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Physical therapy Regimen for a Rare Case of Aneursymal Bone Cyst: A Case Report

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Abstract

Aneurysmal bone cyst (ABC) is aggressive locally lytic lesion which is very rare tumour. It hardly involves talus bone and has either primary or secondary origin. On pubmed till 2012 there are less than 20 cases have been reported. Methaphyses of the long bones and the vertebral column are the common areas where they are typically found. These are most oftenly seen in children and young adults. Fibroblasts, osteoclast-typegiant cells and reactive woven bone is the typical presentation of ABC. It was originally considered as reactive in nature and was caused by circulatory abnormality which was developing increased venous pressure and resulting in dilation of intraosseous vascular network. Herein, we are reporting a case of 20 year old male with ABC of left talus. As a medical plan of treatment he was treated with a sclerotherapy and was referred to physiotherapy post operatively. Physiotherapy treatment was given for early ambulation and to improve quality of life. Physiotherapy treatment plan included strengthening exercises, breathing exercises, gait training and balance training. At the end of one month post operatively he was observed to improve in quality of life as well as was able to return his day to day activities and able to attend his collage and social gatherings.

Key words: Aneurysmal Bone Cyst, Rehabilitation, Physical Therapy, Case Report.

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Introduction:

In Aneurysmal bone cysts the word "aneurysmal" defines marked expansion and the word "cyst" defines fluid filled cavity [1].There is slight female predominance [4] with the prevalence of the disease is 0.14 per 100000 of the population per year with male to female ratio of 1:1.6 [1].Children and young adults are the most common populations in which ABC's are seen in their second decade of life [1].They are considered benign in nature,aggressive lesions likely to have local recurrence [2]. It is rare but rapidly growing condition [3]. Aneurysmal bone cyst (ABC) is composed of expansible blood-filled cavities and it is a benign hostile lesion.ABC of foot bones and particularly the talus is very rare but the fact is that all parts of human body can be involved [5-,6]. In previous literatures a number of primary ABCs of the talus [7-9] and secondary ABCs on giant cell tumor [10] and Chondroblastoma [11]were described. After curettage and bone grafting recurrence of ABC of the talus is extremely rare [8,9].To lower the pain of the patient surgical treatment of these lesions is necessary. Surgeries can also prevent the possibility of pathologic fracture [12].They commonly appear in the metaphyses of the long bones and in the vertebral column and these were first described by Jaffe and Liechtenstein in 1942 [12-14]. They are lytic, blood-filled, separated by fibrous septa.On histological examination they typically show fibroblasts, osteoclast-type giant cells and reactive woven bone [15]. ABC(s) were originally caused by a circulatory abnormalitythought to be reactive in nature.This leads to an increased venous pressure and resulting in dilation of the intraosseous vascular network [16,17].
We are presenting a case of 20 year old male with the complaint of pain at suture site since one day, who was operated for left talus aneurysmal bone cyst at Dr. D.Y.Patil Medical College,Pimpri,Pune(DYPMC) and was referred for physiotherapy treatment.

Patient and observation:

A 20 year old male was admitted to DYPMC with complaint of pain at suture site since one day due to sclerotherapy of ABC of the left talus. The patient had a history of I/V/O aneurysmal bone cyst- biopsy on 15th February 2023. The patient was vitally stable with no past history of hypertension,diabetes,TB,epilepsy,etc.

Clinical Findings:

The patient was assessed in supine lying position. On observation the patient had ectomorphic built. The patient had below knee slab which was till metacarpophalengeal joint on left leg. Swelling was present over left knee. The pain was graded 3/10 on Numerical Pain Rating Scale(NPRS). On examination the range of motion of right hip,knee,ankle and bilateral upper limbs were found to be full and functional. The range of motion of left hip and knee was full but range of motion of ankle can not be measured due to presence of slab. The strength of right lower limb and both the upper limbs were 4/5 while the strength of left lower limb was 3/5. The

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patient had no significant family history of the condition.The scar was present on left medial malleolus.

Timeline:

A 20 year old male with pain in left ankle was first noted in January 2023, diagnosis was done using X-ray,MRI,CT scan and Bone Biopsy on 20th February 2023 for which sclerotherapy was suggested and was done on 30th March 2023. The patient was referred to physiotherapy on 31st March 2023. The cast was removed on 12th april 2023 after which aggressive physiotherapy was started.

Diagnostic methods:

The diagnosis was made on the basis of computed tomography, MRI, X-ray and biopsy report.

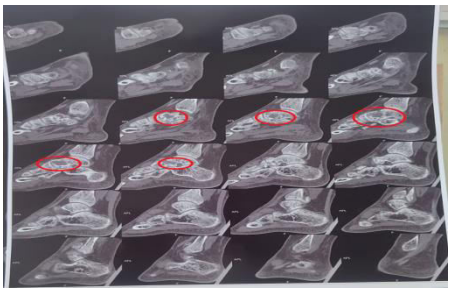

Figure: 1

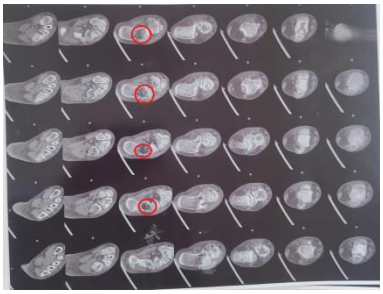

Figure: 2

Figure 3

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Figure: 4

Diagnostic challenges:

Disease rarity,lack of literature availability and etiology understanding are the few diagnostic challenges.

Diagnosis:

Post operative aneurysmal bone cyst of left talus.

Medical management:

Initially the patient was given Tab. Acenac P and Tab. Rabwin DSR. Later on 29th march 2023 sclerotherapy of left talus ABC was done. Patient was taken into supine position then 3 cm incision was taken on medial aspect of ankle then sclerosant polydocanol was injected into talus. After that sterile was given and incision closed. Below knee slab was give. After this post operative pharmacotherapy started.

Physiotherapy managment:

The patient and his relatives were explained about the importance of physiotherapy on better and fast recovery. Electrotherapeutic modalities like ultrasound was used after removal of cast to make the scar pliable. Manual therapy techniques like cyriax incorporated to break the adhesions near scar. Other techniques like mobilisation of joints was used to maintain joint integrity and improve joint range of motion. Breathing exercises were included in the treatment to maintain bronchial hygiene. Active range of motion exercises for left leg was given followed by active resisted exercises which improves strength of the limb. Gait training was given with and without walker.

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Follow up and outcome measures of intervention:

After 4 weeks, the patient's follow up was taken and the values were as follows:1)Numerical Pain Rating Scale(NPRS); pre treatment NPRS score: 5/10, post treatment NPRS score: 1/10.

The Manual Muscle Testing (MMT)

	Pre	post
Hip flexors	3/5	4/5
Hip extensors	3/5	4/5
Knee flexors	3/5	4/5
Knee extensors	3/5	4/5
Dorsiflexors	3/5	4/5
Plantarflexors	3/5	4/5

Patient perspective:

After successful surgery we have initiated physiotherapy and medical therapy, a well planned physiotherapy was initiated twice a day which have improved the mobility of left lower limb, the strength of the limb and ease in activities of daily living such as walking and toileting.

Informed consent:

The patient and relatives were informed about the case report and oral consent was obtained.

Discussion:

eradication of the lesion, prevention of recurrence and preservation of foot function are the main goals in the treatment of aneurysmal bone cyst of the foot. Curettage and bone grafting are the most common operative procedures are used now a days. Although, recurrence rate is high after this procedure.With primary ABCs, an excellent prognosis can be expected after intralesional curettage and bone grafting is said by Siddhartha Sharma et al [5].Whereas,Basarir [18] et al concluded that in two of three cases that were initially treated with curettage and grafting has been recurred. Similarly, in a case series by Frassica [19] et al, in seven cases of curettage and bone grafting four recurrences were observed.Pankaj Singh [3] et al concluded that an end block resection of cystic lesion of metacarpal with bone grafting with fibular block is a good choice of treatment for Aneurysmal Bone Cyst of hand bone with good result in their patient which gave structural construct with full return of functional activity.
In our case patient was undergone with sclerotherapy treatment and followed by physiotherapy. Till now there is no recurrence of the cyst. Physiotherapy helped patient to early return to activities. There was improvement in muscular strength and pain grading of the patient.

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Conclusion:

We conclude that the combined treatment of medical,surgical and physiotherapy showed a significant improvement in the quality of life and contributed to the early return to activities of daily living the patient.

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