



CASE STUDY

MOBILIZATION OF FIRST RIB IMPAIRMENT CAUSED BY BONE THROGLED IN LARYNX (A CASE STUDY)

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ABSTRACT

Case Description:

A 47-year-old female patient was presented in Department of physical Therapy, Shahida Islam teaching hospital, Lodhran with chief complaint of severe headache, vertigo and decreased neck mobility with severe pain. A detailed history revealed that patient has bone stuck in throat which was removed in an OPD setting under the procedure of video laryngeal rigid telescopic by specialist. After the procedure she was prescribed medicine for headache and vertigo. She used medicine for 5 days but there was no relief. In Follow up visit after 5 days she complained about the same symptoms of headache, vertigo and pain which made her sleepless since last 5 days and therefore was referred to physical therapy department by the physician. In physiotherapy department she was administered Maitland mobilization, cervical traction and cervical muscle stretching for first rib mobilization and to increase joint range of motion

Outcomes: The patient was discharge from therapy after 4th physiotherapy sessions weekly, having fully achieved all of her functional goals and resolved her primary complaints of pain and dizziness.

Keywords: Muscle Spasm, Traction, Muscle Stretching, Manual Therapy, Mobilization

CASE DESCRIPTION

A 47-year-old female patient presented in Department of physical Therapy, Shahida Islam teaching hospital, with chief complaint of severe headache, vertigo and decreased neck mobility with severe pain. A detailed history revealed a bone stuck in throat by yawning during eating. All attempts to remove the bone with coughing and sticking her finger in mouth were fruitless. After 5, 6 hours of continuous efforts she was moved to emergency department of Shahida Islam teaching Hospital around 10 p.m. After thorough examination and assessment, the specialist removed the bone with the aid of video laryngeal rigid telescopic procedure.

Post-operative symptoms included persistent headache and dizziness which were treated symptomatically and patient was discharged from the emergency. Patient started experiencing the headache and dizziness along with vertigo again in late night hours. In morning she consulted a physician in medicine OPD and was prescribed dimenhydrinate and metaxalone twice a day for one week. The symptoms did not improve during the week and

additionally she started experiencing decreased neck mobility. She consulted the physician again and was prescribed the same medicine for another week along with neck collar. Keeping in view the deteriorating condition of neck mobility of the patient, her spouse decided to consult physiotherapist and reported to Department of physical Therapy, Shahida Islam teaching hospital

CLINICAL IMPRESSION

After removal of the stuck bone from throat, the patient sought physical therapy with chief complains of headache, vertigo and limited neck mobility with pain in posterior region of neck without radiating to the upper extremities. Her pain score was 8/10 on visual analog scale (VAS).

At this time the physiotherapist developed an initial hypothesis that the patient symptoms were musculoskeletal origin. But the several known musculoskeletal differential diagnosis needed to be investigated. Although diagnosis for cervical spine was not established due to unavailability of cervical radiographs.

EXAMINATION

After patient's consent physical examination was carried out to establish the diagnosis for cervical muscular spasm. During physical examination patient was comfortable solely in the sitting position, while all other directions of movements, forward head posture, extension, lateral flexion, and rotation were restricted for the cervical spine region. Examining the patient in any other positions was really challenging. We, therefore decided to apply therapeutic ultrasound, moist heat and TENS for 15 minutes

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to relax the cervical muscles. Attempt was made to mobilize the cervical spine but patient couldn't bear the pain and ultimately the mobility exercise was surrendered after 15 minutes.

PHYSICAL EXAMINATION'S FINDING

Patient had moderate forward head posture and slight elevated right shoulder as compared to left shoulder. In Cervical Active range of Motion there was limited flexion and extension without any neutral position. All Movements of the shoulder joint i.e. adduction, abduction, extension, flexion, lateral/external rotation, medial/ internal rotation and circumduction were normal. Palpation of shoulder and cervical region revealed Upper trapezius tenderness of grade +3, anterior scalene tenderness of grade +3, middle scalene with tenderness of grade +2, levator scapulae and sternocleidomastoid had tenderness of grade +4, while there was no radiating discomfort.

NEUROLOGICAL EXAMINATION

Neurological examination revealed normal deep tendon reflexes of the upper extremities suggesting normal upper and lower motor neurons.

To check sensory function a piece of cotton wool was touched along pain pathways without any stroke or movement. The patient was asked to close her eyes and inform about any difference of sensation of touch. The sensory reflexes were found to be intact

ESTABLISHING DIAGNOSIS

Different physical maneuvering test were applied to establish the diagnosis:

Firstly, the compression test revealed no signs of pain radiation or numbness in the upper extremity. On palpation the cervical vertebrae were found to be in their normal positions, with no signs of decreased scapulothoracic rhythm, inflammation, or dull pain. This led to conclusion of cervical muscular spasm which is quite common in case of negative compression test.

After that patient was asked to tilt head in different directions and was inquired about any change in the pain symptoms or vertigo. Negative response of the patient helped in conclusion that vestibular system was intact.

Thirdly flexion and extension maneuvers were done to diagnose first rib problem. Patient experienced severe pain during flexion and extension, this led to definitive diagnosis of first rib problem.

INTERVENTION

The first rib mobilization, cervical traction and cervical muscle stretching are the main points of this case study. (1-4) In addition, adjunct therapies like therapeutic ultrasound, TENS and moist heat were applied to address the problem of cervical muscular spasm.

The aim of these therapies was to promote tissue healing rather than to expand range of motion or correct muscle

imbalance. The therapies were adjusted to deliver a modest load force over the collagen fibers and encourage appropriate alignment.

Stretching in sitting position for thirty seconds in every appointment was performed for muscles of upper trapezius, levator scapulae, sternocleidomastoid and scalene. The treatment was divided into three components, cervical traction, first rib mobilizations and the stretching.

On the day first, the patient was unable to maintain the lying position so, traction was applied in bearable position i.e. 60° for 15 minutes with 6.6 pounds weight. Initially the patient was uncomfortable with continues traction so intermittent traction was applied for 30 seconds hold and 10 seconds relaxation time along with TENS and moist heat. The mobilizations were performed by Maitland grade I with the patient in 60° spine lying position. Physiotherapist placed his thumb on the superior portion of the first rib and mobilized the rib in superior to inferior motion at approximately 30 oscillations a minute in bearable intensity. Stretching was applied for upper trapezius, levator scapulae, sternocleidomastoid and scalene muscles with holding time of 20 seconds with 10 repetition for each muscle, keeping in mind the pain bearing capacity of the patient during stretching. After the completion of the 1st session feedback of the patient was that her neck is much lighter than it was before the physiotherapy session, after these satisfactory remarks by the patient, decision was made to continue same treatment pattern for next five days.

On the Second day the same treatments were continued except the traction weight was increased from 6.6 pounds to 11 pounds, first rib mobilization position was changed from 60° to 45°, Moreover, Maitland grade II mobilizations was added. There was a little improvement in patient's symptoms as per her feedback.

On Day third, the patient was able to lie down in supine position. Same treatment design was applied with 11 pounds traction weight. In addition, Maitland grade III was performed.

On Fourth day patient was completely evaluated the patient and was administered the same treatment plan with grade IV Maitland mobilization of the first rib.

After the fourth in office physiotherapy session, the patient was given a plan for three days stretching exercises at home and was advised to use a standard width pillow. Patient was asked to visit physiotherapy clinic immediately in case of any emergency and a follow-up visit after three days was scheduled.

At follow-up visit patient was completely evaluated for signs and symptoms of cervical muscular spasm and first rib mobility. Considerable improvement in cervical range of motion and absence of pain in cervical region was noted. As patient had recovered significantly, she was advised to perform isometric and neck-stretching exercises over the

course of the next week.

OUTCOMES

No standardized outcome measures were used for this patient instead the outcomes were determined by the pain intensity and range of motion of the cervical spine.

At last follow-up visit the patient was found to meet all her functional goals. Her cervical range of motion was found to be painless in all directions and no tenderness was found along any muscles in cervical region.

DISCUSSION

The subclavius, serratus anterior, and scalene muscles are all attached to the first rib.' (,) The first rib can be pulled superiorly (upward) and the joint can become stiff if the scalenes are rigid.' () The Brachial Plexus, as well as the arteries and veins that run between the clavicle and the first rib, may become crushed when the first rib is elevated, occasionally leading to symptoms down the arm. Other typical reasons of an elevated first rib include trauma like whiplash, which causes the head and neck to bend to one side, sleeping on one's stomach and/or with one's arm raised, and repeatedly raising one's arm overhead.(,)

The primary source of the patient's symptoms were due to first rib dysfunction, and were manifested as neck pain and headache.() She made several tries to free the lodged bone by self-induce cough and vomiting, which caused the patient's first rib to malfunction and severe cervical muscular spasms.

The first rib is anatomically unstable and serves as the location where the scalene muscles attach. Any injury or trauma to scalene muscles leads to upward displacement of the first rib. However, pectoralis minor muscle forces can also shift the first rib somewhat anteriorly. Discomfort at the costosternal or costovertebral joints of the first rib, leads to referred pain in the head, neck, shoulder and arm. It may also restrict the movements and cause pain during exhalation or inhalation. During palpation, the first rib may also be swollen, painful, or sensitive.()

As demonstrated in the earlier studies, Maitland grade I and grade II mobilization can effectively treat neck pain by reducing pain and improving quality of life.() When it comes to radicular discomfort and neck ache, women are more likely to experience it than men.

The results of the current study demonstrated a significant difference in visual analog scale (VAS), between the first and fourth treatment session of Maitland grade I & II first rib mobilization. According to the results of the current study first rib mobilization is quite effective at treating radiating pain, headache, and numbness symptoms.

More research is required with longer follow up to determine the impact of first rib mobilization on large population.

Conflict of Interest: None

Patient Consent: Inform Consent was obtained from the patient prior publication of this case

Author's Contribution:

YAK, HT: Compose the manuscript

HT, AA: Reviewed it.

YAK: Conception and supervised manuscript

All the authors have approved the final version of the manuscript to be published

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