Isolated Musculocutaneous Nerve Lesion after Shoulder Dislocation

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SUMMARY: A case report of an isolated musculocutaneous nerve injury following an anterior dislocation of the shoulder is described.

Introduction

Injury to the axillary nerve secondary to anterior dislocation of the shoulder is well-recognised, with a reported incidence of between 5% and 65%1-3. An associated injury to the musculocutaneous nerve is less well recognised, and an isolated lesion of the musculocutaneous nerve is rare. Recent literature on the subject is sparse and only one such report could be found4.

Case Report

A 27 year old soldier suffered an injury to his left non-dominant shoulder following a hard rugby tackle. He was seen in the Accident and Emergency Department about two hours after the injury. Radiographs confirmed an anterior dislocation of the shoulder without fracture. There was no history of previous injury to this shoulder. Reduction proved difficult and was eventually carried out under midazolam using Kocher’s method. The arm was supported in a sling.

When physiotherapy was commenced after three weeks it was noted that biceps brachii could not be voluntarily contracted and that there was diminished sensation in the cutaneous distribution of the musculocutaneous nerve, over the lateral aspect of the forearm. Function was excellent due to compensatory elbow flexion by the pronator teres and brachioradialis muscles.

Muscle stimulation tests using an Orthotron Mk. 5 controlled current stimulator confirmed denervation of the left biceps brachii.

Electromyography subsequently undertaken showed pathological spontaneous activity in the biceps characterised by a close succession of positive sharp waves and moderate fibrillation potentials. On supramaximal stimulation of the musculocutaneous nerve at Erbs’ point with needle electrode sampling from the biceps brachii muscle, a reduced response potential of 500µV could be generated after 6.3 msecs. This was considered to show a denervation of the biceps caused by a nerve lesion in continuity.

The patient remained untroubled by his disability and was able to return to his work as an avionics technician approximately four weeks after the injury, at which time he had only minor loss of power of elbow flexion.

Discussion

The musculocutaneous nerve, composed of fibres from C5 and C6, is a branch of the lateral cord of the brachial plexus. It supplies motor fibres to brachialis, coracobrachialis and biceps. Complete division of the nerve may be overlooked because sensory loss is ill-defined and flexion of the elbow by brachioradialis may be strong enough to mask biceps paralysis. Milton5 demonstrated that a combination of downward traction and external rotation places the musculocutaneous nerve on the stretch and Stevens6 pointed out that this nerve may be “snubbed” at its origin in the plexus as it traverses the coracobrachialis muscle and the fascia over the biceps.

As downward traction and external rotation is an integral part of Kocher’s manoeuvre it seems reasonable to postulate this as the mechanism of injury in this case. The injury was missed because of compensatory action by other muscle groups and the deficit was not reported by the patient. No damage had been sustained by the axillary nerve, function remained excellent and the soldier was able to return to light duty within four weeks of his injury.

Adequate examination of the patient before and after the reduction of a dislocated shoulder should include palpation of muscles since an isolated or unusual pattern of nerve injury is easily missed.
REFERENCES