CASE REPORT

Anterior Shoulder Dislocation with Axillary Artery and Nerve Injury

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Summary

We report a rare case of left axillary artery injury associated with anterior dislocation of the left shoulder in a 25 yrs old male as a result of a road traffic accident. The shoulder dislocation was reduced. A left upper limb angiogram showed an obstructed left axillary artery. The obstructed segment was surgically reconstructed with a Dacron graft. Six months post operation in follow up, he was found to have good left shoulder function and no neurovascular deficit. This is an injury that could have been easily missed without a simple clinical examination.

Key Words: Shoulder dislocation, Axillary artery, Angiogram

Case Report

A 25 years old Malay male was a passenger in the back area of a van that went out of control and crashed. The patient was thrown out of the van through the back doors. The patient could not recall the incident. He sustained cerebral concussion and left shoulder injury.

In the Accident & Emergency Unit in a local hospital, he was found to have a fullness in the left deltopectoral region with bruising and abrasions. A left anterior shoulder dislocation was confirmed by x-ray (Fig. 1). His left shoulder dislocation was reduced promptly. However, despite the reduction, the left radial pulse was not palpable. His left forearm and digits looked slightly dusky. Capillary filling was normal. Doppler ultrasound `examination of the left radial artery region showed no pulsations. His blood pressure was normal at 130/80mmHg with a heart rate of 100 beats a minute. The patient was able to flex his left elbow and move his left wrist and fingers. He had paraesthesia on the left deltoid region but no sensory deficit in the distal left forearm and hand.

A left upper limb angiogram was done that same evening. The angiogram (Fig. 2) revealed an obstructed segment of the third part of the axillary artery about 2cm long below the lower border of the pectoralis minor. There was however good collateral circulation to the left forearm and hand.

After the angiogram, he had surgical exploration via a left axillary incision extended linearly on the

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medial side of the left upper arm. Operative findings revealed a 2cm avulsed and thrombosed segment in the third part of the axillary artery. This was excised and reconstructed with a Dacron graft. Fasciotomy of the arm was not done as the collateral circulation was good.

Post operation, the left radial artery pulsations were palpable and also detectable by ultrasound. After a week of satisfactory observation, the left upper arm was strapped with bandage and the wrist was supported by a collar and cuff. This allowed the shoulder capsular structures to heal. Gradual left shoulder rehabilitation was started after the strappings were removed (3 weeks post operation). On the last clinic follow up, six months post operation, he had a good left radial pulse, good range of motion of his left shoulder without pain and recovered normal sensation of his left deltoid region. To this date, he had not turned up for further follow up.

Though the angiogram showed good collateral circulation to the distal part of the left upper limb, the option of surgery was beneficial so that the patient would not have upper left arm ischemic pain when carrying heavy loads in his occupation as a factory worker.

Discussion

Commonly, the symptoms of axillary artery injury are pain, pallor, paresthesia, paralysis and pulselessness. The above case mentioned had an absent left radial pulse but good colour of the left peripheral arm. The patient had bruising and abrasions on the anterior part of his shoulder. He had no pallor. His blood pressure was normal. Although he had no paralysis, he had paraesthesia on the lower half of the left deltoid region corresponding to axillary nerve injury.

However, sometimes ischemia is not recognized immediately because there is extensive collateral circulation to the forearm. Even the presence of distal pulses by Doppler Ultrasound does not rule out arterial transection. Clinical signs in the presence of distal pulses which may point toward an artery injury are an expanding haematoma and neurological deficit[2]. Over a period of time the hematoma may not only expand into the arm but also into the lateral chest wall[2]. Paralysis and paraesthesia of the arm which occur may be caused by the haematoma compression or stretching of the nerve trunks. An MRI may be used to show the presence of the haematoma and anatomic continuity of the roots and branches of the brachial plexus[2]. The angiogram is a good definitive procedure to show the anatomy of the axillary artery and its branches.

Upper limb vascular injuries secondary to trauma can occur without limb threatening ischemia. Upper limb loss is rare due to good collateral circulation. However, upper limb claudication can occur on exertion and may seriously affect limb function. This affects the above patient's occupation as a factory worker when he carry heavy loads. Therefore, based on the angiogram, the reconstruction of the axillary artery was justifiable to improve blood flow and prevent claudication in the upper limb.

Traumatic lesions of the axillary artery are relatively rare. 15-20% of the arterial injuries of the upper limb are axillary artery injuries. Ninety four percent of the traumatic cases are due to penetrating injuries to the shoulder. Six percent are due to blunt injuries that followed shoulder fracture dislocations including those cases after reduction[2]. A review of the English literature since 1956, revealed 23 cases of axillary artery injuries with anterior shoulder dislocation. In this series, 27% were recurrent shoulder dislocations, 86% occurred in patients aged 50 years or more, 86% of the injuries occur in the third part of the axillary artery and 68% presented with an axillary mass. Since 1980, there were only 10 reported cases of vascular complications associated with shoulder dislocations[1].

Certain risk factors are recognized such as penetrating wounds of the shoulder, recurrent shoulder dislocations and elderly with atherosclerotic vessel disease[2]. The scar formation around the axillary artery from the previous shoulder dislocations and atherosclerosis may reduce the elasticity of the axillary vessel trunk.

There are several theories as to how the axillary artery can be vulnerable[3]. The axillary artery is held by its own branches within the framework of soft tissue such as the circumflex humeral and the subscapular arteries. The pectoralis minor acts as a fulcrum on the axillary artery making the third part of the artery more mobile. Previous recurrent shoulder dislocations created fibrous tissue scar formation or cicatrix around the axillary artery making it more vulnerable in the subsequent dislocation.

Absent pulses in the upper limb with apparently good circulation suggests vascular injury and an upper limb angiogram should be done.

References

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