral shoulder dislocation in opposite directions. The posterior dislocation was recognized with a delay of 16 days. After an episode of seizures, shoulder dislocation can occur in either direction, and bilateral shoulder dislocations may not be symmetrical.

INTRODUCTION

Posterior shoulder dislocations are unusual lesions, representing roughly 2% of all shoulder dislocations (*8*). Seizures and other types of involuntary muscular contractions represent the causative factor in approximately 50% of posterior shoulder dislocations (*1*). Grand mal seizures, but also electrical shock, electroconvulsive therapy (*5*), episodes of hypoglycemia (*7*) and incidents of dyskinesia (*9*) have all been recognized as causes of unilateral or bilateral, posterior or anterior shoulder dislocation. A brain tumour may also provoke seizures resulting in shoulder dislocation (*4, 6*).

We present the difficulties in diagnosis of a bilateral asymmetrical shoulder dislocation (anterior - posterior), which occurred in a patient with a first episode of convulsions, due to an undiagnosed malignant brain tumour.

CASE REPORT

A 67-year-old man was found unconscious on the floor of his bathroom and was admitted to the hospital in a state of confusion. During the first day of hospitalisation he had two episodes of convulsions with loss of consciousness. His medical status was finally stabilised. Computed tomography and magnetic resonance imaging scans of the brain revealed a tumour measuring approximately $2.5 \times 3 \times 3$ cm in the cortical and subcortical area of the right temporal lobe, with central necrosis, marked peripheral oedema and signs of mild compression of the ventricular system. An intralesional excision was performed on the 8th post-admission day ; the histological examination revealed a grade IV astrocytoma. The patient recovered satisfactorily, regained his consciousness in the Intensive Care Unit on the second postoperative day, and started

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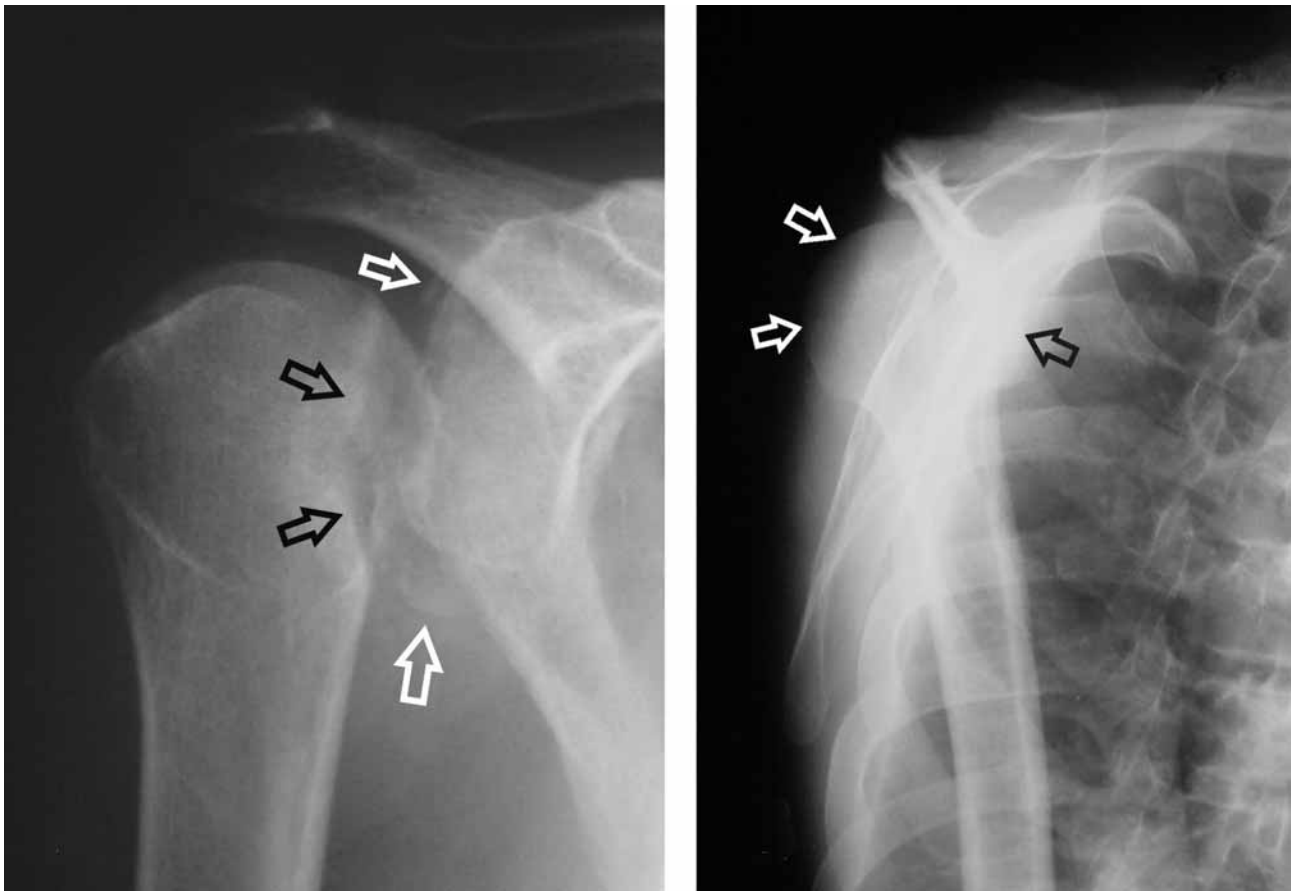

Fig. 1. — True anteroposterior (A) and lateral (B) radiographs of the right shoulder. A. Note the humeral head lesion (black arrows) and osteochondral fragments in the joint (white arrows). B. Note the posterior position of the dislocated humeral head (white arrows) in relation to the glenoid (black arrow).

complaining of pain in the left shoulder. Plain radiographs on the 10th post-admission day showed an anterior dislocation of the left shoulder. It was promptly reduced under general anaesthesia.

The patient then started complaining of right shoulder pain ; the range of motion was limited in all directions. True anteroposterior and lateral radiographs (fig 1) and a computed tomography scan (fig 2) were performed. A posterior dislocation was then diagnosed on the 16th post-admission day, with an anterior humeral head defect. The dislocation was reduced under general anaesthesia but the shoulder felt very unstable. The patient's right upper extremity was immobilised in a brace.

The patient did not accept postoperative adjuvant therapy for his brain tumour and proved very

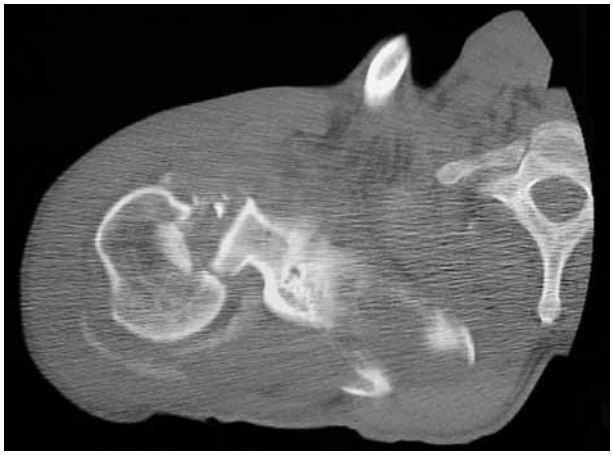

Fig. 2. — Computed tomography scan of the right shoulder (transverse cut). Note the size of the impaction on the humeral head.

reluctant to follow any type of post-reduction immobilisation. In this setting, no reconstructive option was considered for his right shoulder. A rapid recurrence of the tumour 8 weeks postoperatively produced a wave of repeated convulsions and deterioration of bilateral shoulder motion. The patient finally died three months postoperatively.

DISCUSSION

Acute posterior shoulder dislocations may result from axial loading of the upper extremity, particularly when the humerus is in flexion, adduction and internal rotation. Another mechanism is the application of a direct shock to the anterior aspect of the shoulder. Violent involuntary muscular contractions, such as those occurring during seizures, can also result in shoulder dislocation. In the latter case, the resulting dislocation is usually posterior, because the strength of the internal rotators of the shoulder joint overwhelms that of the external rotators. Nevertheless, involuntary muscular contractions can also lead to *anterior* shoulder dislocations (*3, 7, 9*).

Bilateral shoulder dislocations can result from an external force acting bilaterally (*3*). However, a convulsive episode with involuntary muscular contractions is frequently the cause in such cases. Brown (*3*) reviewed 83 cases of bilateral shoulder dislocation from the literature, adding his own 7 cases. Of these, 41% were due to seizures. Moreover, he stressed that there are cases of bilateral shoulder dislocation in which the fit has not been witnessed and the shoulder injury is erroneously attributed to the fall that followed the loss of consciousness.

Whether resulting from an external force or from uncontrolled muscular contractions, bilateral injuries tend to be symmetrical, reflecting the symmetry in the action of the causative factor. A simultaneous bilateral non-symmetrical (i.e. anterior and contralateral posterior) shoulder dislocation has, to the best of our knowledge, been described in the literature only once, as a result of seizures from alcohol withdrawal (*2*). Such a lesion can produce diagnostic and therapeutic problems.

Posterior shoulder dislocations have an ominous reputation concerning delay in recognition. This is due to the presence of only occult signs on antero-posterior radiographs and to the fact that the change in the aspect and contour of the shoulder is not as dramatic as in anterior dislocations. Moreover, when the cause is an episode of seizure, the patient is confused immediately after the episode. Besides, if this has been the first episode for the patient, medical attention may be turned towards revealing the aetiology of the seizures. Finally, in the rare case of an *asymmetrical* bilateral dislocation, attention may be focused on the most evident lesion, namely the anterior dislocation. All these factors may further contribute to the delay in diagnosis.

The mechanism of the bilateral shoulder dislocation in the case reported here remains somewhat uncertain. Most probably, both dislocations were simultaneously produced before admission, during the first non-observed episode of seizures. Alternatively, one of them may have been produced just after the other, from the application of some external force, when the patient fell on the floor. A third probability may be that the patient suffered the dislocations during the two episodes of convulsions he had on his first day in the hospital.

We consider this case as a reminder of some widely known facts (brain tumours may be manifested by convulsions ; convulsions of any aetiology can provoke shoulder dislocation ; these dislocations are frequently bilateral) and of a little-known one : bilateral shoulder dislocations caused by convulsions *do not need to be symmetrical*. In a patient with bilateral shoulder dislocation a meticulous neurological assessment is indicated, especially when there is no satisfactory history of injury. When an anterior shoulder dislocation is disclosed in this context, the contralateral shoulder should be thoroughly evaluated.

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