GIANT CELL TUMOUR OF GREATER TROCHANTER APOPHYSIS: CASE REPORT

Kinyanjui JW, MBChB, MMed (Orth), Orthopaedic Surgeon, St Mary Rift Valley Mission Hospital, P.O. Box 582-00902, Elementaita, Kenya. Email: Jkinyash3000@gmail.com

ABSTRACT

Most giant cell tumours of bone occur in the metaphysic of the long bone in the third decade of life. Surgical excision is associated with a high recurrence rate. This case report describes occurrence of a giant cell tumour of bone in the greater trochanter apophysis in a 15 year old male and outlines surgical management strategies employed to reduce the chance of recurrence based on a review of literature.

Key words: Giant cell tumor of bone, Greater trochanter apophysis, Intralesion excision

INTRODUCTION

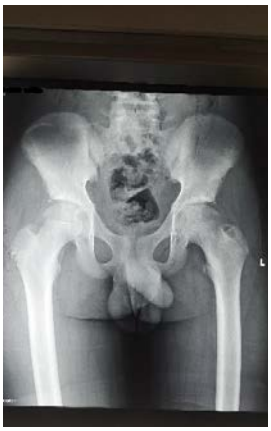
Giant cell tumour of bone is a rare neoplasm of bone that is commonly located in the metaphyses of the long bones and presents in the third decade of life. It is associated with a high recurrence rate after surgical excision. A case of occurrence of a giant cell tumour in an unusual location is presented: the greater trochanter apophysis. This case occurred in a 15 year old male. He underwent surgical excision based on principles shown by available evidence to reduce the high recurrence rate. On 3 months follow up there has been no recurrence.

CASE REPORT

A 15 year old male presented with a 2 year history of left hip pain. The pain was insidious in onset and progressive until presentation. No constitutional symptoms were reported and no history of preceding trauma. There was no family history of early onset bone pain. On examination the only significant findings were a left antalgic gait and point tenderness over the left greater trochanter with no swelling. There was no Trendelenburg gait.

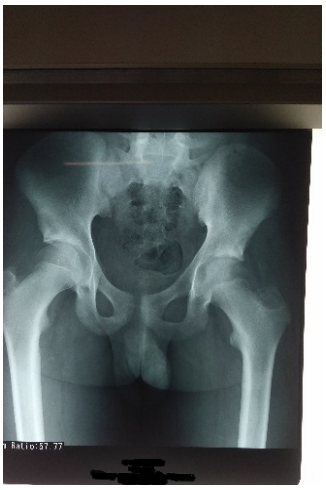
A pelvic X-ray taken shortly after onset of symptoms showed a well demarcated lytic lesion approximately 2 cm in greatest diameter on the greater trochanter apophysis (Figure 1). There was cortical thinning with some extension into the epiphyseal plate. There was surrounding sclerosis and no obvious soft tissue spread. This was treated with prescription analgesics but the symptoms persisted.

Figure 1
Demarcated lytic lesion approximately 2 cm in greatest diameter on the greater trochanter apophysis



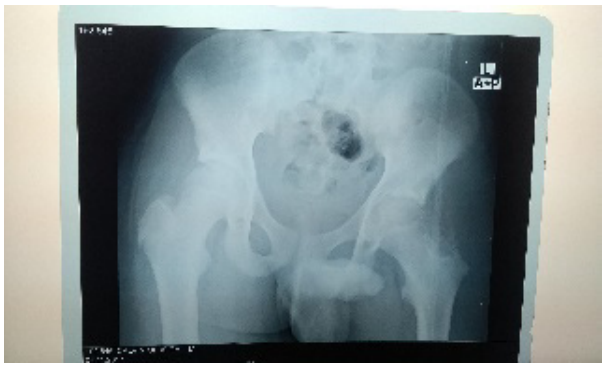
A pelvic X-ray 2 years later (Figure 2) showed that the lesion had enlarged to involve more of the greater trochanter apophysis with more extension into the metaphysis. There was still no cortical break and no soft tissue mass.

Figure 2
A pelvic X-ray 2 years later



The patient underwent an incision biopsy of the greater trochanter lesion; intraoperative findings consisted of a thin bony capsule overlying a tan relatively avascular soft tissue mass confined to the greater trochanter. Histological findings were of soft and calcified tissue fragments consisting of numerous multinucleated giant cells dispersed within dense stroma bearing similar bland nuclei. No mitoses, necrosis or atypia noted. This was consistent with giant cell tumour of soft tissue/ bone.

Figure 3
A pelvic X-ray at 3 months follow up



He subsequently underwent intralesional excision, curettage and extension of curettage with a mechanized burr. Pulsatile lavage with normal saline and a syringe was done and hydrogen peroxide was applied on the cavity. The gluteus minimus and medius conjoint tendon was not detached from the greater trochanter since most of it was attached to the metaphysis. Post operatively he ambulated well with no evidence of a Trendelenburg gait or hip abductor weakness. A pelvic X-ray at 3 months follow up (Figure 3) showed no evidence of recurrence, trochanteric overgrowth or coxavalga and the patient is pain free. However, regular 3 monthly radiographs were recommended.

DISCUSSION

Giant cell tumour also known as osteoclastoma is an uncommon neoplasm of bone (1,2). There is a female to male ratio of 1.3-15:1. They occur most commonly in the third decade of life and less than 5% occur in patients who are skeletally immature (1,3-5). Of these, the lesions described were all metaphyseal. There is a reported high recurrence rate of 20 - 60% (6). The tumour typically affects the ends of long bones; distal femur, proximal tibia, distal radius and proximal humerus in that order (7). Involvement of the pelvis and greater trochanter is extremely rare (8-13).

The treatment of choice is intralesional resection and curettage (14). Extension of curettage with mechanized burrs has been shown to reduce the recurrence rate from the typical 60% to 10% (14). Wide excision without contamination would be curative but like in this case may result in unacceptable functional limitations. The use of an intralesional margin of resection was in an attempt to preserve the function of the hip abductors. Copious irrigation preferably with a pulsatile jet lavage systems is preferable but this was not available in this case. However syringe lavage with normal saline was performed. Hydrogen peroxide has shown efficacy *in vitro* as an adjuvant after extended local curettage (15). Phenol is another adjuvant that has been shown to reduce recurrence rates (16). Polymethyl methacrylate cement has the advantages of filling the defect, providing structural support and necrosis of tumour cells as a result of its exothermic reaction (17). Other adjuvants include incorporation of cytotoxic agents like adriamycin and methotrexate and cryosurgery using liquid nitrogen. Phenol was not available during treatment of this case and it was felt that the lesion after curettage was not large and since this is not a weight bearing area of the femur then additional support with cement or bone graft was not needed (18). The use of adjuvants has been questioned especially in tumours confined to bone and the current recommendation is intralesional curettage for intraosseous tumours (18).

CONCLUSION

This case serves to illustrate the occurrence of a giant cell tumour of bone in an unusual age group and in an unusual location; before skeletal maturity and in the greater trochanter apophysis respectively. It also illustrates the fact that the same principles of treatment that apply to giant cell tumours in other locations applied well to the management of this case.

REFERENCES

1. Unni, K.K. Dahlin's bone tumors: general aspects and data on 11,087 cases. New York, NY. *Lippincott-Raven*. 1996:**463**
2. Sung, H.W., Kuo, D.P., Shu, W.P., *et al.* Giant cell tumor of bone: analysis of two hundred and eight cases in Chinese patients. *J Bone Joint Surg Am.* 1982;**64**(5):755-761.
3. Kransdorf, M.J., Sweet, D.E., Buetow, P.C. and Moser, R.P. Giant cell tumor in skeletally

immature patients. *Radiology*. 1992; **184**(1):233-237.
4. Picci, P., Manfrini, M. and Zucchi, V. Giant cell tumor of bone in skeletally immature patients. *J Bone Joint Surg Am*. 1983; **65**(4):486-490.
5. Puri, A., Agarwal, M.G., Shah, M., Jambheker, N.A., Anchan, C. and Behle, S. Giant cell tumor of bone in children and adolescents. *J Pediatr Orthop.* 2007; **27**(6):635-639.
6. Carrasco, C.H. and Murray, J.A. Giant cell tumors. *Orthop Clin North Am*. 1989; **20**(3):395-405.
7. Greenspan, A. Orthopaedic imaging – A practical approach 5th Edition. Lippincott Williams & Wilkins 2011.
8. Shankman, S., Greenspan, A., Klein, M.J. and Lewis, M.M. Giant cell tumor of ischium. A report of two cases, and a review of literature. *Skeletal Radiol.* 1988; **17**(1):46-51.
9. Mathur, S.K., Garg, M., Sethi, D. and Khetrapal, S. Giant cell tumor of ilium: an unusual location. *Clin Cancer Inves J.* 2012; **1**:80-82.
10. Stewart, M.J. and James, O.E. Jr. Giant cell tumor confined to the greater trochanter. A case report. *J Bone Joint Surg Am*. 1950; **32**A(2):439-442.
11. Chakarun, C.J., Forrester, D.M., Gottsegen, C.J., Patel, D.B., White, E.A. and Matcuk, G.R. Jr. Giant cell tumor of bone: Review, mimics, and new developments in treatment. *Radiographics*. 2013; **33**(1):197-211.
12. Lichtinger, T.K. and Heimkes, B. Reconstruction of greater trochanter with an allograft after resection of a giant cell tumor. *Arch Orthop Trauma Surg*. 2004; **124**(10):715-717.
13. Gebhardt, M., Tabaddor, R. and Villafuerte, J. Greater trochanteric fracture of young healthy male with a lytic lesion: A diagnostic and management dilemma. *The Orthop J Harvard Med School Online*. 2005
14. Puri, A. and Agarwal, M.G. Treatment of giant cell tumor of bone: Current concepts. *Indian J Orthop*. 2007; **41**(2): 101–108.
15. Nicholson, N.C., Ramp, W.K., Kneisl, J.S. and Kaysinger, K.K. Hydrogen peroxide inhibits giant cell tumor and osteoblast metabolism in vitro. *Clin Orthop Relat Res.* 1998; **347**:250-260.
16. Dürr, H.R., Maier, M., Jansson, V., Baur, A. and Refior, H.J. Phenol as an adjuvant for local control in the treatment of giant cell tumour of the bone. *Eur J Surg Oncol.* 1999; **25**(6):610-618.
17. Bini, S.A., Gill, K. and Johnston, J.O. Giant cell tumor of bone. Curettage and cement reconstruction. *Clin Orthop Relat Res.* 1995; 321:**245**-250.
18. Prosser, G.H., Baloch, K.G., Tillman, R.M., Carter, S.R. and Grimer, R.J. Does curettage without adjuvant therapy provide low recurrence rates in giant-cell tumors of bone? *Clin Orthop Relat Res.* 2005; **435**:211-218.