Case Report

Extraskeletal Myxoid Chondrosarcoma of Thigh: A Case of Uncertain Origin

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Abstract

Background: Extraskeletal myxoid chondrosarcoma (EMC) is a rare soft-tissue malignancy that accounts for less than 3% of all soft-tissue sarcomas. It arises in patients older than 35 years, with peak incidence during the 5th and 6th decades. It is distinguished from other sarcomas by its unique histology and a characteristic chromosomal translocation, typically t(9;22)(q22;q12.2), fusing EWSR1 to NR4A3.

Case details: A 60-year-old male presented with a slow-growing mass over the right side of his thigh for approximately one year. The patient complained of pain associated with the mass. FNAC showed a moderately cellular smear displaying chondromyxoid stroma. Suspicion of extraskeletal myxoid chondrosarcoma was made, and the mass was excised and sent to our department for histopathological examination. Grossly, the tumor was 16x14x10 cm, soft to firm, gray-tan colored, lobulated, and nodular. On the cut section, it had a gelatinous surface with cystic and solid areas. Microscopically, the tumor showed a multinodular pattern, with cells arranged in short cords and strands separated by myxoid material. Individual cells had round to oval nuclei with deeply eosinophilic cytoplasm. Few cells showed cytoplasmic vacuolization. Immunohistochemistry was done for further analysis using S100, Vimentin, and Synaptophysin.

Conclusion: Extraskeletal myxoid chondrosarcoma is a tumor of uncertain differentiation. It has intermediate-grade malignant potential and can show metastasis or recurrence. Surgical excision is the treatment modality of choice.

Keywords:

Extraskeletal Myxoid Chondrosarcoma, Thigh, Malignant, Chondromyxoid

Introduction

Extraskeletal myxoid chondrosarcoma (EMC) is a rare soft tissue sarcoma that was recognized as a distinct pathologic entity by Stout and Verner in 1953 [1]. Extraskeletal myxoid chondrosarcoma (EMC) was first reported by Enzinger and Shiraki in 1972 as a rare soft-tissue sarcoma that primarily occurs deep in the extremities, especially in skeletal muscle or tendon [1,2].

Extraskeletal myxoid chondrosarcoma (EMC) is a rare, low-grade malignant mesenchymal neoplasm of uncertain differentiation characterized by an abundant myxoid matrix located in the soft tissues [3]. It accounts for less than 1% of all soft tissue sarcomas [4]. It arises in adults with peak incidence during the 5th and 6th decades, with an M

ratio of 2:1 [5]. EMCs demonstrate a strong tendency for recurrence and metastatic disease [3,5]. It has fairly indolent behavior

and is distinguished from other sarcomas by its unique histology and characteristic chromosomal translocation, typically t(9;22)(q22;q12.2), fusing EWSR1 to NR4A3 [5].

Here we report a rare case of a 60-year-old male presenting with a mass over the thigh that was duly worked up and, after histo-immunopathological correlation, diagnosed as extraskeletal myxoid chondrosarcoma. The objective of this case report is to study and discuss the challenges faced in reporting this rare tumor of uncertain histogenesis.

Case Report

A 60-year-old male presented with a slow-growing mass on the right side of his thigh for approximately one year. The patient complained of pain associated with the mass. A CT scan revealed a contrast-enhanced hyperechoic mass. FNAC showed a moderately cellular smear with chondromyxoid stroma and a few oval to spindle cells. Suspicion of extraskeletal myxoid chondrosarcoma was made, and the mass was excised and sent to our department for histopathological examination. The diagnosis of EMS was made and confirmed by immunohistochemistry.

Grossly, the tumour was 16x14x10 cm, soft to firm, grey-tan coloured, and lobulated. It was a nodular circumscribed mass. On the cut section, it had a gelatinous surface with cystic, haemorrhagic, and solid areas (Figure 1).

Figure 1: Grossly, the tumour was 16x14x10 cm, soft to firm, grey-tan coloured, and lobulated with a nodular circumscribed mass. On cut section, it had a gelatinous surface with cystic, hemorrhagic, and glistening solid areas.

Microscopically, the section showed a nodular pattern with cells arranged in cords, trabeculae, and tubules. Individual tumour cells were round with vacuolated cytoplasm and hyperchromatic nuclei showing mild to moderate atypia. Nests of spindle and epithelioid cells were seen in myxoid stroma. Metaplastic cartilage was also present. The FNCLCC system of grading was used, and it was graded as Grade 2 (3+1+0) (Figure 2).

Immunohistochemistry was done for vimentin, S100, and synaptophysin, which showed diffuse positivity, focal positivity, and a weak focal positive reaction with their antibodies, respectively (Figure 3).

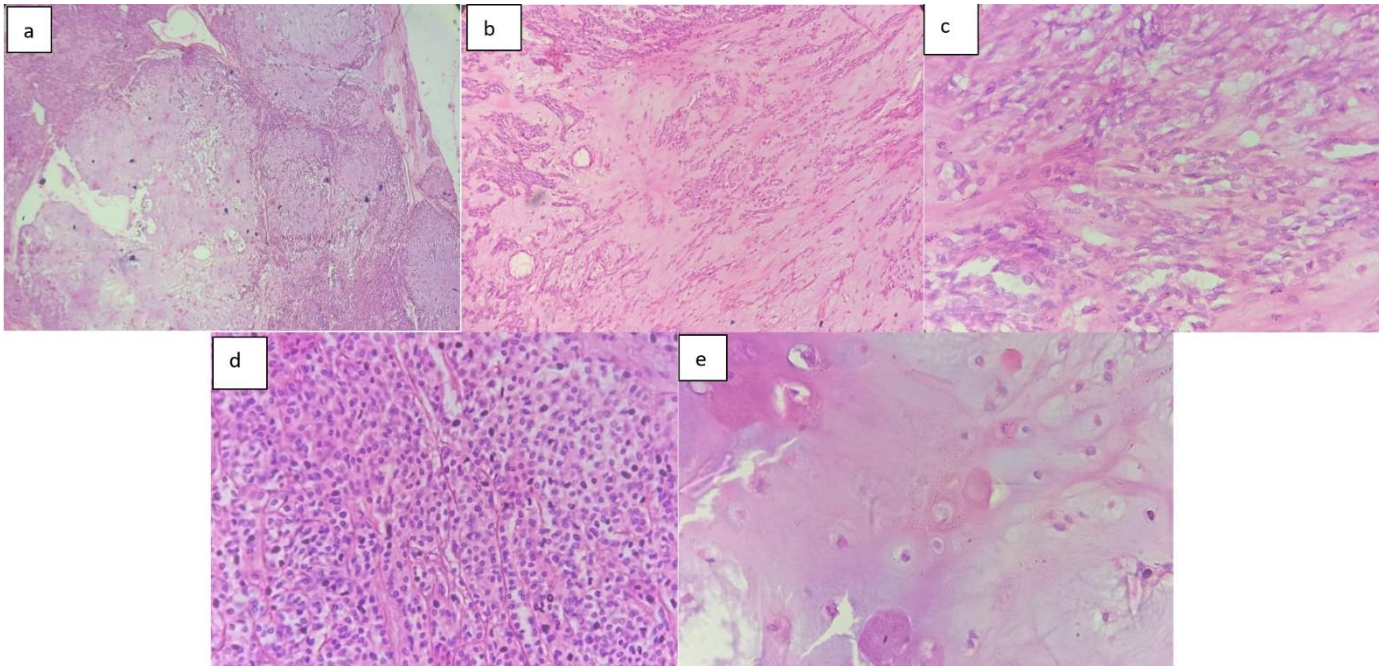

Figure 2: a: The lobulated architecture of the tumour exhibited different morphological areas (H&E, 40X). b: Cells were arranged in cords (H&E, 100X), c: with vacuolated clear lipoblast-like cells in sheets (H&E, 400X), d: hyperchromatic basaloid cells in sheets (H&E, 400X), and e: metaplastic cartilaginous stroma (H&E, 400X).

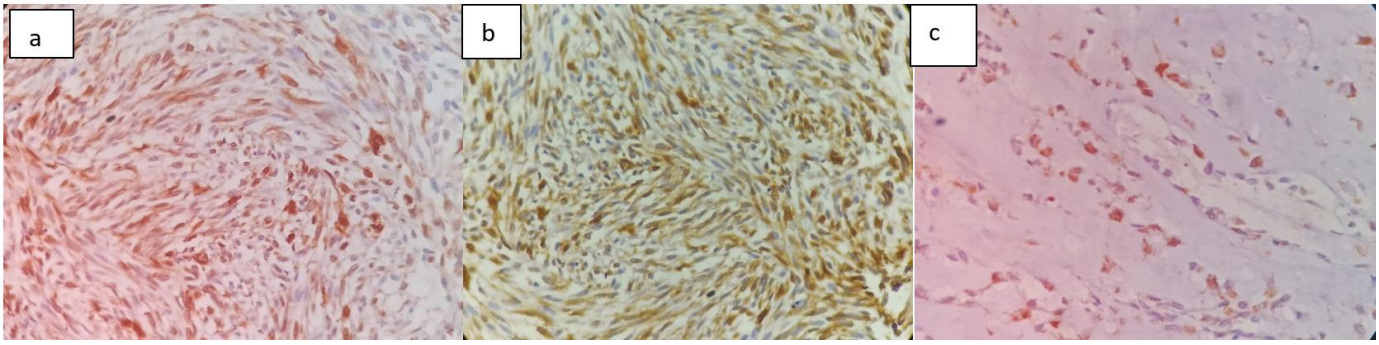

Figure 3: a: Immunohistochemistry revealed diffuse positivity for vimentin (IHC, 400X) and b: S100 (IHC, 400X), c: along with focal positivity for synaptophysin (IHC, 400X).

Discussion

Extraskeletal myxoid chondrosarcoma (EMC) is a malignant mesenchymal neoplasm of uncertain differentiation characterized by an abundant myxoid matrix, multilobular architecture, and uniform cells arranged in cords, clusters, and reticular networks. Despite the name, there is no evidence of cartilaginous differentiation [4]. Clinical examination of EMC has no specific findings that separate it from other types of chondrosarcoma. Pain, tenderness, and detection of a palpable mass may characterize some cases [6,7]. Most EMCs arise in the deep soft tissues of the proximal extremities and limb girdles, with the thigh being the most common site [4]. Unusual locations include the tongue, retroperitoneum, spine, intracranium, testis, inguinal region, etc. [8]. In our study, this rare tumor occurred in its preferred site, i.e., the thigh, where it presented as a multilobulated mass. It was slow-growing owing to its low malignant potential; however, other cases with metastasis, such as in the lungs, have been reported. Fine

needle aspiration should be an initial method for diagnosing any swelling in correlation with clinical findings and radiological inferences. In our cases, FNA yielded sparsely cellular chondromyxoid stroma with round to spindle cells. Differentials of myxoid lesions of extremities include myxoma, myxoid liposarcoma, myxofibrosarcoma, and EMC. However, myxoma is less cellular than EMC and cytologically bland cells are found. Myxoid liposarcoma displays lipoblasts along with a plexiform vascular pattern, and myxofibrosarcoma exhibits pleomorphism with curvilinear blood vessels [9]. Considering these features, a diagnosis of EMC was made, and the mass was excised.

The treatment of EMC is radical local excision with or without adjuvant radiotherapy [7,9]. Good results have been obtained with high-dose irradiation, while chemotherapy has been found ineffective so far. In our case, the mass was more than 10 cm, multinodular, and lobulated with myxoid and hemorrhagic areas, which grossly show aggressive tumor features according to a few studies in which tumor size >10 cm, high cellularity, mitotic activity greater than 2/hpf, MIB-1 >10%, and anaplasia were associated with more aggressive behavior.

Histopathological diagnosis of EMC is distinctive, and it should be distinguished from its histological differentials like chondrosarcoma with fibrosarcomatous metaplasia, myxoma, myxoid leiomyosarcoma, soft tissue myoepithelium, and myxofibrosarcoma epitheloid variant. The presence of multiple foci of hyaline cartilage, whether well-differentiated or atypical, within the cellular proliferation of small undifferentiated cells, is considered diagnostic of EMC [10]. The immunoprofile of this case showed positivity for S100 and vimentin and focal positivity of synaptophysin, which is a neuroendocrine marker, thus rendering the origin of the tumor in a dilemma. The neuroendocrine marker was seen more prominently in areas showing chondroid foci. In a few pieces of literature, evidence of neuroendocrine differentiation and identification of dense core granules have been seen ultra-structurally. This presence of neuroendocrine features has been associated with uncommon translocation t(9;17)(q22;q11) [9]. Molecular rearrangement of NR4A3 fused with EWSR1, which is seen in most cases (about 62-75%) with t(9;22)(q22;q12), is confirmatory for the diagnosis of EMC [1]. The EWSR1-rearranged tumors show low cellularity, minimal cytological atypia, low mitotic count, and have relatively good prognostic behavior. In contrast, other non-EWSR1-NR4A3 translocations, like t(9;22)(q22;q12) which fuses TAF15 with NR4A3, t(9;15)(q22;q21) that results in TCF12-NR4A3 fusion, or t(3;9)(q12;q22) resulting in TFG-NR4A3 fusion, show high-grade morphological features [9]. Late recurrence and metastasis are common in EMC. Increased patient age, large size, and proximal tumor location are predictive of an adverse outcome [9]. In our case, follow-up showed that the patient is faring well so far and has no sign of recurrence or metastasis.

Conclusion

Extraskeletal myxoid chondrosarcoma is a type of tumor that usually grows slowly but tends to recur and spread to other parts of the body in many cases. The best way to diagnose these tumors is by identifying less cellular areas or by using cytogenetic testing. In most cases, there is an abundance of extracellular mucinous material present in these tumors. The recommended treatment is radical local excision, which may be combined with radiotherapy if necessary.

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Informed Consent: Informed consent was taken from the patient.

Ethical Approval: The study was approved by the institutional ethics committee.

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