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Case Report
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Rare Aneurysmal Bone Cyst Arising in the 3rd Rib; 5 Years Follow Up

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Abstract

We experienced with a relatively rare case of an aneurysmal bone cyst (ABC) arising in the right 3rd rib. A 20-year-old female, had experienced chest swelling on the right anterior side and pain for 6 months. Spiral CT scan and tissue biopsy confirms aneurysmal bone cyst of chest. Wide excision of the tumor and adjacent muscle tissue and part of 2nd, 3rd and 4th ribs were performed with a right antero-lateral thoracotomyincision (Sub-mammary approach). Chest wall reconstruction was performed with prolene mesh (140 x 90 mm). In 5-year post-operative follow up showed no recurrence.

Keywords: Aneurysmal Bone Cyst; Chest Wall Reconstraction

Abbreviations: ABC: Aneurysmal Bone Cyst; CT: Computed Tomography; NIDCH: National Institute of Disease of Chest & Hospital; GA: General Anesthesia

Introduction

Aneurysmal bone cyst (ABC) is a benign tumor of the skeletal system that rarely occurs in ribs. ABC is usually located in the metaphysis of long bones, but very few cases involving the ribs have been reported [1]. It is characterized by spongy, fibro-osseous, locally destructive tissue and a multi-cystic lesion filled with blood. Here we describe one cases of aneurysmal bone cyst in the right 3rd rib. This disease originating in a rib was never reported in Bangladesh in the literature.

Case Report

A 20-year-old female, had experienced chest discomfort on the right anterior side and pain for 6 months. A chest X-ray suggested having an abnormal shadow in the left upper lung field on the chest roentgenogram. Bilateral Mammography showed no definite soft tissue mass or any lump within the breast with no evidence of malignancy. Her Excision biopsy under GA with a vertical right upper para sternal incision done on 21/01/2011. The operative finding was: Chondroma of Ant. Chest wall. Histopathology showed: Tissues compatible with Aneurysmal bone cyst (ABC) with a differential diagnosis as Giant cell tumor of bone. After a period less than a month, unfortunately the swelling recurred with which she again consulted her surgeon with the complaints of pain and swelling of the operation site. This time a spiral CT scan of chest was done which gave an impression of large remnant of previous mass lesion about 9x7cm mass in the upper antero-lateral chest wall in relation to the anterior end of right 3rd rib [2].

She got admitted to NIDCH on 28/03/2011 as a known case of post operative state of right chest wall neoplasm. She was unmarried. She was 2nd of her two sisters and one brother. Her parents were alive. All were in good health. She came from a middle class family. Wide excision of the tumor and adjacent muscle tissue and part of 2nd, 3rd and 4th ribs was performed with a right antero-lateral thoracotomyincision (Sub-mammary approach) on 04.04.2011 (Figures 1-5). Chest wall reconstruction was performed with prolene mesh (140 x 90 mm). The resected specimen showed an encapsulated bony mass (75 x 60 x 35 mm) with multiple blood-filled spaces. Histopathological findings showed multiple cysts filled with blood and fibrous trabecullae containing osteoid tissue and multinucleated giant cells, confirming the diagnosis of aneurysmal bone cyst. Routine post-operative follow up to 5 years post-operatively showed no recurrence.

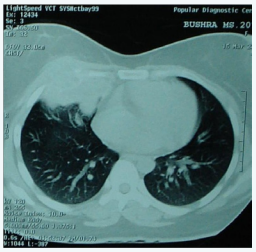

Figure 1: Chest computed tomographic scan revealed the expansile mass destroying the anterior half of the right 3rd rib and bulging into the chest cavity. The cyst was surrounded by a thin and calcified cortex with periosteum.

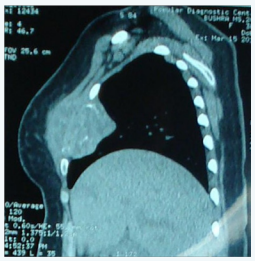

Figure 2: Multiple cysts containing blood or osteoid tissue are observed in the capsule from patient 1 (hematoxylin and eosin stain at 100 original magnification). Structures visible include the membrane of a cyst (A), blood (B), a small vessel (arrow at C), and osteoid tissue (D).

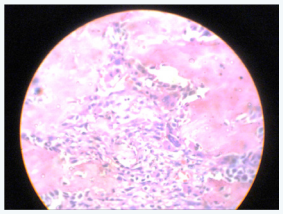

Figure 3: Resected Specimen of aneurysmal bone cyst.

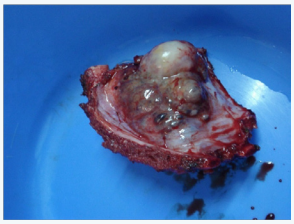

Figure 4: From Within.

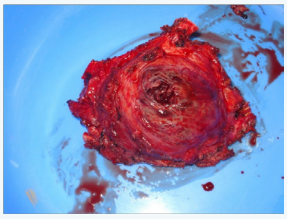

Figure 5: From outside.

Discussion

Aneurysmal bone cyst accounts for only 5% of all primarybone tumors [1]. It is extremely rare in the first rib. To those cases that have been documented in the literature to date [3], we add a report of ABC in the 3rd rib in the Bangladeshi population. The etiology of ABC is unclear. Some investigators think that it may be secondary to an increased circulatory venous pressure or trauma, causing bone absorption and blood-filled cysts formation, thus explaining the expansile nature of ABC [1]. Others think that ABC may be secondary to other preexisting bone diseases, giant cell tumor of bone being the most common [4]. Symptoms of ABC in the rib are nonspecific, and it is usually found incidentally by routine examination.

Conclusion

A CT scan is of great value to demonstrate the characteristic findings of the disease. The differential diagnosis of ABC will include Ewing sarcoma and eosinophilic granuloma, among others [5,6]. Some have used core needle biopsy specimens to confirm the diagnosis. We do not think this is necessary, however, and it will increase the risk of bleeding due to the abundant blood cysts inside the ABC. An en bloc resection with a clear margin is still the best approach for treatment of ABC. An antero-lateral incision in sub-mammary approach allows retraction of the mammary gland, and excellent access to the operative field. No recurrence in our cases with the above approaches has been observed to date.

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