



AGGRESSIVE MANAGEMENT OF SURFACE ANEURYSMAL BONE CYST: A CASE REPORT

Orthopaedics

Mohit Agarwal

Senior Resident, SMS Medical College, Jaipur.

Lalit Maini

Director Professor, Maulana Azad Medical college, New Delhi.

Juhi Agrawal

Assistant Professor, Government Medical College, Bharatpur.

ABSTRACT

Aneurysmal bone cyst originating from the surface of the bone is an unusual subtype. Surface ABCs have a predilection for diaphysis of long tubular bones. Radiologically it may mimic telangiectatic osteosarcoma which can be differentiated on the basis of histology. We present here a case of 17 year old male with proximal humerus surface ABC with extensive cortical breach. Clinico-radiographic presentation of the patient was more aggressive than conventional ABC. Plain radiograph demonstrated a permeative type of destructive pattern and the cross-sectional imaging demonstrated extensive cortical breach and intramedullary spread. MR Imaging suggested that intramedullary spread was more extensive in dimension as compared to the subperiosteal component. Biopsy was suggestive of ABC. Preoperatively selective arterial embolisation was done. Management was done by wide en-bloc resection and treatment of resected segment with liquid nitrogen by free freezing method followed by reimplantation and internal fixation with a proximal humerus plate along-with fibular strut graft. Patient on follow up after 5 months post operatively was able to perform his activities of daily living. Most cases reported in literature were managed by curettage and bone grafting. Literature for aggressive management of surface ABC's is sparse with no literature available regarding the use of liquid nitrogen in its management.

KEYWORDS

Aneurysmal Bone Cyst, Selective Arterial Embolisation, Liquid Nitrogen, En bloc resection

INTRODUCTION

Aneurysmal bone cyst is a non-neoplastic benign cystic lesion of bone that consists of multiloculated blood filled spaces separated by connective tissue septae containing fibroblasts, osteoclast type giant cells and reactive woven bone.¹ Majority of Aneurysmal bone cysts arise from metaphysis and are intramedullary.¹ Clinically Aneurysmal bone cysts present as pain and swelling with restricted motion on affected side.² Surface Aneurysmal bone cyst is a rare entity with a predilection for diaphysis of long tubular bones and originating from surface of bone.³ Radiologically it may mimic telangiectatic osteosarcoma which can be differentiated on the basis of histology which shows malignant osteoid formation in telangiectatic osteosarcoma.⁴

CASE REPORT

17 year male presented with complaints of pain and swelling over right upper arm since 6 months with restricted range of motion at shoulder joint. History of biopsy from swelling over right upper arm, done 14 days back in some other institute suggestive of secondary ABC over GCT. On examination hard tender swelling of 8*7cm present over posterolateral aspect of right upper arm with smooth surface and ill-defined margins (Fig. 1). Healed biopsy scar present over anterolateral aspect of right upper arm (Fig. 2). Plain radiograph demonstrated a lytic lesion originating from surface of bone with permeative type of destructive pattern and extending both peripherally toward periosteum and towards medulla with cortical breach (Fig. 3, Fig. 4). The intramedullary spread as demonstrated by MR Imaging was much more extensive as compared to the sub-periosteal component (Fig. 5). MRI Axial cuts revealed fluid-fluid levels along with extensive cortical breach (Fig. 6). Histopathological examination revealed blood filled spaces with multiple septae and giant cells suggestive of aneurysmal bone cyst (Fig. 7, Fig 8). Patient was managed by preoperative selective arterial embolization (Fig. 9) followed by wide en-bloc resection (Fig. 10) and treatment of resected segment with liquid nitrogen by free freezing method (Fig. 11) followed by re-implantation and internal fixation with a proximal humerus plate along-with fibular strut graft (Fig. 12, Fig. 13, Fig. 14). Resected specimen on histopathological examination was suggestive of aneurysmal bone cyst. Patient on follow up 6 months post operatively was able to perform his activities of daily living with no functional impairment

DISCUSSION

Aneurysmal bone cyst is a benign cystic intramedullary lesion having metaphyseal origin. Capanna classified aneurysmal bone cyst into 5 types of which type 4 and type 5 are surface aneurysmal bone cyst.¹ Aneurysmal bone cysts localized to cortex or periosteum are unusual. Radiographically aneurysmal bone cyst demonstrate lytic lesion with geographic type of destruction with narrow zone of transition. Surface aneurysmal bone cyst usually shows lytic lesion arising from cortical

region.⁵ Radiographically surface aneurysmal bone cyst cannot be differentiated from telangiectatic osteosarcoma. They can be differentiated on histopathology by presence of malignant osteoid in telangiectatic osteosarcoma. Histopathological examination showed large number of osteoclast like giant cells and densely arranged capillaries in both surface aneurysmal bone cyst and classical aneurysmal bone cyst.⁴



Figure 1

Figure 2

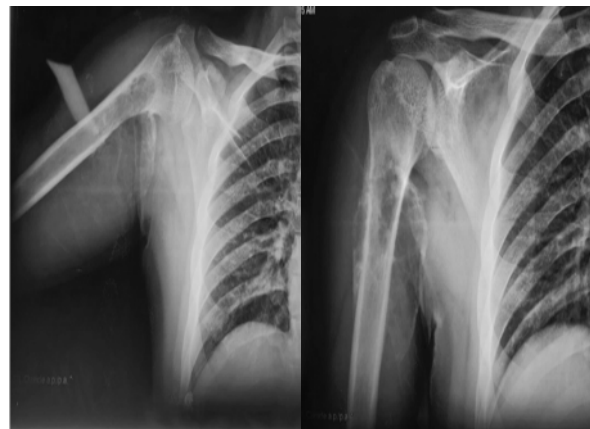


Figure 3

Figure 4

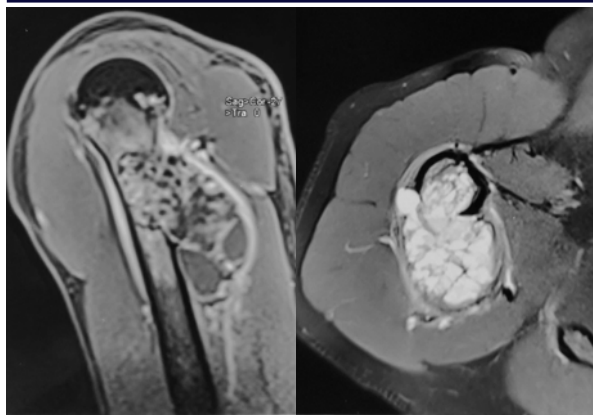


Figure 5

Figure 6

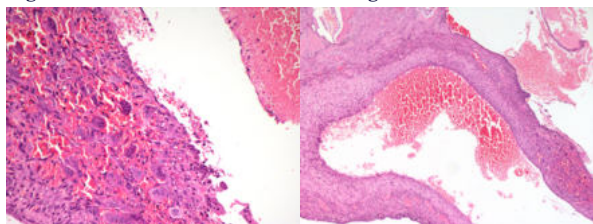


Figure 7

Figure 8

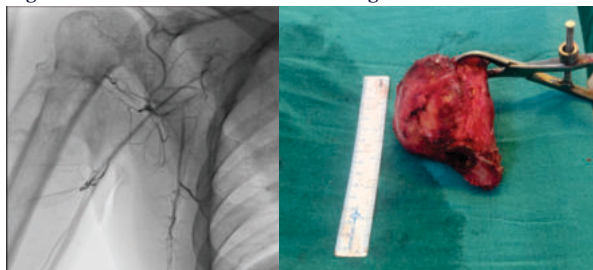


Figure 9

Figure 10

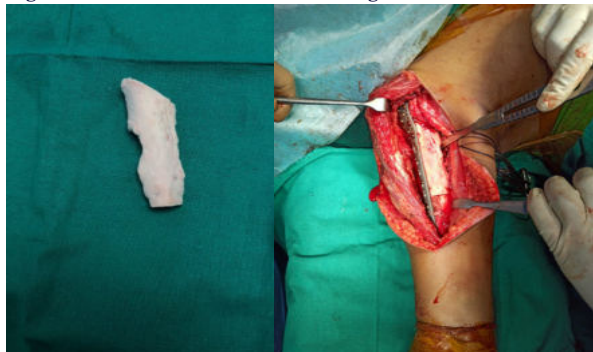


Figure 11

Figure 12

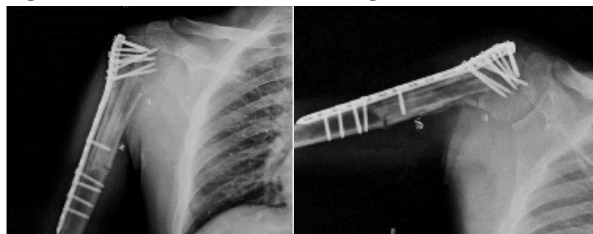


Figure 13

Figure 14

Surface aneurysmal bone cyst are usually managed by curettage and bone grafting. Aggressive management was done in this case because of such an aggressive presentation on plain radiographs and MRI. Literature for aggressive management of Surface ABC is sparse with no literature available regarding the use of liquid nitrogen in its management.

CONCLUSION

Surface aneurysmal bone cyst despite being benign lesion requires

aggressive management if radiological imaging is showing extensive medullary involvement and cortical breach to have better functional outcomes and to prevent recurrence.

REFERENCES

1. Yalcinkaya M, Lapcin O, Arkan Y, Aycan OE, Ozer D, Kabukcuoglu YS. Surface aneurysmal bone cyst: clinical and imaging features in 10 new cases. *Orthopedics*. 2016 Sep 1;39(5):e897-903.
2. Rapp TB, Ward JP, Alaia MJ. Aneurysmal bone cyst. *JAAOS-Journal of the American Academy of Orthopaedic Surgeons*. 2012 Apr 1;20(4):233-41.
3. Woertler K, Brinkschmidt C. Imaging features of subperiosteal aneurysmal bone cyst. *Acta Radiologica*. 2002 May;43(3):336-9.
4. Ahmad T, Naous R. Subperiosteal Aneurysmal Bone Cyst with Florid Ossification: A Rare Subtype. *Case reports in pathology*. 2020 Nov 5;2020.
5. Aydinli U, Ersozlu S, Sadikoglu Y, Yerci O, Ozturk F, Ozturk C. Subperiosteal aneurysmal bone cyst. *European Journal of Orthopaedic Surgery & Traumatology*. 2004 Dec;14(4):242-5.