CRCP Case Reports in Clinical Practice

Case Report

Journal Homepage: http://crcp.tums.ac.ir

Two Cases of Spinal Accessory Neuropathy Due to Muscle Injection of Nandrolone For Bodybuilding

Ziba Khanmoradi [1]; **Kian Zohrabi** [2]; **Zohreh Abna** [3*]

1. Department of Neurology, Kermanshah University of Medical sciences, Kermanshah, Iran.
2. Department of Orthopedic Surgery, Kermanshah University of Medical sciences, Kermanshah, Iran.
3. MS Fellowship, Department of Neurology, Tehran University of Medical Sciences, Tehran, Iran.

Use your device to scan and read the article online

Citation Khanmoradi Z, Zohrabi K, Abna Z. Two Cases of Spinal Accessory Neuropathy Due to Muscle Injection of Nandrolone For Bodybuilding. Case Reports in Clinical Practice. 2023; 8(2): 88-90.

Running Title Spinal Accessory Neuropathy Due To Nandrolone Njection

Article info:
Received: 12 March 2023
Revised: 25 March 2023
Accepted: 20 April 2023

Keywords:
Accessory nerve; Muscle injection

ABSTRACT

The accessory nerve is the eleventh cranial nerve that supplies the sternocleidomastoid and trapezius muscles. Injury to the spinal accessory nerve is most commonly caused by medical procedures that involve the head and neck, which causes wasting of the shoulder muscles, winging of the scapula, and weakness of shoulder abduction and external rotation. Here, two cases of spinal accessory neuropathy after injection of trapezius muscle for body building are reported.

Introduction

The accessory nerve, also known as cranial nerve XI, supplies the sternocleidomastoid and trapezius muscles. It was formerly believed to originate in the brain, which is why it's considered one of the twelve pairs of cranial nerves. The sternocleidomastoids are responsible for rotating the head, while the trapezius, which connects to the scapula, acts to shrug the shoulder. Damage to this nerve can result in poor strength or limited movement, and is most commonly caused by medical procedures involving the head and neck. Such an injury can lead to wasting of the shoulder muscles, winging of the scapula, and weakness of shoulder abduction and external rotation [1].

Two interesting cases are reported here of spinal accessory neuropathy following injections into the trapezius muscle for body building.

Case 1

A 25-year-old man presented with the chief complaint of shoulder pain and inability to elevate his right arm. He was referred from an orthopedic clinic for an electrodiagnostic study. The patient denied any form of trauma or surgical procedure in the shoulder and neck region. However, he did report bilateral injection of Nandrolone (5 vials of 50mg) into the trapezius and deltoid muscles 3 weeks prior. Symptoms progressed gradually.

In a neurological examination, the patient was alert

*** Corresponding Author:**
Zohreh Abna
Address: *Zohreh Abna, MS Fellowship, Department of Neurology, Tehran University of Medical Sciences*
E-mail: *abna.zohreh90@yahoo.com*

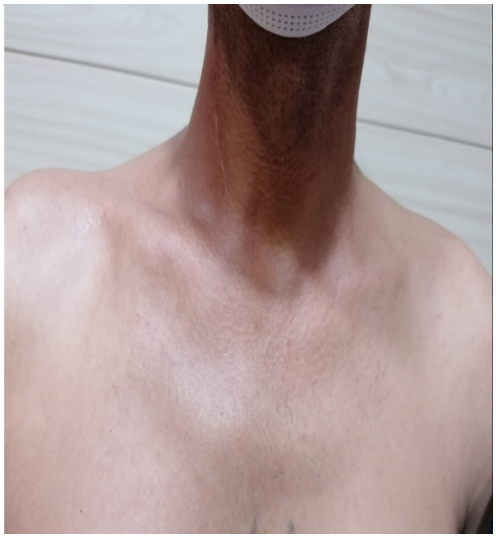

Fig. 1. Rt trapezius muscle atrophy

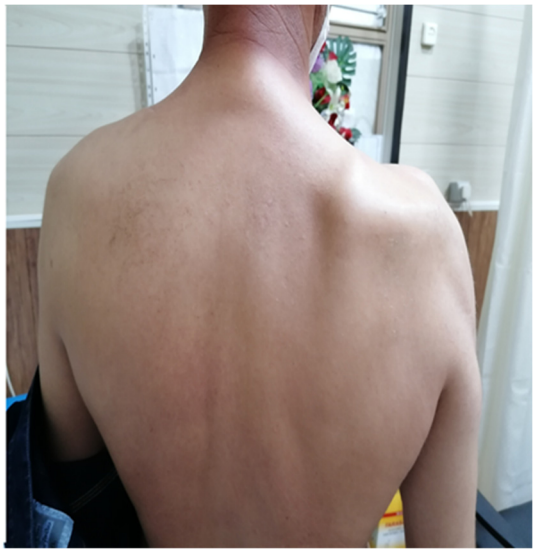

Fig. 2. Rt accessory nerve neuropathy

and oriented with normal examination results for all cranial nerves except the 11th. Neck rotation force to lateral sides (action of SCM muscle), neck flexion, and extension were normal, but elevation of the right shoulder was weak. Forces of other proximal muscles including deltoid, supraspinatus, infraspinatus, serratus anterior were also normal. No sensory impairment was detected in the physical exam (Figures 1, 2).

In the nerve conduction study, compound muscle action potentials (CMAP) and sensory nerve action potential (SNAP) of the right radial, median, and ulnar nerves, as well as the CMAP of the right axillary nerve, were normal. However, the CMAP of the right spinal accessory nerve, with recording of the trapezius muscle and stimulation posterior to SCM, severely decreased in comparison to the normal value and the left side.

In the electromyography examination, active denervation (fibrillation potentials and positive sharp waves) and decreased motor unit action potential recruitment were observed in the right trapezius muscle, while activation of the SCM muscle was normal.

These observations suggest an axonal lesion of the right spinal accessory nerve with involvement of distal branches to the trapezius muscle.

Case 2

A 35-year-old man was referred from an orthopedic clinic for an electrodiagnostic study with the chief complaint of pain in his left shoulder and difficulty in raising his left arm. The patient denied any form of trauma or surgical procedure in the shoulder and neck region. However, he did report bilateral injection of Nandrolone (6 vials of 50 mg) into the trapezius and deltoid muscles 2 months prior. He noticed local pain after the injection that partially improved, but the weakness gradually progressed.

In a neurological examination, the patient was alert and oriented with normal examination results for all cranial nerves except the 11th. Significant atrophy was observed in the left supraclavicular area. Shoulder shrug and arm abduction were limited to 90 degrees. Other movements of the neck, shoulder, and upper limb were normal (Figure 3).

In the nerve conduction study, CMAPs and SNAPs of the right radial, median, and ulnar nerves, as well as the CMAP of the left axillary nerve, were normal. However, the CMAP of the left spinal accessory nerve, with recording of the trapezius muscle and stimulation posterior to SCM, was absent.

In the electromyography examination, decreased motor unit action potential recruitment was observed in the left trapezius muscle without any reinnervated motor unit action potentials. Activation of the left SCM muscle was normal. These observations suggest a chronic severe axonal lesion in the distal part of the left spinal accessory nerve.

Discussion

Past reports of injury to peripheral nerves were iatrogenic, including vaccine or venipuncture [2], and cases of spinal accessory nerve injury due to

Fig. 3. Lt trapezius muscle atrophy

muscle injection are rare. Accessory nerve injury can be debilitating, resulting in paralysis of the trapezius, drooping of the shoulder, loss of full abduction, winging of the scapula, and pain. The spinal accessory nerve has a superficial and highly variable course in the posterior triangle of the neck [3].

Anabolic steroids are prescription drugs with medical uses including the treatment of delayed puberty, wasting conditions, and osteoporosis. However, they are often illegally used by bodybuilders to increase muscle mass. Studies about the frequency of their use in athletes and reports about their side effects are rare.

In Iran, in one study in Karaj, the frequency of steroid abuse in athletes was 26% (22% injection form) with a low level of awareness about their side effects [4]. Thus, information about their potential side effects and complications of local injection should be disseminated.

Ethical Considerations

Compliance with ethical guidelines

There were no ethical considerations to be considered in this article.

Funding

No funding was received to assist with the preparation of this manuscript.

Conflict of Interests

The authors state that they have no conflicts of interest.

References

[1] Spinal accessory nerve structure of the human body. loyola university of medical education network. Archived from the original on 16 June 2007,retried 17 June 2007.

[2] Upper limb nerve injuries caused by intramuscular injection or routine venipuncture; Hyun Jung Kim, Sun Kyung Park, and Sang Hyun Park

[3] Minimizing iatrogenic nerve injury in primary care, Katharine a Wallis, Thomas Hills and Ali Mirjalili, Brithish journal of general Practice 2018;68(673):392-393

[4] Nojoomi M, Behravan V. Study of Anabolic Steroids and the Awareness of their Complications in Bodybuilding Athletes in Karaj(2003). RJMS 2005; 11 (44) :1057-1063