ECRONICON OPEN ACCESS

EC CLINICAL AND MEDICAL CASE REPORTS

Case Report

Extraskeletal Myxoid Chondrosarcoma of the Posterior Mediastinum: Rare Dilemmatic Entity Posing Diagnostic Challenges

Mona Bargotya[1]*, Ankita Mehta[1], Payel Das[1], Utsav Gupta[2], Vikas Dogra[3] and Arti Gupta[4]

[1]Department of Pathology, Rajiv Gandhi Super Speciality Hospital, Tahirpur, Delhi, India

[2]Department of CTVS, Rajiv Gandhi Super Speciality Hospital, Tahirpur, Delhi, India

[3]Department of Pulmonology, Rajiv Gandhi Super Speciality Hospital, Tahirpur, Delhi, India

[4]Department of Critical Care, Rajiv Gandhi Super Speciality Hospital, Tahirpur, Delhi, India

***Corresponding Author**: Mona Bargotya, Department of Pathology, Rajiv Gandhi Super Speciality Hospital, Tahirpur, Delhi, India.

Received: January 10, 2019; **Published:** February 17, 2020

Abstract

Extraskeletal myxoid chondrosarcoma (EMC) is a morphologically distinctive neoplasm with characteristic morphology and architecture. It is categorized by the World Health Organization (WHO) Classification of Tumours of Soft Tissue and Bone as a tumour of uncertain differentiation because of paucity of convincing evidence of cartilaginous differentiation. The deep tissues of the extremities especially the musculature are the primary site and hence radiological studies are needed to establish its soft tissue origin. Primary cartilaginous tumours arising within the mediastinum are very unusual and particularly posterior mediastinal chondrosarcomas exceedingly rare with very few cases mentioned in the available literature. Though it is a slow growing tumour but it has propensity for local recurrence and metastasis. Surgical management in form of radical en-bloc resection with or without adjuvant radiotherapy is the current treatment of choice which indeed requires a careful planning and a multidisciplinary collaborative approach especially in complicated and huge tumours involving areas with regional constraints like mediastinum. The purpose of this case report is to achieve a better understanding of the clinical as well as the pathological interpretation of this rarely reported entity which may help to distinguish it from the other close differentials thereby avoiding misdiagnosis and help in early initiation of the treatment.

Keywords: *Extraskeletal myxoid chondrosarcoma (EMC); World Health Organization (WHO); Soft Tissue; Bone*

Introduction

EMC is a rare malignant neoplasm of mesenchymal origin and uncertain differentiation accounting for less than 3% of soft tissue sarcomas [1]. The first case of EMC was described by Stout., *et al*. in 1953 and initially it was called by various names such as extraskeletal chondrosarcoma and chordoma sarcoma [3]. The first concept of EMC was proposed by Enzinger., *et al.* in 1972 [4]. It is a quite uncommon tumour with unclear parental lineage and accounts for less than 3% of all the soft tissue sarcomas, with a peak incidence during 5th to 6th decade and a male preponderance (M:F-2:1) [5,6]. The exact etiopathogenesis of these tumours is not very clear, but various studies ensure that they have a multidirectional lineage. It is characterized by presence of uniform spindle cells in reticular pattern within abundant myxoid matrix and location in soft tissues [2]. As per the recent studies EMC cases have a high rate of local recurrence, metastasis and mortality rate and hence it is classified as an intermediate grade malignancy. Majority of the tumours reported occurred in the proximal

extremities and limb girdles however unusual locations described are mediastinum, vulva, central nervous system and heart. Primary cartilaginous tumours in any part of the mediastinum is very rare and is particularly unusual in the posterior mediastinum which is the potential space along each side of the vertebral column and adjacent proximal portion of the ribs and very few case reports of mediastinal EMC are mentioned in the available literature. Majority of them are case reports and the largest case series is by Suster S., *et al*. in which six cases of primary malignant cartilaginous tumours presenting as extraskeletal soft tissue masses in the posterior mediastinum including EMC are discussed. There is no gross or morphological difference between the EMC of mediastinum or any other site and the treatment approach is also quite the same.

Case Report

A 66 years old male presented to ENT OPD with complains of gradually progressing right sided backpain since last $1^{1/2}$ years and acute onset change of voice where he was diagnosed with vocal cord palsy. Investigations were done. Chest X-ray showed radio opaque shadow both the hemi thoraces. CECT chest was suggestive of large bosselated posterior mediastinal mass with extension to right as well as left pleural cavities and extensive chest wall involvement (Figure 1a). The basic laboratory investigations were within normal limits. Gradually patient developed dysphagia and slight breathing difficulties for which an Endobronchial Ultrasound (EBUS) was done which showed compression of distal trachea on the right side. EBUS guided biopsy was attempted but the material collected was non-contributory to the diagnosis. On physical examination solitary hard enlarged right side cervical lymph note was palpable measuring around 1.5 x 1cm. So before doing thoracotomy lymph node biopsy from the enlarged cervical lymph node was done (right side- level V) was done which was highly suggestive of metastasis from a cartilaginous tumour. But a definite diagnosis could not be given because of the fragmented and small tissue submitted. Following this right posterolateral thoracotomy and decompression of mass surrounding the trachea was planned. With double lumen intubation and deflation of right lung, the mass in pleural cavity was examined which showed a large lobulated mass with myxoid material in the thick walled lobules densely adhered to the posterior chest wall not separable from it and extending into the right side (Figure 1b). Debulking of the tumour with removal of the compression on trachea was done and the wall of the lobules with the myxoid material was sent for histopathological examination.

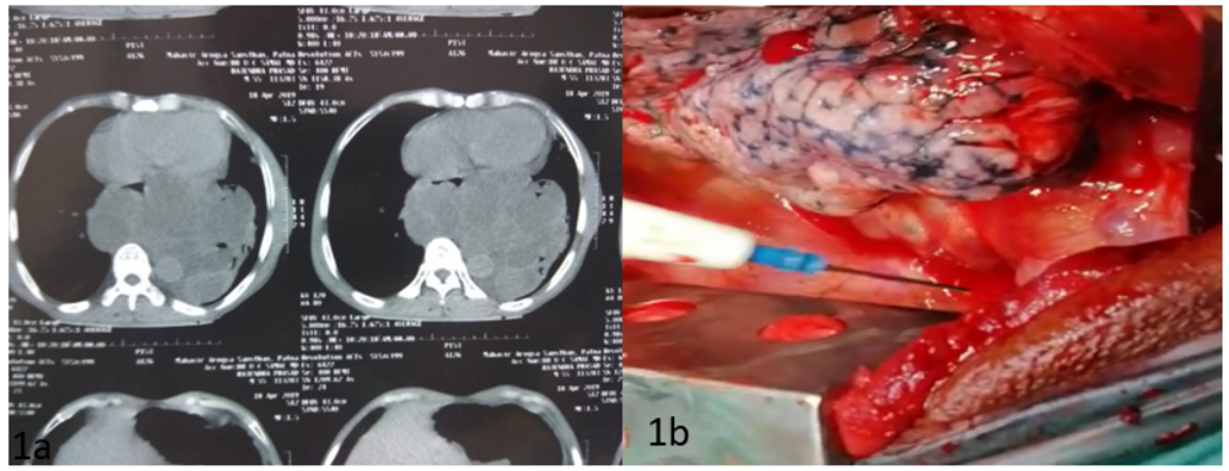

Figure 1: *1a: CECT showing large bosselated posterior mediastinal mass. 1b: Intra-op image depicting the lobulated mass with myxoid material in the thick walled lobules densely adhered to the posterior chest wall.*

Grossly the specimen was received in the Department of Pathology in four different containers labelled as: 1. Myxoid necrotic material from the multicystic sacs of the posterior mediastinal mass 2. Parietal pleural sac 3. Thickened sac wall 4. Tissue below the hilum. All the tissues submitted were processed entirely for histopathological examination.

Microscopically, sections examined from the multiple biopsies submitted showed similar histomorphological findings. Sections examined showed a tumour having lobulated architecture with interconnecting tumour cells arranged in reticular pattern, anastomosing cords, strands or occasional pseudoacini creating a lace like appearance embedded in a chondromyxoid matrix. These neoplastic cells had round, fusiform slightly elongated with uniform shape and size having small hyperchromatic nuclei, finely stippled chromatin, small inconspicuous nucleoli and scant to moderate eosinophilic cytoplasm separated by variable amount of chondromyxoid material. Occasional cells showed cytoplasmic vacuolization. There was chondroblast like lacunar formation but no definite hyaline cartilage differentiation noted. Large areas of hemorrhage along with presence of chronic inflammatory cells comprising predominantly of lymphocytes and plasma cells noted. No evident mitotic activity was seen (Figure 2a and 2b). The neoplastic cells were strongly positive for vimentin, focally positive for S100 and cytokeratin (Figure 2c and 2d). On the basis of these histological findings, immunohistochemical features, previous lymph node biopsy and clinicoradiological details provided final diagnosis of extra skeletal chondromyxoid chondrosarcoma with metastasis to right cervical lymph node was made.

Postoperative management of the patient was quite challenging as well as he had persistent tachycardia and hypotension despite pain management. 2D echo, chest x-ray and routine laboratory investigations were within normal limits. It was challenging to give fluids

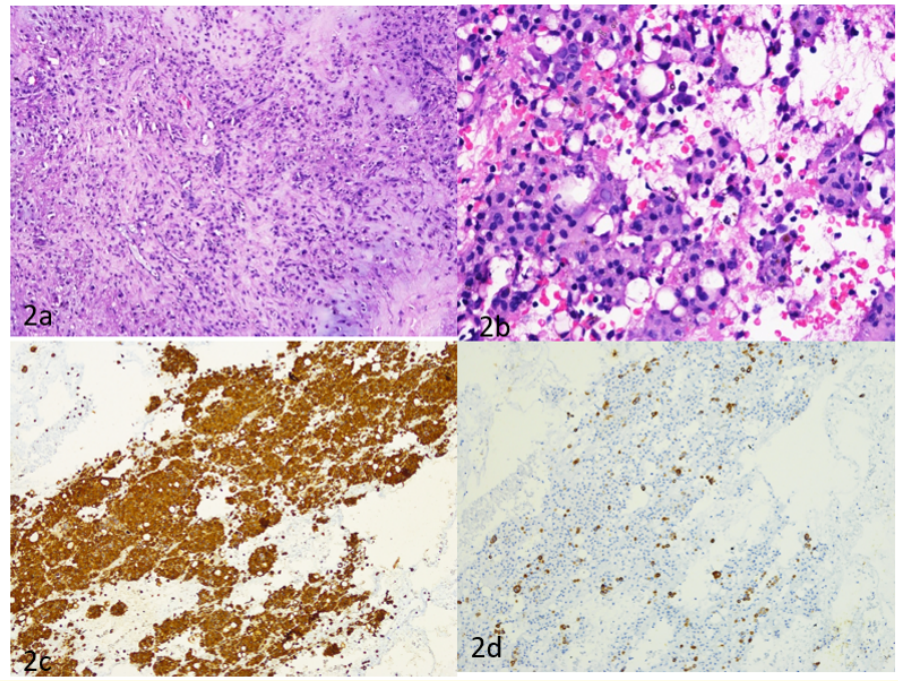

Figure 2: *2a (10X): Interconnecting tumour cells arranged in reticular pattern, anastomosing cords, strands embedded in a chondromyxoid matrix. 2b (40X): Tumour cells with small hyperchromatic nuclei separated by variable amount of chondromyxoid material. 2c (10X): Tumour cells showing strong positivity for vimentin. 2d (10X): Focal CK positivity in tumour cells.*

as peri and post operatively as fluid overload can cause post pneumonectomy pulmonary oedema which may occur after lesser degree of resection, PPPE has been found have histological feature as ARDS, so to prevent this fluid was given cautiously. Once the vitals of the patient stabilized he was shifted to the ward after 24 hrs of observation. The patient refused for any further treatment. He was discharged in stable condition and the post-operative follow up till date has been uneventful i.e. about 07 months post-surgery.

Discussion

EMC is a relatively slow growing deep seated tumour with non-specific signs and symptoms and a tendency to recur and eventually metastasize in many of the cases. Few of the patients have typical past history of trauma, however most of the patients are diagnosed co-incidentally. EMC is less aggressive than the morphologically similar bone tumour but has a significant potential to develop propensity for distant metastasis. The most common sites of metastasis are lungs followed by soft tissues and lymph nodes. Radiological correlation is mandatory to confirm the soft tissue origin [4]. However, there are no distinctive radiological features on CT or MRI that can distinguish this entity from other types of soft tissue sarcomas because of the limited documented literature and only histopathological examination can establish the definitive diagnosis.

Grossly the tumour may range from a size of few centimetres to huge mass with a range of 1 - 25 cm. They are well circumscribed encapsulated oval to nodular tumours having soft to firm consistency. The cut surface of the tumour is grey brown to tan in colour with lobulated and gelatinous appearance. The colour of the lesion varies according to the extent of haemorrhage. Histologically, EMC has characteristic multinodular architecture, abundant myxoid matrix with presence of malignant chondroblast like cells arranged in cords, clusters or delicate networks without any convincing evidence of cartilaginous differentiation. Absence of differentiated cartilage cells with distinct lacunae (or well developed hyaline cartilage) differentiates it from chondrosarcoma of bone. The individual tumour cells are small spindle to stellate shaped with hyperchromatic nuclei and a thin rim of eosinophilic cytoplasm. On immunohistochemistry cells of EMC stain strongly positive for vimentin and this is the only IHC marker which is consistently positive. Rarely focal and weak positivity for S-100 is observed, 30% of the cases may show scattered reactivity for epithelial membrane antigen (EMA) and occasional cases may show focal positivity for cytokeratin [7]. Electron microscopy shows interconnecting round cells surrounded by abundant granular amorphous extracellular stroma, well developed endoplasmic reticulum, cytoplasmic filaments and glycogen. EMC has a characteristic balanced t (9;22) (q22; q12) which leads to the fusion of EWSR1 with NR4A3 and approximately 70 - 75% of cases harbor this translocation. A second genetic abnormality also identified is t (9;17) (q22; q11) which is equally specific but less common than the first one [8]. Molecular assays using paraffin embedded sections can help in confirming the diagnosis especially in challenging cases.

Considered low grade it is an aggressive malignancy known to produce huge masses with reported local recurrence rate of about 37 - 48% and metastasis occurring in about 50% of the cases. Though prolonged survival inspite of recurrence and metastasis in not uncommon. Old age, tumour size more than 10 cm, proximal location are the adverse clinical prognostic factors and in addition increased cellularity, mitotic activity greater than 02 mitotic figures/10 HPF, MIB -1 index greater than 10% with nuclear atypia or presence of rhabdoid cells are the adverse morphological factors [9]. EMC has well distinguished histological, immunohistochemistry as well as cytogenetic features. It should be differentiated from benign as well as malignant chondroid-like or myxoid lesions which include myxoid variant of extraskeletal chordoma, myxoma, myxoid liposarcoma, myxofibrosarcoma and mixed tumour/myoepithelioma (Table 1).

Radical local excision with or without adjuvant radiotherapy is the current treatment of choice for localised disease which can be curative in some patients. Encouraging results with high dose radiation to achieve maximum local control have been reported in some studies especially in cases of unresectability or if a wider surgical margin cannot be achieved after incomplete resection. However, chemotherapy has not been found to be of much efficacy. For early detection of local recurrence, a careful follow up is mandatory which includes physical examination and thoracic imaging every 3 - 6 months for the first 5 years and annually after that for a minimum period of 10 years.

	Myxoid chondrosarcoma	Myxoma	Myxoid liposarcoma	Myxoid fibrosarcoma	Low grade fibromyxoid sarcoma
Cellularity	**Moderate**	**Low**	**Moderate**	**High**	**Moderate**
Histological key	Round cells arranged in cords, chains, or small clusters	Cytologically bland cells, lack of curvilinear vessels	Chicken-wire vessels, Lipoblasts present especially at the margin of tumour lobules	Curvilinear vessels, pleomorphic spindle cells (cellularity dictates grade)	Spindle cells with alternate fibrous and myxoid areas
Matrix	Chondroitin sulfate	Hyaluronic acid	Hyaluronic acid	Hyaluronic acid	Collagenized

Table 1: *Histological distinguishing points of various differential diagnosis of extraskeletal myxoid chondrosarcoma [10].*

Conclusion

EMC especially that of the posterior mediastinum is indeed a rare neoplasm with sparse literary evidence. The accurate diagnosis of this tumour requires a combined clinical, radiological as well as pathological approach. This case report is an effort to provide additional study material for better clinical as well as pathological understanding of this entity which can hence aid in the early diagnosis as well as prompt treatment by avoiding misdiagnosis. There is a need to explore new treatment approaches for this rare entity because local recurrence has been reported in upto 50% of the patients with thoracic and mediastinal lesions despite wide local excision. Hence enrolment of such rare cases in clinical trials should be encouraged for the development of novel treatment strategies which may help in treating these patients successfully in a long run to achieve a quality life with prolonged survival especially in cases of metastasis as well as recurrence.

Bibliography

1. Paoluzzi L and Ghesani M. "Extraskeletal myxoid chondrosarcoma with massive pulmonary metastases". *Clinical Sarcoma Research* 8 (2018): 20.
2. Kapoor N., *et al*. "Clinical and radiologic features of extraskeletal myxoid chondrosarcoma including initial presentation, local recurrence, and metastases". *Radiology and Oncology* 48.3 (2014): 235-242.
3. Stout AP and Verner EW. "Chondrosarcoma of the extraskeletal soft tissues". *Cancer* 6 (1953): 581-590.
4. Goldblum JR., *et al*. "Malignant Soft Tissue Tumors of Uncertain type". Enzinger and Weiss's Soft Tissue Tumors. 6th edition. Philadelphia: Elsevier Saunders (2014): 1045-1052.
5. Meis-Kindblom JM., *et al*. "Extraskeletal myxoid chondrosarcoma: a reappraisal of its morphologic spectrum and prognostic factors based on 117 cases". *American Journal of Surgical Pathology* 23.6 (1999): 636-650.
6. Drilon AD., *et al*. "Extraskeletal myxoid chondrosarcoma: a retrospective review from 2 referral centers emphasizing long term outcomes with surgery and chemotherapy". *Cancer* 113.12 (2008): 3364-3371.
7. Sayal NR., *et al*. "Extraskeletal myxoid chondrosarcoma of the neck". *Otolaryngology Case Reports* 2 (2017): 22-25.
8. Gupta SS., *et al*. "Curious case of extraskeletal myxoid chondrosarcoma". *Lung India* 34 (2017): 170-172.
9. Oliveira AM., *et al*. "Extraskeletal myxoid chondrosarcoma: a clinicopathologic, immunohistochemical, and ploidy analysis of 23 cases". *Modern Pathology* 13.8 (2000): 900-908.
10. Wei S., *et al*. "Soft Tissue Tumor Immunohistochemistry Update". *Archives of Pathology and Laboratory Medicine* 141 (2017): 1072-1091.

Volume 3 Issue 3 March 2020