Case Report

Soft Tissue Chondromas: A case series of 6 cases with review

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ABSTRACT

Soft tissue chondroma is extraskeletal benign cartilagenous soft tissue tumor rare to their skeletal counterpart enchondromas. They manifest characteristic radiological and histological features with consistent cytological features. Although several histologic studies of soft tissue chondromas have been published, correlative studies of cytologic, radiologic and corresponding histologic features are limited. To better define the triad of cytological, radiological and histological features of various Soft tissue chondroma, we reviewed the radiological and corresponding cytohistologic material of six tumors. The radiological finding consists of a well defined soft tissue mass, partly calcified not attached to underlying bone. Classical cytological patterns were found to be small clusters of benign appearing chondrocytes along with chondromyxoid fragment, with a impression of soft tissue chondroma. Post operatively all six cases show characteristic histologic features consisting of adult type hyaline cartilage with mild atypia in chondocytes in one and inflammation in other tumor. The cyto-histologic features along with radiologic feature constitute definitive triad in diagnosing soft tissue chondromas.

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Introduction

Soft tissue chondromas (STC) are rare benign soft tissue tumors occurring in extraosseous and extra-synovial location predominantly composed of adult type hyaline cartilage[1]. Because of their rarity they are liable to be under diagnosed clinically[2]. The STC share same pathology as there bony counterpart except there lacations[3,4]. The current WHO classification places STC under category of chondro–osseous tumors under benign tumors. The majority of patients are middle aged persons with age range of 30-60 years with specific predilection for hands and feet[1,5]. The STC are slow growing tumors with special predilection to extremities especially acral areas like fingers[1].

Our study entailed a retrospective review of the clinico-pathological features of six histologically confirmed cases of STC, received in Central Institute of Orthopedics, laboratory Safdarjung Hospital over past four years.

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We report our ongoing experience involving six cases of STC with three FNAC soft tissue aspirates reported in CIO Laboratory over four years. All the relevant history was retrieved from the requisition form with available radiological, cytological and histological data. The X ray findings available in all the six patients were noted, all of which suggest a possible radiological diagnosis of soft tissue chondroma. The cytologic aspirate was done in three patients without general anesthesia using 23 gauge needles by the standard manual method at CIO laboratory VMMC and Safdarjung Hospital Delhi. The available gross findings were noted. Histologic material in the form of paraffin wax blocks and H&E stained slides were retreived for all six cases. All six cases were reported by total of two experienced pathologists specialized in reporting of musculoskeletal lesions over more than 10 years. The cases were again reviewed in light of available radiological and cytological diagnosis.

In our study the age group of affected patients showed a wide range varying from 12 to 40 years with a mean age of 27.67 years. Males and females were found to be equally affected. Most patients presented with a solitary, painless lump of long duration arising in the vicinity of tendons and joints. All patients were found to have a hard, fixed, non-tender swelling with well defined borders involving extremities mainly distal extremities. A diagnosis of a benign chondroma arising from the soft tissues of the distal extremities was made based on the clinico-radiologic and cytologic findings. Plain X-ray was done in all patients and FNAC was undertaken in three out of six patients.

Plain radiograph in all the six cases revealed a soft tissue mass, with normal underlying bone (Figure 1). No bony erosion or periosteal reaction was observed. Dense homogenous calcification was seen in two out of six cases. CT scan (Figure 2) done in one patient showed a soft tissue mass partly calcified, separated from the underlying bone. Extensive calcification masking the cartilaginous component of the tumor was noted in one of the cases.

Cytological smears of three cases available out of six cases shows myxo-chondroid fragments (Figure 3) suggestive of a benign tumour of cartilaginous origin and a diagnosis "consistent with a STC" was made in view of available radiological finding.

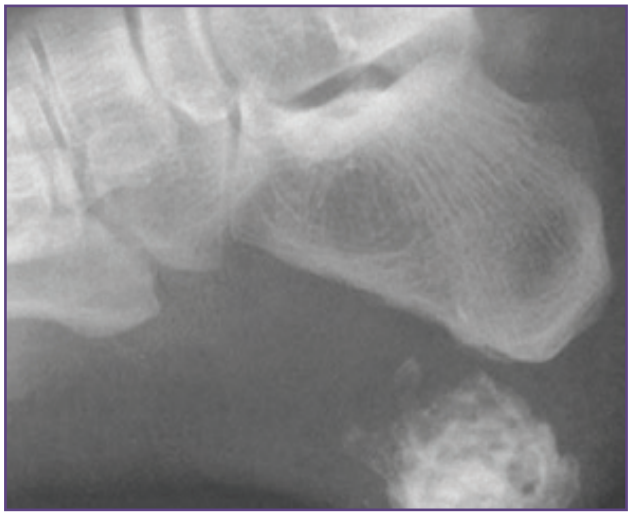

Fig. 1: X-ray right ankle shows well circumscribed soft tissue mass, partly calcified, no underlying bony connection was appreciated.

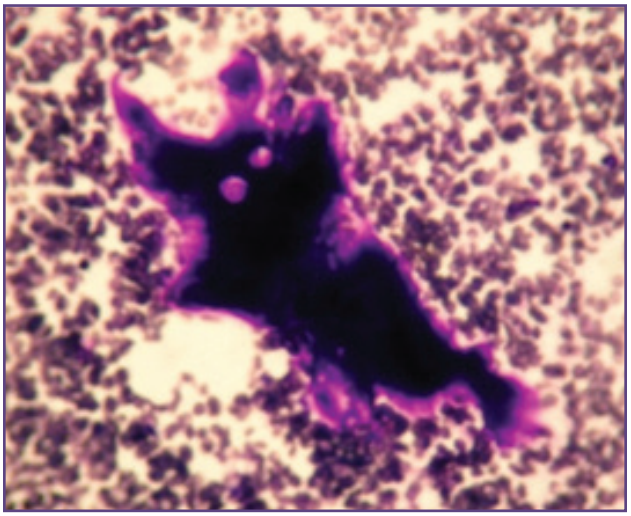

Fig. 2: Low power view of aspirate showing chondromyxoid fragment in hemorrhagic background. (Giemsa; 100x)

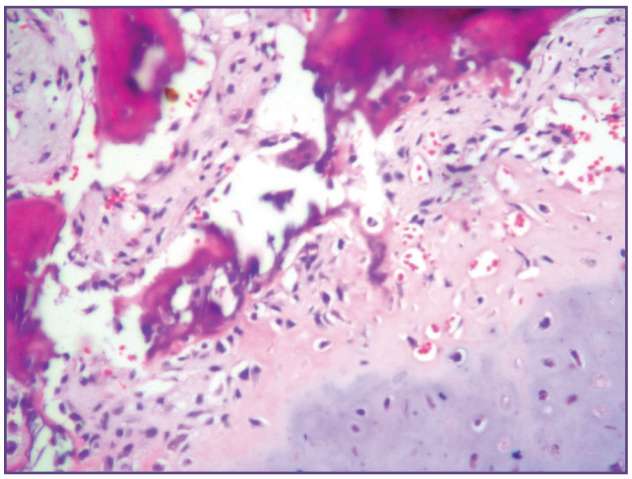

Fig. 3: Photo micrograph showing soft tissue mass with central foci showing lobule of cartilage with bony trabeculae (H&E 100x).

The complete excision of all swellings was done. The swellings varied in size from 1 to 5 cm in maximum dimension; were well circumscribed, lobulated and on cut surface exhibited a firm, gritty, grey and glistening appearance, with occasional myxoid and cystic areas. The tumour-bone interface was unremarkable.

Histologicaly the lesions were composed of lobules of mature, adult hyaline cartilage; chondrocytic cells which were showing mild variation in size and shape were identified in the lacunae (Figure 4). One case showed moderate atypia but atypical mitotic figures were not found. Intralesional ossification was appreciated in three cases (Figure 5). Striking histiocytic reaction at the periphery of the lesion was noted in one case. No multinucleated giant cell or well formed granulomatous reaction was seen.

Discussion

This retrospective study was carried out in CIO laboratory over a period of four years. Our series included 6 cases of STC, with the youngest patient being 12 years of age and the oldest 40 years. The average affected age was 28.3 years. There were 3 males and 3 female. Chondroma of the soft tissue is usually asymptomatic with no reported sex predominance[6] or a slight male predominance[1,7]. Foot was the site of involvement in five of our cases, as found by Ekanem and co-workers[8] in their series and one case was in hand however finger. All the patients presented with soft tissue mass of long duration in acral areas from months to years. The radiological investigations showed STC to be well demarcated, lobulated with central calcification in some cases[1,9,10] . The origin of these tumors are considered to be the tenosynovial sheath or the peritendinous soft tissue of the foot and failed to demonstrate any connection with bone. Exact sub typing on cytology could be done in three of the cases. On cytology along with clinico-radiological findings, they were labeled “consistent with STC”.

Microscopically soft tissue chondromas are composed of mature hyaline cartilage with chondrocytes cells identified in lacunae[11]. STC with predominant cartilaginous component constitute chondroblastic variant of soft tissue chondroma[12]. Various types of STC are identified with prominent fibrous, ossification or myxoid changes can be found designating tumors as osteochondromas[13] or myxochondromas[14]

STC also present rarely with chondroblastic features[15]. The center of tumor lobules may have calcification masking normal cartilaginous component. Rare feature includes granuloma like reaction with epitheloid and multinucleated giant cells. Occasional cells may show mild nuclear atypia or mitosis but abnormal mitosis is never seen[1].

Thool and co-workers[16] reported that the clinical, radiologic and cytologic triad is important for the correct cytologic diagnosis of soft tissue chondroma despite worrisome cellular atypia.

STC can present from an immature pattern dominated by chondroblasts to a mature chondrocytes. The matrix can be hyaline, fibrous or fibrohyaline with granuloma-like areas in the stroma. The variable cellularity along with cellular immaturity and atypia could mislead one to a malignant pathological interpretation. However, a STC is unlikely to display cords of tumor cells within a myxoid matrix, as found in the extraskeletal myxoid chondrosarcoma or the primitive round-cell pattern. Furthermore, hemangiopericytoid vascularity is characteristic of the extraskeletal mesenchymal chondrosarcoma.

Benign lesion showing cartilaginous component comes in differential diagnosis of STC. Calcifying aponeurotic fibroma can show foci of cartilaginous metaplasia in dense, poorly circumscribed fibromatous background. Tumoral calcinosis, giant cell tumor may come in differential diagnosis but shows characteristic histopathological feature. Synovial chondromatosis also shows similar histopathological feature like STC but it is present in large joints.

The presence of atypia makes the diagnosis of STC difficult. Important differential diagnosis is well-differentiated extraskeletal chondrosarcoma, extraskeletal myxoid chondrosarcoma, and mesenchymal chondrosarcoma. While well-differentiated extraskeletal chondrosarcoma shows atypia, absence of abnormal mitoses and necrosis tilts diagnosis in favour of STC. Mesenchymal chondrosarcoma is another chondroid lesion which can

show a well-differentiated cartilage surrounded by small, undifferentiated tumor cells.

There are no specific clonal chromosomal abnormalities detected by STC. The pathogenesis remains unclear, involvement of chromosomes six and eleven has been implicated in some studies. Repeated micro trauma may be an initiating factor and was noticed in two of our patients.

Follow up could be obtained in four cases, in which the results were found to be excellent with no report of recurrence at the end of two years. Local excision is curative although local recurrence is common.

Conclusion

STC are rare tumors leading to difficult clinical diagnosis. FNAC in conjunction with detailed clinical and radiographic data may allow a preoperative diagnosis of STC and permit planning of a therapeutic approach for them. STC can show worrisome histological atypia simulating chondrosarcoma, making it imperative that the clinical, radiological and histological triad is taken into account for arriving on the correct diagnosis.

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Competing Interests

None declared

Reference

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