GIANT CELL TUMOUR OF BONE – A RARE SITE WITH RECURRENCE

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ABSTRACT

BACKGROUND

Occurrence of Giant cell tumour of bone (GCT) in phalanx of a finger is very rare. We here report a case of Giant cell tumour of middle phalanx of right ring finger in an 18 years-old female with evidence of recurrence after primary treatment and subsequent management. During clinical and radiological evaluation one should give proper importance to the fact that giant cell tumour can occur in extremely rare location and it has aggressive behaviour and potential of local recurrence.

KEYWORDS

Giant Cell Tumour, Middle Phalanx, Recurrence.

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BACKGROUND

Giant cell tumour (GCT) of bone usually occurs in epiphysis of long bones like distal femur, proximal tibia and distal radius etc.^{1,2,3} However, it is extremely rare in phalanx of finger. The incidence of GCT in hand (including phalanges and metacarpals) is ranging from 1.7% to 2%. Though most cases of GCT in these sites are benign, it shows high recurrence rate^{4,5} with local aggressiveness after simple curettage and often needs en block excision.⁴ The recurrence of GCT of hand, especially of phalanx is significantly higher than that of other location. In 90% of cases, the local recurrence has been reported after curettage and bone grafting.^{4,6,7,8,9} Even after wide resection and reconstruction with structural bone grafting, high local recurrence rate is noted.^{4,5} Multiple surgical procedures like local and wide excision and amputation including ray amputation are used to cure the disease completely.

Here, we report a case of GCT of middle phalanx of right ring finger due to its rare location as well as local recurrence after 10 months of primary curettage and bone grafting. The recurrence of tumour was treated by amputation of affected phalanx, iliac crest bone grafting and arthrodesis.

CASE REPORT

An 18 years old female attended our institution reporting a history of trivial accident in December 2009 following which she had pain and soft tissue swelling of middle phalanx of right ring finger. As per advice of orthopaedic surgeon, digital x-ray was done. Radiological evaluation revealed aneurysmal bone cyst with the description of expansile subarticular osteolytic lesion of middle phalanx of right ring finger. [Figure - 1].

Just after one and half month she underwent curettage of lesion and bone graft. Tissue from lesion sent for histopathological examination.

Microscopical examination showed classical features of Giant cell tumour of bone with round or oval mononuclear stromal cells interspersed with many multinucleated osteoclastic type of giant cells. [Figure–2]. After 10 months of surgery, she again noticed pain and soft tissue swelling of that area. She underwent repeat digital x-ray along with MRI and spiral CT scan. All the investigations were suggestive of Giant cell tumour of bone. [Figure–3, 4, 5]. Bone scan was done. No other lesion detected. Ultimately, excision of middle phalanx of right ring finger was done along with iliac crest bone grafting and arthrodesis of Proximal Interphalangeal (PIP) and Distal Interphalangeal (DIP) Joint (Performed elsewhere). Bone graft stabilised proximally with two wires at right angles and distally with stainless wire and K wire (four stairs technique) in functional position. [Figure–6]. Histopathological examination of amputated middle phalanx proved the recurrence of Giant cell tumour. [Figure–7].

**Figure 1. Report of first X-ray:
Aneurysmal bone cyst of middle
phalanx of right ring finger**

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**Figure 2. Histopathological diagnosis:
Giant Cell Tumour of Bone**

**Figure 5. Spiral CT Scan: Suggestive
of recurrence of GCT**

**Figure 3. X-ray - suggestive of local recurrence of giant cell
tumour of bone
of middle phalanx of right ring finger**

**Figure 4. MRI scan suggested local recurrence of
GCT of Bone of middle phalanx of right ring finger**

**Figure 6. X-ray shows bone grafting and arthrodesis of
Proximal Interphalangeal (PIP) and Distal
Interphalangeal (DIP) Joint after excision of affected
middle phalanx of right ring finger**

**Figure 7. Microscopic features of recurrent
Giant Cell Tumour of Bone in excised
middle phalanx of right ring finger**

Figure 8. Photograph of right hand shows the right ring finger after amputation of middle phalanx followed by iliac bone grafting and arthrodesis

DISCUSSION

GCT of hand, especially of phalanx is extremely rare and it appears different from conventional GCT seen in other sites of skeleton.⁴ In this case, the first radiological diagnosis was aneurysmal bone cyst, the commonest differential diagnosis of GCT. GCT of phalanx is so rare that in a series of 108 cases of GCT, only two cases were reported.^{4,10} In a larger series of 2400 skeletal GCTs reported in literature, less than 50 were arising from phalanx.^{4,11,12} In another two large series of 568 and 327 of GCT, only 4 and 1 reported as phalangeal involvement respectively.¹¹

The treatment modalities of GCT of hand included aggressive curettage, cancellous bone grafting, wide excision along with structural bone grafting, amputation and ray amputation.^{4,7,8,9,13} However, high recurrence (90%) rate have been reported even with these treatment procedures.^{4,7,8,9,14} Considering total number of GCT of all locations, high local recurrence rate has also been observed in few series ranging from 30.7 to 88.0%.^{1,2,3} Distance metastasis is extremely rare. In few cases, involvement of lung and lymph node was reported.^{1,2} It is observed that most of the local recurrences of GCT in hand are reported to occur within one year of initial surgery.^{4,8} In our case also, local recurrence occurred after 10 months of primary surgery with bone grafting. But after excision of affected middle phalanx of right ring finger followed by iliac bone grafting and arthrodesis of PIP and DIP joints, she has been found disease free for last six years.

In one of the largest series of GCT of hand, reported by Averill et al⁶, comprising of 28 lesions (14 in Phalanges) in 21 patients, 16 of the cases had local recurrence.^{4,6} Two of six cases of finger phalangeal involvement of GCT, reported in the series by Goldenberg et al¹⁵ developed local recurrence. In our case, the patient was comfortable with a cosmetically improved right ring finger. [Figure 8].

Due to comparative rarity of GCT originating from middle phalanx of finger, the present case was planned for reporting.

CONCLUSION

Though GCT in phalanx is an extremely rare location, it should always be kept in mind during clinical and radiological evaluation because GCTs originating from small bone of hand (e.g. Phalanx or metacarpals) are highly aggressive tumours with significant incidence of recurrence.

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