

Spinal accessory nerve palsy following gunshot injury: a case report

Ateşli silah yaralanmasına bağlı spinal aksesuar sinir palsi: Olgu sunumu

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Injuries to the spinal accessory nerve are rare and mostly iatrogenic. Pain, impaired ability to raise the ipsilateral shoulder, and scapular winging on abduction of the arm are the most frequently noted clinical manifestations. As a seldom case, a 20 year-old male with spinal accessory nerve palsy after penetrating trauma by gunshot was reported. Three months after the injury, he was complaining about left arm pain in abduction to shoulder level and a decreased range of movement. On physical examination, wasting of the left trapezium with loss of nuchal ridge and drooping of the shoulder were found. On neurological examination of the left trapezius and sternomastoid muscles, motor function were 3/5 and wide dysesthesia on the neck, shoulder and arm was present. The bullet entered just above the clavicle and exited from trapezium. Radiological studies were normal, where electromyography (EMG) showed neuropathic changes. Surgical exploration showed the intact nerve lying on its natural course and we performed external neurolysis for decompression. The postoperative period was uneventful. Dysesthesia has diminished slowly. He was transferred to physical rehabilitation unit. In his clinical control after 3 months he had no dysesthesia and neurological examination of the left trapezius and sternomastoid muscles motor function were 4/5. EMG showed recovery in the left spinal accessory nerve.

Key Words: Decompression; gunshot injury; spinal accessory nerve; injury, neurolysis.

Spinal aksesuar sinir yaralanmaları seyrek görülür ve çoğunlukla iyatrojeniktir. Ağrı, aynı taraf omuzun kaldırılmasında güçlük ve kol abduksiyonunda skapular kanatlanma, en sıklıkla görülen klinik bulgulardır. Ender rastlanan bir olgu olması nedeniyle, 20 yaşında, ateşli silaha bağlı penetran yaralanma sonrasında spinal aksesuar sinir palsili bir erkek olgu sunuldu. Yaralanmadan üç ay sonra, sol kolunu omuz hizasına kadar abduksiyona getirdiğinde ağrı ve harekette kısıtlılıktan şikayetçiydi. Fiziksel incelemesinde sol trapez kası erimiş ve omuzu düşmüş şekildeydi. Nörolojik incelemede sol trapez ve sternokleidomastoid kaslarının motor fonksiyonları 3/5 idi; boyun, omuz ve kolda yaygın dizestezi vardı. Mermi, klavikulanın üzerinden girip, trapez kasından çıkmıştı. Radyolojik incelemeler normaldi fakat elektromiyografi'de (EMG) nöropatik değişiklikler saptandı. Cerrahi eksplorasyonda sinirin trasesi boyunca doğal seyirini izlediği görüldü ve dekompresyon amaçlı eksternal nörolizis yapıldı. Ameliyat sonrası sorunsuz geçti. Dizestezi ilerleyen günlerde kayboldu. Fizik tedavi de uygulanan hastanın üç ay sonraki kontrol muayenesinde motor fonksiyonlar 4/5 idi ve EMG'de sol spinal aksesuar sinirde iyileşme saptandı.

Anahtar Sözcükler: Ateşli silah yaralanması; dekompresyon; spinal aksesuar sinir; yaralanma, nörolizis.

Injury to the spinal accessory nerve is most commonly reported following surgical procedures in or around the posterior triangle of the neck. Many other causes of spinal accessory nerve palsy (SANP) have been reported.^[1]

We report a case of SANP following gunshot injury which has been reported rarely, to our knowledge.

CASE REPORT

A 20-year-old man was referred to outpatients' clinic, with complaints of asymmetry of the shoulders, pain on abducting the left arm to shoulder level and a decreased range of movement. This had developed after gunshot injury three months before. Physical examination demonstrated marked wasting

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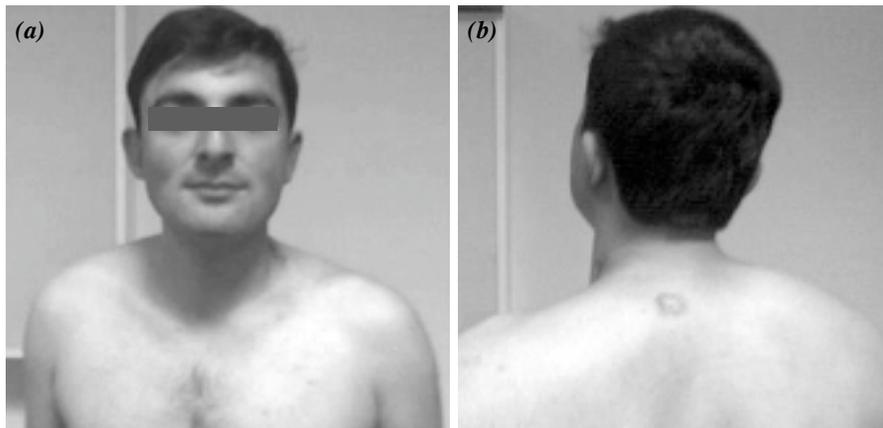


Fig. 1. (a,b) Anterior and posterior perspectives demonstrating wasting of the left trapezius with loss of the nuchal ridge, drooping of the shoulder and the bullet entered just above the clavicle and exited trapezius.

of the left trapezius with loss of the nuchal ridge and drooping of the shoulder. The bullet entered just above the clavicle and exited from trapezius (Fig. 1a, b). Active movements were restricted to 90° abduction and flexion due to pain. He had a full range of passive movements, the rotator cuff was intact and neurological examination of the left trapezius and sternomastoid muscles' motor function were 3/5. He complained of wide dysesthesia on the neck, shoulder and arm. Plain radiographs and magnetic resonance image (MRI) scan were normal. EMG study showed a delay in the motor potentials of the left spinal accessory nerve consistent with neuropathic changes. Surgical exploration showed the intact nerve lying on its natural course and we performed external neurolysis for decompression (Fig. 2). There



Fig. 2. The intact nerve lying on its natural course on surgical exploration.

was no complication at the postoperative period (Fig. 3). Dysesthesia has diminished following the days after operation. He was discharged after a week. He was transferred to the physical rehabilitation unit. In his clinical control after three months he had no dysesthesia and neurological examination of the left trapezius and sternomastoid muscles' motor function were 4/5 (Fig. 4). EMG showed recovery in the left spinal accessory nerve, as well.

DISCUSSION

The accessory nerve arises from two different locations. The cranial component arises from the nucleus ambiguus, and the spinal component arises from the anterior horn cells of the first five cervical spinal root levels.^[1] The spinal accessory nerve is solely a motor nerve that supplies both the muscles of the trapezius and the sternocleidomastoid. Its branches are passing deep to the posterior belly of the digastric muscle to supply the muscle of the sternocleidomastoid. At the junction of the superior and middle thirds of the posterior border of the sternocleidomastoid, it traverses the posterior triangle of the neck superficial to the deep fascia to supply the trapezius. The spinal



Fig. 3. The patient at postoperative period.



Fig. 4. The patient's neurological examination three months after the operation.

accessory nerve can be entrapped at various sites along its course. It is vulnerable to injury by tumors at the base of the skull, fractures involving the jugular foramen or blunt/penetrating injuries to the neck. Injuries to the spinal accessory nerve root are rare but well documented. Case reports and series document the commonest cause of accessory nerve palsy as iatrogenic from cervical lymph node biopsy in the posterior triangle.^[2] Other causes include penetrating injuries to the neck and amyotrophic neuralgia.^[3] The diagnosis may be difficult in the early stage as symptoms are vague and there are few physical signs. Persistent pain and dysfunction around the neck and shoulder six weeks following cervical lymph node biopsy merits electromyography studies. Lacerations in the posterior triangle warrant exploration to exclude nerve injury, as the consequence of a missed lesion is chronic pain and disability.

The prognosis is still unclear and those caused by blunt trauma or of spontaneous onset have a better outcome.^[4] Electromyography shows that spontaneous nerve regeneration does occur after complete axonal degeneration from amyotrophic neuralgia or unknown causes, but recovery is incomplete following iatrogenic injuries.^[5] The timing of surgical intervention is different. Small surgical series show good recovery from exploration and neurolysis or end to end repair at an average of 3-12 months.^[2,6-9] We performed external neurolysis for decompression. The patient had physical therapy after surgery. The aims of physical therapy are to decrease pain, to normal-

ize joint range of motion and muscle strength, and to facilitate return of the patient to their pre-morbid activity level.^[1] Some suggest that surgical repair of the nerve is hopeless after 6 months as the paralyzed trapezium is unable to regain sufficient function. Salvage procedures include nerve graft and tendon transfer of levator scapulae and rhomboid major and minor.^[2,10-12]

In addition, electro diagnostic studies can be used to confirm the clinical diagnosis and to follow recovery of the nerve.^[1] We also used these techniques to avoid overlooking hints of trapezium weakness. The results confirm our surgical findings.

We suggest that surgical exploration of spinal accessory nerve palsy may lead to more effective pain relief and a better functional outcome.

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