growing into the cavity, and a small area of radiolucency remained, though with no subjective complaint from the patient. One year later, the range of motion had recovered completely, and no sequela was seen.

DISCUSSION

The majority of chondroblastomas remain non-aggressive and have a benign course. However, malignant transformation to sarcoma (often after radiotherapy), and distal metastasis to the lung[3] have been documented. Aneurysmal bone cysts may coexist with the chondroblastoma in about 10% to 15% of cases.[4] The typical radiographic appearance shows a well-defined geographical osteolytic lesion with thin sclerotic margins arising eccentrically in an epiphysis or apophysis, with or without extension into the metaphysis. It has been noted that up to 60% of chondroblastomas may coexist with a benign-appearing, thick, solid periosteal reaction that extends distally from the lesion.[4] Calcifications within the lesion and periosteal reactions are reported in some literatures.[5-7] MRI features characterize a lesion with a thin, low-signal-intensity rim corresponding to the sclerotic margin seen radiographically. The contents have predominantly low to intermediate signal intensity on both T1-weighted and T2-weighted images. Edema in the adjacent bone marrow and soft tissues is another common but nonspecific finding. [8] Most cases occur in the long bones (80%), especially around the knee joint and proximal humerus. The remainder arise in the flat bones and in the short tubular bones of the hands and feet. The clinical symptoms are nonspecific. Most patients experience pain referred to the joint adjacent to the lesion and limb-swelling due to synovial proliferation secondary to the irritation of the tumor.[4]

Radiographic findings usually suggest the diagnosis. Differential diagnoses should include giant cell tumor, enchondroma, Brodie abscess, or clear cell chondrosarcoma.

The histological characteristics of chondroblastomas, generally include a predominance of roundish or polyhedral cells of varying sizes with oval nuclei and pink cytoplasm, multinucleated giant cells of varying numbers, and foci of chondroid matrix. Dystrophic calcification is sometimes present but is not necessary for the diagnosis.[9, 10]

Different treatments have been proposed in the literature: cryotherapy by Huvos and Marcove[11] and curettage by Dahlin and Ivins[12] with or without bone grafting. Resection of an articular lesion through the arthroscope can be an alternative,[2,13] but adequate visualization of the tumor may not always be possible through the arthroscope if the lesion is in an inaccessible location. Besides, there is the possibility of intra-articular spread of a malignant tumor if a biopsy is attempted using arthroscopic means[2]. If there is any suspicion of an aggressive lesion during the preoperative work-up, arthroscopy should not be performed. The frequency of local recurrence after these procedures ranges from 8% to 36%. Recurrence is more common among patients with open physeal plates. To avoid recurrence, complete removal of the tumor under good visualization is of ultimate importance.

Dahlin and Ivins[12] state that, if the tumor is left untreated, it can enlarge, undergoing cortical breakthrough, and invade the adjacent joint. Surgical complications are rare, unless the physeal plate is injured, which will cause subsequent growth arrest.

The clinical symptoms associated with chondroblastomas are often nonspecific, such as pain, low-grade fever, and constitutional symptoms. The radiographic and MR imaging features of chondroblastomas are nearly always sufficiently characteristic for the physician to make a diagnosis. After surgical removal, most patients will recover completely without complications. Though the majority of chondroblastomas are considered non-aggressive tumors, however, the possibilities of local recurrence, malignant transformation to sarcoma, and distant metastasis still exist. It is mandatory to excise the lesion early after proper image interpretation and/or biopsy, accompanied with regular follow-up similar to patients with giant cell tumors.[3]

REFERENCES

1. Jaffe, H.L., Lichtenstein, L. Benign chondroblastoma of