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Physiotherapy Rehabilitation in Subject with Scapular Osteochondroma: A Case Report

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Authors' contributions

This work was carried out in collaboration among all authors. All authors read and approved the final manuscript.

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Case Study

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ABSTRACT

Introduction: The most prevalent benign tumour affecting the metaphysis of long bone is osteochondroma, a form of cartilaginous tumour. Solitary or multiple osteochondromas can prevail.Hereditary multiple exostosis (HME) or familial osteochondromatosis is the multiple variant, which is an autosomal dominant syndrome.
Case Presentation: A 35-year old female with right-hand dominance was referred todepartment of physiotherapy. On palpation small nodular swelling of marble size was present in left axilla. X-rays findings showed increased scapular mass and ribs were compressed laterally.
Discussion: The most widespread benign tumour is osteochondroma. In 3.0-6.4 percent of all instances, the scapula is implicated. The osteochondroma normally develops on the scapula's anterior aspect. The scapula osteochondroma induces pain and a grating sound when the scapula is moved. Mechanic irritation of muscle, tendon, or soft tissue, emergence of a pseudoaneurysm or bursa, fracture, or malignant transformation are all causes of symptoms.
Conclusion: Osteochondroma is a common benign tumor. Management of osteochondroma is important to improve the quality of life. Physiotherapy plays an important role in managing Scapular osteochondroma.

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1. INTRODUCTION

The most prevalent benign tumour affecting the metaphysis of long bone is osteochondroma, a form of cartilaginous tumour [1]. Solitary or multiple osteochondromas can prevail [2].Hereditary multiple exostosis (HME) or familial osteochondromatosis is the multiple variant, which is an autosomal dominant syndrome [3].The knee, proximal aspect of humerus, and pelvis are the most frequent sites for osteochondromal tumours, whereas the scapular region is only infrequently concerned [1].Exostosis is another term for osteochondroma (35-46%)[4].It usually strikes between second and third decade (10-30 years)[5]affects both the genders equally, and only rarely manifests as symptoms following the skeletal maturation[6].Scapular osteochondroma cause symptoms as a result of pressure directly on the overlying anatomic structures or indirectly as a result of bursitis which is reactive[7] with the prior one inducing snapping scapular syndrome and a limitation in scapular range[8]. Bone deformities, fractures, formation of bursa including or excluding bursitis, vascular impairment, symptoms associated with neurological impairments and malignant transformation are all usually occuring complications accompanied with osteochondroma [2]. Scapulohumeral rhythm is affected.

Osteochondromas that are situated dorsally can cause discomfort when lying supine, whereas those that are located laterally potentially elicit subacromial impingement syndrome [7]. Most commonly tumours occurs on scapular ventral aspect, about 63% [7][8].Osteochondromas are typically asymptomatic and uncomplicated, but they require surgical resection to be treated [1].Following resection, the rate of recurrence is minimal [6].The case presented in this report is of left scapular osteochondroma with left upper back pain and swelling over left axilla. Physiotherapy plays crucial role in increasing ROM, vital capacity and pain reduction.

2. CASE PRESENTATION

A 35-year old female with right-hand dominance was referred to department of physiotherapy. The patient stated that she was apparently alright 1 month back when she started complaining of pain in left axillary region with painful movement of left shoulder. She noticed a small nodular swelling in left axilla which was initially the size of a marble and has not progressed over a period of 1 month and is of same size at present. Swelling was associated with pain while carrying out shoulder movement. Patient also complains of deformity in back left side since birth. No history of loss of weight, or loss of appetite.

Patient had initially visited a homeopathic practitioner and was managed conservatively. Patient then visited a private hospital and was advised surgical management but patient was not willing then and patient went to AVBRH for definitive management. No associated illness was seen. Patient had history of deformity over upper back since birth for which she did not seek any medical advice. Patient had similar family history of swelling over knee and wrist of her father, uncle, and cousin siblings.

2.1 Clinical Findings

After taking consent from the patient, her examination was done. On inspection swelling was seen in left axilla. On palpation small nodular swelling of marble size was present in left axilla, which was not adherent to skin, immobile and of firm consistency. Tenderness was present over swelling. There was spasm of scapular muscles. X-rays findings showed increased scapular mass and ribs were compressed laterally (Fig. 1,2,3). There was no rise in local temperature. On examination, chest expansion was mildly decreased. Range of motion assessment was done by goniometer (Table no.1). Severe pain was present in left shoulder and axillary region. On the numerical pain rating scale (NPRS), she rated her pain as 8.

2.2 Therapeutic Intervention

2.2.1 Phase 1(0-2 weeks)

The primary goal of physiotherapy management is to maintain the mobility.

To maintain the range of motion, active exercises were given for distal joints for initial one week. In second week range of motion exercises were given for shoulder including shoulder flexion, extension, abduction and adduction. Isometric exercises for deltoid and biceps were given 10

repetition with 10 seconds of hold 3 times a day. Breathing exercises were given. Breathing exercises included Thoracic expansion exercises were given with 7 repetition 3 times a day.

2.2.2 Phase 2 (3-4 weeks)

In phase 2 the goal was to maintain the goals achieved in phase one and to increase upper limb strength as well as of scapular muscles.

To increase upper limb muscle strength, resistance band exercises were given starting with yellow resistance band and progressing to red resistance band strengthening exercises included shoulder flexors strengthening, extensions abductors and adductors. 10 repetitions were given 3 times a day. For serratus anterior pushing and punching actions were given 10 repetition 3 times a day.

2.2.3 Phase 3 (4-8 weeks)

Phase 3 focused on maintaining the goals achieved in first two phases and progressing in strength training.

In This phase the resistance exercises will be given with resistance band which initially will be the green resistance band progressed to blue resistance band. Breathing exercises were continued. Rhomboids strengthening exercises were10 repetition 3 times a day. In this phase management was plan in order to improve the quality of life.

2.3 Followups and Outcomes

After eight weeks of physical therapy, there was an improvement in pain scores for the left shoulder joint. Chest expansion was also improved. Clinically, the improvements noted were that the patient could stand for a longer duration than Before with mild discomfort during the activities of daily living. The range of motion for the concerned Upper limb was also improved (Tables 2).

3. DISCUSSION

In this case report we are discussing a case of 35 year old female with abnormal mass in the scapular region. The primary goal of physiotherapy management was to maintain the mobility and the intervention was planned accordingly.

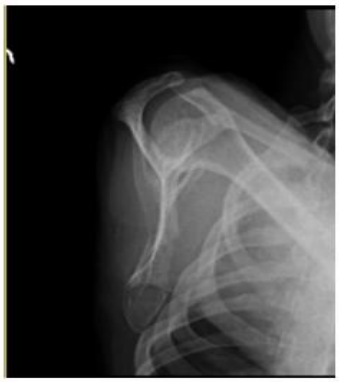

Fig. 1. X-ray of scapula

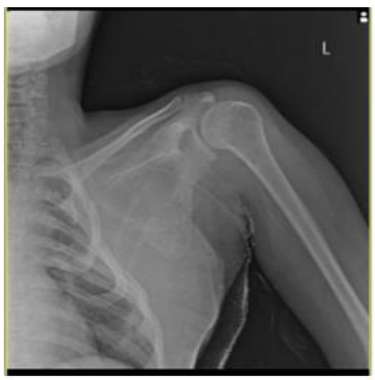

Fig. 2. X-ray of scapula (anterior-posterior view) scapular mass is enlarged. Ribs are seen compressed

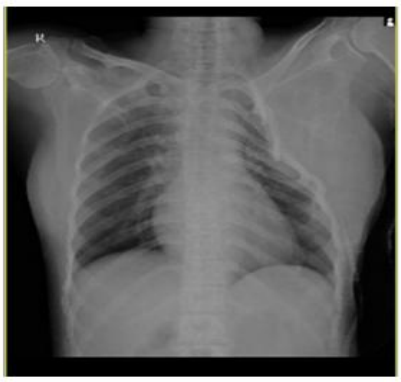

Fig. 3. X-ray of scapula (anterior-posterior view left side) scapular mass is enlarged. Ribs are seen compressed

Table 1. Assessment of ROM of joint on first day of rehabilitation

Action	Active ROM	Passive ROM
Shoulder flexion	$0\text{-}70^0$	$0\text{-}70^0$
Shoulder abduction	$0\text{-}70^0$	$0\text{-}70^0$

Table 2. Assessment of ROM of joint on last day of rehabilitation

Action	Active ROM	Passive ROM
Shoulder flexion	0-180	0-180
Shoulder abduction	0-180	0-180

The most widespread benign tumour is osteochondroma. In 3.0-6.4 percent of all instances, the scapula is implicated. The osteochondroma normally develops on the scapula's anterior aspect. The scapula osteochondroma induces pain and a grating sound when the scapula is moved. Mechanic irritation of muscle, tendon, or soft tissue, emergence of a pseudoaneurysm or bursa, fracture, or malignant transformation are all causes of symptoms. There are secondary complications of osteochondroma including scapular dyskinesia, scapular alata and reduced range of motion. Physiotherapy rehabilitation focused on maintaining the available range and to increase the range of motion [9].

Because tumour growth normally stops when the physis closes, and most osteochondromas are asymptomatic, the vast majority of osteochondromas are discovered in the first or second decade of life. The patient in our current case, on the other hand, arrived with a symptomatic scapular lesion in his fourth decade of life, and had not witnessed a growing lesion during maturation [1]. Unless the skeleton is juvenile, osteochondroma is usually treated surgically. Longitudinal approach was used by various authors along the medial scapular border with split, or release of the rhomboids, trapezius, levator scapulae, for tumour resection in various combination [10-13]. Following the excision of a lesion on the ventral portion of the scapula, Kwon recommended open approach surgery and reported satisfactory outcomes and significant reduction in the patient's mechanical complaints [14]. The thoracodorsal neurovascular bundle and long thoracic nerve were dissected free and preserved by Flugstad et al [15]. Endoscopic resection is an alternative to open procedures, which provides functional recovery [16,17]. Physiotherapy rehabilitation should be given to improve quality of life.

4. CONCLUSION

Osteochondroma is a common benign tumor. Management of osteochondroma is important to improve the quality of life. Physiotherapy plays an important role in managing Scapular osteochondroma.

CONSENT AND ETHICAL APPROVAL

As per international standard or university standard guideline Patient's consent and ethical approval has been collected and preserved by the authors.

COMPETING INTERESTS

Authors have declared that no competing interests exist.

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