Short report

Biting palsy of the accessory nerve

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SUMMARY A young man was bitten by his girl friend at the anterior border of the left trapezius muscle. Weakness of the trapezius resulted and a longstanding ache in the shoulder developed. Clinically and neurophysiologically, an axonotmesis type crush injury of the accessory nerve was verified.

On its course between the sternocleidomastoid and trapezius muscles, the accessory nerve runs superficially and lies in a potentially vulnerable position. Injuries of the nerve, however, are not common.¹ Most of them result from surgical procedures in the posterior triangle of the neck.² Trapezius weakness will follow in such lesions, as the upper part of the muscle receives its motor innervation through the eleventh cranial nerve only.¹ We present a case of accessory nerve palsy complicating a common variety of sexual behaviour, amorous biting.

Case report

A male medical doctor was bitten in the neck by a nurse in an obviously friendly love-making situation. The patient was a 28-year-old man with no history of neurological disease. The bite struck the anterior border of the left trapezius muscle and was described as vigorous, but the skin was not punctured. The shoulder felt immediately paralysed and soon a dull ache developed, diffusely locating in the shoulder and upper arm. The patient found it difficult to raise the shoulder and the arm above the horizontal plane and impossible to bring the elbow behind the shoulder in the horizontal plane. He himself made the diagnosis of accessory nerve palsy. As the symptoms did not subside within a month, he consulted a colleague.

On examination four weeks after the injury the skin appeared undamaged. No atrophy was ob-

served at this time. The left arm was slightly drooping. The left scapula was winging at rest and on lateral abduction but not on forward elevation of the arm. In a prone position, the patient was not able to retract the shoulder or raise it when the arm was held abducted. These functions were normal on the right. Lateral abduction of the arm was somewhat weakened and the palm, facing downward in the beginning, tended to twist forward and upward in the course of the movement. The most anterior portion, about 1 cm thick, of the trapezius muscle was contracting and tender on palpation but there was no palpable contraction in the rest of the suprascapular part of the muscle. The other muscles in the shoulder region, including the sternocleidomastoids, functioned normally.

Needle electromyography of the left trapezius muscle near the suprascapular fossa showed some fibrillation potentials and very few voluntarily recruited motor unit potentials (MUPs). Motor conduction velocities of the left median and ulnar nerves were normal, being 56 m/s and 52 m/s. Antidromic sensory conduction velocities of the superficial branches of the radial nerves were normal, 56 m/s on the left and 54 m/s on the right. Spinal F-responses of the left median (wrist-thenar) and ulnar (wrist-interosseus I) nerves were normal, 30 ms and 31 ms. The accessory nerves were stimulated at the anterior borders of the trapezii in the posterior triangle of the neck and the responses were recorded with superficial electrodes symmetrically at a distance of 100 mm at points above the suprascapular fossae. The motor latencies were 6.0 ms on the left and 2.6 ms on

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the right and the amplitudes 3 mV and 10 mV, respectively.

The patient was seen again twelve weeks after the injury. At this time, he still complained of pain in the shoulder and had to support the arm every now and then. His working capacity was not affected, but he experienced difficulty in carrying objects and in such free time activities as jogging which aggravated the pain and swimming because of trapezius weakness. On examination, the trapezius appeared slightly atrophied except for its most anterior portion. There was a weak palpable contraction of the middle portion on raising the arm.

On the EMG re-examination of the left trapezius muscle, the voluntarily activated MUPs were more numerous and of increased amplitude, duration and polyphasy (figure), compared with the previous recording. Fibrillation activity was also more intense. The motor latencies of the accessorius nerves were equal to the previous values but the amplitudes were 6 mV on the left and 10 mV on the right.

After six months the ache had almost vanished. The trapezius had recovered most of its strength and atrophy was no more apparent.

Discussion

Clinical and neurophysiological examinations in our case showed that the left accessory nerve was damaged at its point of entry into the trapezius muscle. The crush injury was an axonotmesis, which was located distal to the first ramifications of the nerve, since the most anterior portion of the muscle was spared. The patient was a non-manual worker and the trapezius weakness was of little practical importance, but the ache in shoulder was annoying. Such a pain, typical of peripheral accessory nerve palsy, has been attributed to stretching of the brachial plexus.²

The causes of injury to the peripheral part of the eleventh cranial nerve include missile wounds (Kramer 1922, cited by Nordén²), compression by inflammatory or neoplastic lesions or surgical procedures on such lesions^{2,3,4} and hemithyroidectomies.⁵ Blunt injuries seem to be rare. Nordén² describes a male patient (one in his series of fifteen), who accidentally stepped through a ladder when carrying a wooden beam on the shoulder; Bell⁶ gives an account of pressure palsy to the accessory nerve in a patient who unsuccessfully tried to hang himself. Eisen and Bertrand⁷ present

Figure (Upper trace) Long polyphasic MUPs in the left trapezius muscle at the suprascapular fossa on maximal effort. (Lower trace) The EMG needle has been inserted more deeply at the same point and normal MUPs of the supraspinatus muscle are seen. Calibration: horizontal 100 ms, vertical 0.2 mV.

four cases with no apparent cause. In some cases even surgical therapy is recommended.⁸

The mechanism in our case seems unique. In our western culture, love-making couples bite each other a lot. Aggressiveness seems to be intimately linked with sexual behaviour. Ford and Beach⁹ give ample evidence from the animal world: males of many lower mammals often bite the neck of the female in order to control her during mating. Interestingly—and in contrast to lower animals—in those human cultures, where injurious acts such as scraping, pulling the hair or biting are approved or favoured constituents of love-making behaviour, both sexes seem to be equally active in their aggressiveness. Malinowski, in his classical anthropological study of the Trobriand Islanders, claims that only women may inflict significant injuries in this way.⁹ We have no statistical information on this kind of behaviour in western cultures, but in clinical practice, black and blue marks are quite often seen in the neck, especially of teenagers and young adults. Nature has protected us from serious complications by burying the vital structures of the neck deep enough to stand the attacks of even a voracious lover. Due to its anatomical position the accessory nerve is in potential danger. Considering the frequency of biting, the risk of significant injury must be small

indeed, since no similar cases are presented in the literature.

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