Case Report:

Parosteal osteosarcoma of wrist: a rare case report

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ABSTRACT:

Parosteal osteosarcoma (Juxtacortical osteosarcoma) is an infrequent variant of conventional osteosarcoma that occurs in slightly older age group. It is a slow-growing tumor which originates from the outer layer of the periosteum. It usually arises in a juxtacortical position in the metaphyses of long bones. Rare cases have been described at other sites such as mandible and small bones of hand. Although these lesions are low-grade malignancies with minimal potential to metastasize, they can recur with simple local excision. The clinical features combined with the radiologic characteristics are diagnostically helpful. Definitive diagnosis comes from histopathology, and wide local resection should be employed as the optimal treatment. Here we present a case of 30 years old male with swelling wrist, which was diagnosed as parosteal osteosarcoma on histopathology.

Key words: Parosteal osteosarcoma, wrist, low grade malignancy.

INTRODUCTION:

Osteogenic sarcoma represent the most common non hematopoietic primary malignant bone tumor with an overall incidence of 1:100,000 per year. A separate class of osteosarcoma has been termed juxtacortical osteosarcoma, which includes intermediate grade periosteal and low-grade parosteal variants. Parosteal osteosarcoma is a slow-growing tumor which originates from the outer layer of the periosteum and represents 65% of surface osteosarcomas. It usually arises in a juxtacortical position in the metaphyses of long bones. Rare cases have been described at other sites such as mandible and small bones of hand. Because of less aggressive biological behavior, it is important to recognize these subtypes of osteosarcomas to plan treatment appropriately and avoid overtreatment. Here we present a case of parosteal osteosarcoma of wrist diagnosed histologically.

CASE REPORT:

A 30 years old male presented with pain and swelling in right wrist since one month. The onset of swelling was gradual but over a month, it increased in size and became painful. X-ray wrist revealed dense mineralized lobulated mass with irregular margins. The medullary space of the bone was not involved. The tumor was not associated with periosteal reaction. A provisional diagnosis of osteochondroma was made. To confirm the diagnosis, an incisional biopsy was done. We received a grey tan soft to hard tissue piece measuring 1.5x1x1 cm. The hard bony piece was subjected to decalcification in EDTA. On subsequent microscopic examination, a disorderly pattern of well formed bone, osteoid, occasional cartilage and hyaline stroma was observed (Figure1,2). Osteoblasts were seen lining some of the trabeculae. Hence diagnosis of parosteal osteosarcoma was made.

Wide excision of the tumor was done. The margins were free of tumor on histopathological examination. Since parosteal osteosarcoma is low grade tumor, chemotherapy was not required.
DISCUSSION:
Geschickter and Copeland provided the first description of a parosteal osteoma in 1950. Unlike conventional osteosarcoma, it involves an older age group typically in the 3rd and 4th decades of life and shows a slight female predilection. The most common location of a POS is the posterior aspect of the distal femur accounting for approximately two thirds of all cases. These tumors were thought to begin as ossifying fibrous tissue of the periosteum with a tendency toward malignant differentiation resembling sclerosing osteogenic sarcoma. Histologically, parosteal tumors are ill-defined, exophytic tumors with a regular external surface and no cartilaginous cap, a tendency to overgrow the base of origin, and a spindle-cell stroma with mild atypia. These lesions are composed of intermixed bone, fibrous, and cartilaginous tissue involving the periosteum. The bland histologic appearance may lead to misdiagnosis as osteoma, osteochondroma, heterotopic ossification, or myositis ossificans. Periosteal osteosarcoma tend to have a lobular and well-defined periphery composed of more poorly differentiated malignant cartilaginous tissue. Accurate diagnosis requires correlation of clinical, radiographic, and histologic features. The inability to diagnose the lesion correctly often leads to inadequate initial operative procedures. The differential diagnosis include myositis ossificans, fracture callus, ossifying hematoma, osteochondroma, extraosseous osteosarcoma, parosteal chondroma, desmoplastic fibroma and osteoma. Most commonly they are misdiagnosed as osteochondroma. Histologically, osteochondroma has cells resembling normal hyaline cartilage with mature bone trabeculae located beneath cartilagenous cap. Parosteal osteosarcoma is distinguished from myositis ossificans mainly on basis of presence of orderly pattern of maturation. Parosteal osteosarcoma having morphologic features equivalent to those of the conventional intramedullary osteosarcoma are referred to as high-grade surface osteosarcomas and behave aggressively. Features of high-grade osteosarcoma are seen focally in what is otherwise a typical juxtacortical osteosarcoma, either initially or – more commonly – following repeated tumor recurrences; this phenomenon, which is referred to as ‘dedifferentiation’, is associated with a markedly decreased survival rate. The molecular genetic makeup of juxtacortical osteosarcoma is different from that of conventional osteosarcoma. It is characterized by a supernumerary ring chromosome as the sole aberration, effecting gain of 12q13–15, which results in co-amplification of the SAS, CDK4, and MDM2 genes. Parosteal osteosarcoma present with slow growth as a low-grade malignancy that do not tend to metastasize but can recur after local excision. However, they are not as aggressive as central osteosarcoma. With adequate surgical excision with a negative margin, there is no defined role for chemotherapy or radiation as adjuvant treatment.

CONCLUSION:
Parosteal osteosarcoma of the wrist is rare, low-grade variant of osteosarcoma. Although these lesions are low-grade malignancies with minimal potential to metastasize, they can recur with simple local excision. The clinical features combined with the radiologic characteristics presented are diagnostically helpful. Definitive diagnosis comes from histopathology, and wide local resection should be employed as the optimal treatment.
Figure 1: Disorderly arrangement of bony trabeculae (H&E,100X).

Figure 2: Moderately atypical spindle tumor cells along with irregularly shaped bony trabeculae (H&E,400X).

REFERENCES: