Axillary artery thrombosis associated with fracture of the clavicle

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THE LITERATURE on vascular injuries complicating fractures of the clavicle reveal that the lesions are limited to the subclavian vessels and its more proximal components (Dickson, 1952, Ghormley et. al., 1941, Howard and Shaffer, 1965, Penn, 1964, Steinberg, 1961, Stone and Lord, 1955). This report describes a case of axillary artery thrombosis associated with an ununited fracture of the clavicle.

Case report

A 29-year-old male presented with inability to use the right shoulder. Three years previously, as a result of a motorcycle accident, he sustained a closed fracture of the right clavicle with multiple abrasions over the right shoulder region. In his treatment at the local hospital, the arm was kept immobilised in a sling. The abrasions needed eight weeks of surgical toilet and dressings at the hospital due to infection. Since his discharge from the hospital, he noticed progressive weakness and wasting of the muscles of the right shoulder girdle.

Physical examination revealed a healthy young man with obvious deformity of the right shoulder. Irregular scars extended over the supra and infra clavicular regions, overlying the fracture site. Visibly distended veins traversed the front of the upper chest wall and arm. On palpation, grossly distorted fracture fragments were felt. The lateral fragment was tethered to the scar. Finger tip could be easily inserted between the fragments. Radial pulse was absent and so were the brachial and axillary. Other peripheral pulses appeared to be normal. Blood pressure could not be recorded on the affected side. On the opposite side, it was 130 mm Hg systolic and 85 mm Hg diastolic. No appreciable difference in the temperatures of the upper extremities was noted nor did the affected side exhibit any Raynaud's phenomenon.

Neurological examination revealed wasting of muscles of the right shoulder girdle with paralysis of the supraspinatus, infraspinatus and the deltoid muscle. The arm was wasted 1½ inches in girth. Sensation was absent in the cutaneous distribution of the circumflex nerve and diminished along the antero-lateral aspect of the arm.

Laboratory data

Routine blood examination showed values within normal limits and the Kahn test proved to be negative.

X-ray of the region was reported as normal with no evidence of injury to the scapula.

Arteriogram was carried out by percutaneous puncture of the right femoral artery and retrograde advancement of the catheter into the innominate artery. Attempts to negotiate into the subclavian proved unsuccessful. Twenty mils. of urovision was injected and serial films obtained. A segmental occlusion of the axillary artery 1.5 cm. from its origin and about 5 cm. in length was demonstrated. Good distal

Fig 1

Obvious deformity and wasting of the right shoulder. Inner fragment stands out prominently and scars over the fracture site are visible. The veins cannot be seen in the black and white reprint.

filling from collaterals via internal mammary, segmental intercostal and lateral thoraic artery was noted.

Venogram demonstrated an essentially normal appearance of the vein. ECG was within normal limits.

Operative findings

Trapezius transfer was performed, using extended sabre-cut incision. The operative field was extremely vascular. Mobilisation of the flaps was made difficult by the tethering of the skin to the lateral fragment. The bone was found to be encased in a thick fibrous

Fig 2

Ununited fracture of the clavicle, showing gross displacement and deformity of the lateral fragment with rounded fracture ends.

Fig 3a

Retrograde innominate angiogram showing detour taken by the contrast via the internal mammary, segmental intercostal and lateral thoracic artery. Note the block beyond the subclavian.

Fig 3b

Passage of the contrast through the lateral thoracic artery entering the distal axillary and into the brachial artery.

sheath and the intervening area between the fracture fragments was filled with intense reactive fibrosis. Beyond this point, the rest of the tissue appeared normal. No attempt was made to display the axillary lesion lest in doing so, more vital collaterals could be interrupted.

Comments and conclusion

Closed fractures and dislocations have been known to be complicated with concomitant vasuclar lesions of the adjacent arteries (Jane and Ghormley, 1950; Johnstone, 1962; and Lowry, Spears and Jane, 1951). The extent of such a lesion may vary from simple spasm to complete severance of the artery. Associated axillary artery lesion have been known to occur with dislocations of the shoulder (Johnstone and Lowry, 1962; Spears and Jane, 1951). In the absence of any history of shoulder dislocation, it seems logical to believe that the thrombosis in this case was the result of possibly a traction type injury to the arterial wall at the time of initial trauma. It would appear that the traumatised intimal wall led to subsequent development of the thrombus.

It is believed that a similar case has not been reported before.

Fig 4
A normal venogram appearance.

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