Subperiosteal Schwannoma Of The Ulna

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Citation

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Abstract

This is a report of a case of subperiosteal schwannoma arising from the surface of the ulna in a 28 years old lady. To our knowledge, this is only the second report, of schwannoma presenting as a surface lesion of a bone. Radiologically, it presents as a well-circumscribed lesion, scalloping the cortex of the bone.

INTRODUCTION

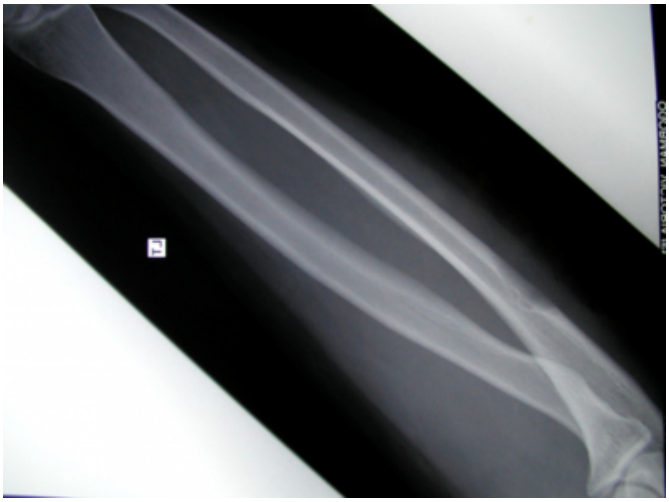
Schwannomas (neurilemomas) are benign tumors derived from the Schwann cells of the nervous system. They are usually solitary, circumscribed, and encapsulated tumors eccentrically located on proximal nerves or spinal nerve roots [1]. Schwannomas are slightly more common in men than women, with peak occurrence between 30 and 60 years of age [2]. Occasionally, they are found in an intraosseous location, mainly in the mandible arising from the mandibular nerve [3]. This case report describes a patient with a single schwannoma arising from the surface of the ulna. To the authors' knowledge, this is only the second time that a schwannoma has been identified arising from this site and we report this case to highlight it's radiological and clinical features.

CASE REPORT

A 28 years old woman presented with a swelling over the subcutaneous border of her left ulna. It was first noticed many years ago after she had had an injury over the area, but lately it has been associated with pain and it was tender to touch. She had no significant past medical or family history. There were no other systemic symptoms. On examination, there was a tender swelling over the subcutaneous border of ulna. It was deep, fixed and tender to palpation and the surrounding skin was normal. There were no other swellings, café-au-lait spots or cutaneous neurofibromata noted.

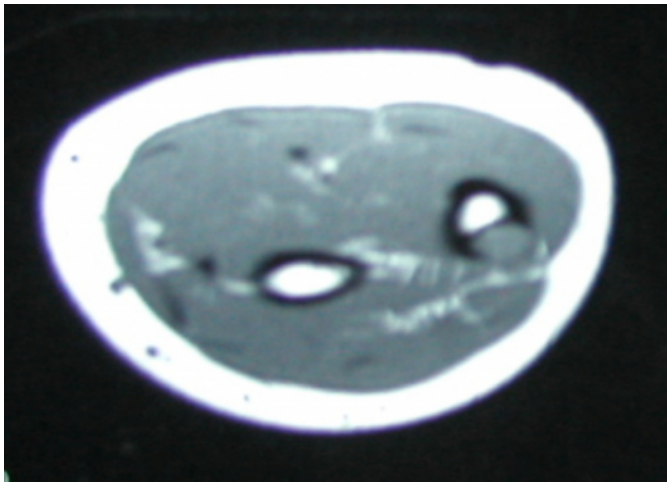
Plain radiographs showed a two-centimeter cystic lesion on the subcutaneous border of the ulna at the junction between proximal third and middle third. It had a well define sclerotic margin with absent superficial cortex. There was no sub-periosteal reaction or new bone formation (Fig. 1).

Figure 1



Magnetic resonance (MR) imaging showed a surface lesion arising on the extensor aspect of the ulna diaphysis, which appeared cystic in nature (Fig 2).

Figure 2



Excision biopsy of this lesion was done. The swelling was well embedded in the ulna and had to be shelled out. It was a yellowish firm nodule, 28mm x 16mm x 11mm, which appeared to arise from the bone extending into the surrounding muscles. It was a well-encapsulated swelling, which had scalloped into the ulna. It was excised in one piece without compromising the surrounding normal tissues. Histological examination showed that it was a benign Schwannoma, which was completely excised.

DISCUSSION

Schwannoma or neurilemmoma, is a benign tumour of nerve sheath origin with a very low incidence in bone. It accounts for less than 0.2% of all bone tumours [4,5]. There have been numerous reports of intramedullary schwannomas, located in various bones through out the body such as the fibula, tibia, radius, metacarpal and humerus [6,7,8,9,10]. To the author's knowledge, this is the second time that schwannoma has been reported as a surface lesion of the bone. This is despite the fact that there are numerous nerve fibres in the periosteum of the bone. The first case, was reported by Verma and colleagues [11]. They reported a case of two adjacent subperiosteal schwannomas arising from the surface of the femur. In addition to this, there have been reports of other nerve related tumours that have presented as surface lesions of the bone such as malignant schwannoma [12] and neurofibromas [13,14]. In this particular case, the schwannoma was on the surface of the ulna, eroding into the ulna causing scalloping of the outer cortex and extending into the surrounding soft tissues, without invading them. Focal scalloping is usually a sign of a benign lesion. The radiological differential diagnosis in this case would be a periosteal chondroma, a surface aneurysmal bone cyst and a periosteal ganglion [15]. Sometimes, even a malignant lesion such as Ewing's sarcoma can present with focal scalloping of the cortex, but it is usually not so well localised [16,17]. Therefore, it is obvious that a variety of lesion can present as surface lesions and can pose a diagnostic challenge [18,19].

CONCLUSION

When a clinician is encountered with a surface lesion that appears benign radiologically, he or she should seriously consider peripheral nerve sheath tumours as a possible differential diagnosis.

References

1. Morris JH: The nervous system, in Cotran RS, Kumar V, Robbins SL (eds): Robbins Pathologic Basis of Disease, ed 4. Philadelphia, WB Saunders, 1989, pp 1445-1447.
2. Anthony DC, Vogel S: Peripheral nervous system, in Damjanov I, Linder J, Anderson WAD (eds): Anderson's Pathology, ed 10. St Louis, Mosby, 1996, pp 2824-2826.
3. Sadeghi EM, Koenig LJ, Clark D. Intrabony neurilemmoma: diagnosis and management. J Am Dent Assoc 1998; 129:729-731.
4. Samter T G, Vellios F, Shafer W G. Neurilemmoma of bone. Radiology 1960: 75; 215-222.
5. Wirth W A, Bray C B Jr. intraosseous nuerilemmoma. J Bone Joint Surg (Am) 1977: 59: 252-255.
6. Aoki J, Tanikawa H, Fujioka F, Ishii K, Seo GS, Karakida O, Sone S. Intraosseous neurilemmoma of the fibula. Skeletal Radiol. 1997 Jan;26(1):60-3.
7. Gordon EJ. Solitary intraosseous neurilemmoma of the tibia: review of intraosseous neurilemmoma and neurofibroma. Clin Orthop. 1976 Jun;(117):271-82.
8. Gine J, Calmet J, Sirvent JJ, Domenech S. Intraosseous neurilemmoma of the radius: a case report. J Hand Surg [Am]. 2000 Mar;25(2):365-9.
9. Vora RA, Mintz DN, Athanasian EA. Intraosseous schwannoma of the metacarpal. Skeletal Radiol. 2000 Apr;29(4):224-6.
10. Mutema GK, Sorger J. Intraosseous schwannoma of the humerus. Skeletal Radiol. 2002 Jul;31(7):419-21.M. Forest. Orthopaedic Surgical Pathology.
11. Verma RR, Khan MT, Davies AM, Mangham DC, Grimer RJ. Subperiosteal schwannomas of the femur. Skeletal Radiol. 2002 Jul;31(7):422-5.
12. Andrew SM, Freemont AJ. Juxtacortical malignant schwannoma with heterologous elements. Histopathology 1993; 23:280-282.
13. Suvarna SK, Smith JHF, Barrington NA. Periosteal neurofibroma mimicking osteochondroma. Clin Radiol 1995; 50:800-802.
14. Paksoy Y, Sahin M, Avunduk MC, Aksoy F, Odev K. Solitary juxtacortical neurofibroma of the humerus. Skeletal Radiol 2002; 31:112-115.
15. Seeger LL, Lawrence Y, Eckardt JJ. Surface lesion of the bone. Radiology 1998; 206: 17-33.
16. Mueller DL, Grant RM, Riding MD, Coopes MJ. Cortical saucerization: an unusual imaging finding of Ewing's sarcoma. AJK Am J Roentgenol 1994; 163:401-403.
17. Shapeero LG, Vanel D, Sundram M, et al. Periosteal Ewing's sarcoma. Radiology 1994; 191: 825-831.
18. Kenan S, Abdelwahab IF, Klein MJ, Hermann G, Lewis MM. Lesions of juxtracortical origin (surface lesions of bone). Skeletal Radiol 1994; 22:337-357.
19. Seeger LL, Lawrence Y, Eckardt JJ. Surface lesions of bone. Radiology 1998; 206:17-33.

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