POTENTIALLY FATAL ASPHYXIA FOLLOWING A MINOR INJURY OF THE CERVICAL SPINE

A. J. HOWCROFT, PRESCOT, ENGLAND, and D. H. R. JENKINS, CARDIFF, WALES

From the Department of Orthopaedic Surgery, Cardiff Royal Infirmary

The case is reported of an elderly man with asymptomatic cervical spondylosis who sustained a minor hyperextension injury of the cervical spine when the brakes of a car were applied suddenly to avoid a collision. Within six hours marked swelling of the neck and severe dyspnœa developed, and a lateral radiograph showed the pharyngeal shadow displaced far forwards and a crack fracture of an anterior osteophyte. Tracheostomy and evacuation of a massive prevertebral haematoma were performed, with immediate relief. The case draws attention to the possibility of this serious complication of a "whiplash" type of injury.

The syndrome of cervical sprain with resulting confusion, mild amnesia, local and referred pain is commonly seen following sudden hyperextension of the neck (Hohl 1974, 1975). Dysphagia and hoarseness, lasting not more than a few days, are a common complaint and presumably are secondary to moderate increase in depth of the retropharyngeal soft tissues (Birsner and Leask 1954), but near-fatal asphyxia due to a large precervical haematoma has not been reported.

CASE REPORT

A retired miner aged seventy-three presented with severe respiratory distress, marked stridor and inability to speak following a whiplash injury. The history obtained from the relatives was that he had been the front seat passenger in a car travelling at about thirty miles an hour which had to stop suddenly to avoid a collision. He was not wearing a seat belt and was thrown forward, but did not strike his head and was not even dazed. He went home after the accident and did not report to his general practitioner. At first he had only slight neckache but over the next few hours the neck became progressively more painful and swollen with increasing difficulty in breathing, finally resulting in his admission to hospital. His home was about fifteen minutes' drive from the Royal Infirmary, to which he was taken in a relative's car about six hours after the accident. On examination at the time of admission, his neck was grossly swollen with the trachea in the midline. He could not walk and had a slight salivary drool suggesting that swallowing was obstructed. He was slightly cyanosed at rest but became very cyanosed and quite panic-stricken on attempts at movement, though he could move all four limbs in a purposeful manner and did not complain of any sensory loss. Radiographs of the cervical spine were taken, and the lateral film may be seen in Figure 1. This showed the trachea widely separated from the anterior border of the cervical spine, and the trachea could clearly be seen compressed against the sternal notch. Well marked changes of cervical spondylosis were also seen, with an undisplaced fracture of a prominent osteophyte on the antero-superior margin of C5. It was clear that this man required urgent decompression of the neck as a life-saving procedure.

Anaesthesia was induced intravenously by an experienced senior registrar who was then able to introduce a small, child-sized endotracheal tube and to confirm obstruction of the trachea. Tracheostomy was then performed expeditiously,

D. H. R. Jenkins, F.R.C.S., Department of Orthopaedic Surgery, Cardiff Royal Infirmary, Newport Road, Cardiff CF2 1SZ, Wales.

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allowing the neck to be explored in a more thorough and relaxed manner.

The neck was opened by a skin crease incision extended on the left side to allow dissection anterior to the sterno-mastoid and lateral to the thyroid gland, with care to avoid damage to its blood supply. The prevertebral fascia was seen bulging and was incised, revealing a large haematoma, of which about 500 millilitres were evacuated. No single bleeding point could be seen but the fibres of the anterior longitudinal ligament were disrupted opposite the fourth cervical vertebra and venous blood was oozing through. In view of this suction drainage was instituted before closure of the wound. A lateral radiograph of the neck taken after the operation showed a marked reduction of the forward displacement of the trachea (Fig. 2).

The patient made a rapid and full recovery. He left hospital after two weeks with his tracheostomy closed and his neck back to its normal size.

DISCUSSION

While the early symptoms and signs of whiplash injuries have been well recorded (Jackson 1952; Torres and Shapiro 1961), this case is noteworthy for the rapid formation of a large pre-cervical haematoma that could have led to a fatal asphyxia. This patient had no tendency to bleed such as could arise from a blood dyscrasia, anticoagulants or large doses of acetylsalicylic acid.

Bleeding might have occurred from the inferior thyroid artery, or related structures. However, in this case the trachea, oesophagus and thyroid, together with the major veins and arteries and their branches were all seen to be pushed forward by a mass deep to the prevertebral fascia. The trachea was trapped between this mass and the upper border of the manubrium sterni and was almost totally compressed at this point. The massive haematoma could only have resulted from bleeding deep to the prevertebral fascia. Normally the only structure deep to this fascia is the anterior longitudinal ligament, which has an insignificant blood supply, and deep to that again, the vertebral bodies. The ligament was seen to be damaged and blood was oozing from the bone deep to the fascia.

The prevertebral fascia is attached superiorly to the base of the skull, forms the floor of the posterior triangle of the neck, blends with fat under the edge of trapezius laterally and extends down into the mediastinum. Here it blends with the anterior longitudinal ligament near the third thoracic vertebra, and thus forms a potential space in which blood can collect following injury to the cervical spine. A haematoma can thus be contained in this space and compress the trachea against the manubrium.

"Whiplash" is generally an injury whose impressive symptomatology is coupled with a singular lack of objective physical signs. It is hoped that this case will draw attention to the fact that in an older patient, particularly one with cervical spondylitis, it may present an urgent physical problem.

It is recommended that particular attention should be paid to the radiologically defined position of the trachea in whiplash injuries and that when there is asphyxia associated with this injury the prevertebral space should be urgently explored.

REFERENCES