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Radio-Diagnosis

A CASE REPORT ON PULMONARY INFLAMMATORY MYOFIBROBLASTIC TUMOR: A RARE NEOPLASTIC MIMICKER OF MALIGNANCY

Dr. Rohit Harwani Radiology Resident

Dr. Neha Teckchandani Radiology Resident

ABSTRACT Pulmonary inflammatory myofibroblastic tumor (IMT) is a rare neoplasm with nonspecific clinical and radiological features, often mimicking malignancy. We present a case of lung IMT in a young patient who presented with cough with expectoration and fever since 1.5 months. Chest radiography revealed a homogeneous radiopacity in right lung field. Contrast-enhanced computed tomography demonstrated a heterogeneously enhancing lesion with multiple foci of calcifications and no significant lymphadenopathy. CT guided biopsy and histopathological analysis confirmed the diagnosis of inflammatory myofibroblastic tumor. This case emphasizes the importance of considering pulmonary IMT in the differential diagnosis of solitary lung masses, particularly in younger patients, and highlights the role of imaging in guiding diagnosis and management.

KEYWORDS : Inflammatory Myofibroblastic Tumor, Young Age, Lung Mass, Calcification, No Significant Lymphadenopathy.

INTRODUCTION

Pulmonary inflammatory myofibroblastic tumor (IMT) is a rare, intermediate-grade neoplasm characterized by myofibroblastic spindle cells and a prominent inflammatory component. Although it most frequently affects children and young adults, IMT can present across all age groups and often manifests as a solitary pulmonary mass. Its imaging appearance is variable and may closely mimic infectious, inflammatory, or malignant lung lesions, posing a diagnostic challenge for radiologists. On CT, pulmonary IMTs commonly appear as well-defined soft-tissue masses with heterogeneous enhancement, while PET-CT may demonstrate mild to moderate FDG uptake. Because imaging alone is often insufficient for definitive diagnosis, histopathologic confirmation, including assessment for ALK expression, plays a crucial role. Awareness of the radiologic features of IMT is essential to ensure accurate identification and guide appropriate management.

Case Study

A 30 year old female presented with the complaint of cough with expectoration, weight loss and fever since 1.5 months. Physical examination was normal.

On chest X-RAY (AP view), there was a homogeneous soft tissue opacity noted involving right lung field with relative sparing of right lower lung zone. No evidence of significant abnormality on left side.

CECT Thorax was performed which showed following findings:

- A large heterogeneously enhancing soft tissue density lesion with multiple non-enhancing areas within (S/o-necrosis) and multiple foci of calcification in right upper lobe extending inferiorly crossing major oblique fissure to involve superior and medial basal segment of right lower lobe causing cut-off of right upper lobe bronchus.
- The lesion receives blood supply from descending aorta.
- Relations:
- Medially, the lesion appears to abut and encase various mediastinal structures like trachea, esophagus, SVC, ascending aorta, right inferior pulmonary vein and right main pulmonary artery. However, all vessels show normal post contrast opacification.
- Anteriorly, laterally and posteriorly, the lesion reaches upto costal pleura.
- Inferiorly, the lesion abuts right dome of diaphragm and also abuts IVC, which shows normal post contrast opacification.
- No evidence of any metastatic lymphadenopathy, metastatic deposits or vascular invasion seen.

CT Guided Biopsy was Performed.

Histopathological examination showed spindle cells admixed with chronic inflammatory infiltrates mainly consisting of plasma cells, lymphocytes, occasional eosinophils and dilated channels seen in myxoid collageneous background. Overall features suggestive of benign mesenchymal tumour- Inflammatory myofibroblastic tumour likely.

CONCLUSIONS

We can say that for 1m3 M20 grade of concrete consumption of fine aggregate is 775.96 kg. Here in specimen M-3 we replace fine aggregate by 24.62 kg of crumb rubber for 1m3M20 grades of concrete. So, we can say that up to 15% foundry sand utilized for economical and sustainable development of concrete. Uses of crumb rubber in concrete can reduce the harmfulness to the environment and produce a 'greener' concrete for construction. An innovative supplementary Construction Material is formed through this study.

DISCUSSION

Inflammatory myofibroblastic tumor(IMT) is an idiopathic benign mass lesion composed of fibrous tissues, myofibroblasts and marked inflammatory infiltration, predominantly plasma cells. IMT is also known as plasma cell granuloma, xanthogranuloma, inflammatory pseudotumor, and fibrous histiocytoma. IMT is very rare with an incidence of approximately 0.04-1% of all the pulmonary neoplasms. Other common sites are mesentery, omentum, larynx, liver spleen, and breast.

The clinical and imaging characteristics of this lesion are similar to that of a neoplasm. The biological behavior and the tendency of spontaneous regression is suggestive of a benign nature.

Pathogenesis of IMT is not known. Microscopically, IMT is characterized by abundant inflammatory infiltrate consisting of predominantly plasma cells, lymphocytes, histiocytes, admixed with a variable proportion of fibroblasts and myofibroblasts. On immuno-histochemistry tumor cells exhibit strong diffuse positivity with smooth muscle actin and vimentin, and are negative for cytokeratin, CD34 and S100.

Pulmonary IMT is divided into two types: One is invasive and another one is noninvasive. Invasive IMT usually occurs among younger patients and may reach large size invading surrounding structures. Inflammatory myofibroblastic tumor can occur at any age, but is most commonly seen in the second decade of life.

Patients present with cough, fever, and hemoptysis. On imaging, IMT usually appears as a single peripheral, lobulated mass, predominantly occurring in the lower lobe, however it can be multiple in 5% of cases. Calcification can occur and is more common in children than in adults. On CT scan, the mass shows heterogeneous enhancement. However, in our patient, the lesion was located in the upper lobe which showed heterogeneous enhancement.

Inflammatory myofibroblastic tumor can also be FDG-avid on PET/CT images. The range of reported SUV values varies from 5 to >35 g/ml. This makes differentiation of IMT difficult from other neoplasms. The possible reason for such a high uptake in these benign tumors is probably the associated intense inflammation. This leads to increased metabolic activity, which in turn leads to high uptake on FDG-PET/CT scan.

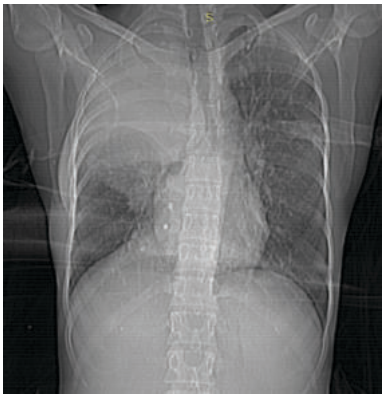
Differential diagnosis: Intrathoracic lymphoma, Extralobar pulmonary sequestration, Round pneumonia, Ganglioneuroma, Ganglioneuroblastoma.

The mainstay of treatment is radical resection with negative margins. In case of invasive IMT surgical removal of adjacent structures may be necessary. For patients who cannot undergo surgery, radiation and corticosteroids have been used.

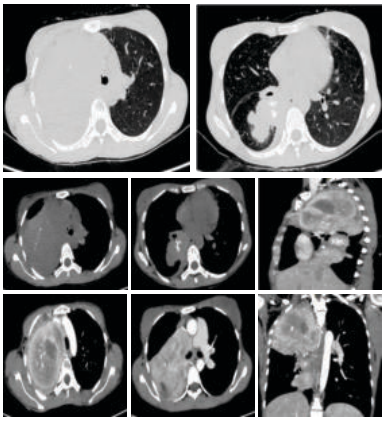
Long-term surveillance is important because local and distant recurrence and sarcomatous degeneration has also been reported in IMT. Long-term survival is usually good.

CONCLUSION

Recognition of these imaging patterns and consideration of inflammatory myofibroblastic tumor in differential diagnosis- particularly in younger patients or in cases with atypical features for carcinoma- are essential to guide appropriate biopsy and management. Radiologic-pathologic correlation remains crucial for accurate diagnosis and optimal treatment planning.



(XRAY CHEST PA VIEW)



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