Immature Mediastinal Teratoma: Radiological Findings (A Case Report)

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ABSTRACT
Immature mediastinal teratomas are rare malignant neoplasms that can metastasize and recur, are characterized by the presence of various tissues that histologically resemble embryonal structures. Computerized tomography (CT) shows the location and extent of the tumors as well as intrinsic elements including soft tissue, fat, fluid, and calcification. CT is the radiological modality choice for the diagnostic evaluation of these tumors and also combination of magnetic resonance imaging (MRI) best defines the characterisation, location and operability of tumor. In this report, we present radiological findings of immature mediastinal teratoma.

Key words: Mediastinum, Immature teratoma, Computerized tomography, Magnetic resonance imaging

CASE REPORT
A 26-year-old male patient was admitted to our hospital with complaints of cough and dyspnea for 4 months. He was also complaining from sputum production, hemoptysis and right chest pain for 20 days. Night fever and perspiration was accompanying symptoms.

Figure 1. Posteroanterior chest radiograph shows a large, well-marginated mass of the anterior mediastinum extending to the right hemithorax.
Physical examination revealed decreased breath sounds in lower zone of right lung. Routine laboratory tests was within normal limit. Posteroanterior chest radiograph revealed a large, smooth edged opacity between right pulmonary hilus and right diaphragma. Opacity was blurring the contours of diaphragma and heart (Figure 1).

Contrast-enhanced chest CT showed a smooth-lobulated edged mass with heterogenous density composed of solid and cystic components (density values mostly ranged from –80 to –110 HU at the more hypodense area and 10 HU at the cystic region), which located between anterior mediastinum and right pleura and right diaphragma. Mass were also containing small punctate calcifications (density value was approximately 300 HU) and extending to anterior chest wall (Figure 2).

The mass was obliterating perivascular and pericardial fat planes. Right lung’s volume was decreased. Anterior segment of upper lobe, middle lobe and mediobasal segment of lower lobe of right lung parenchyme was obliterated.

Chest MRI showed a mass which located within anterior mediastinum and right hemithorax with dimensions of 10x12x10 cm. Mass was smooth-lobulated edged with heterogenous intensity on both T1 and T2 weighted images and also some areas with high signal intensity on T1 weighted images which demonstrate fat within the mass. Post-contrast T1 weighted images showed, mass have enhanced capsule and solid components. Mediastinal and chest wall fat planes were obliterated. There was an irregularity at the posterior contour of the mass and strong enhancement at the adjacent lung parenchyme due to inflamation (Figure 3a-d).

At operation, a median sternotomy was used to approach mass, which was totally removed. Histopathology proved it to be an immature teratoma.
Immature teratomas are rare tumors that differ from benign teratomas in that the component tissue resembles that observed in the fetus or embryo. Any type of tissue may be represented in immature teratoma, the main component is usually neurogenic, but mesodermal elements are also common. Immature teratomas grow rapidly and frequently penetrate the capsule with spread or metastases (4,5).

The pathogenesis of extragonadal immature teratoma is not completely understood. Clinically it is not possible to differentiate mature teratoma from immature teratoma. The differentiation can only be made by careful histological examination (4).

Cross-sectional imaging using CT, MR imaging, allows identification of different elements within these tumors including soft tissue, fluid, fat and calcium.

Mediastinal immature teratoma typically manifests on CT as a heterogeneous anterior mediastinal mass containing soft-tissue, fluid, fat, or calcium attenuation, or any combination of the four. Fluid-containing cystic areas, fat, and calcification occur frequently. Cystic lesions without fat or calcium were seen in 15% of tumors. Fat-fluid levels, considered highly specific for the diagnosis of mediastinal mature teratoma, are uncommon. CT is the imaging technique of choice in the evaluation of these lesions. CT is also useful in the evaluation of associated pulmonary opacities, which usually represent atelectasis, pneumonitis, or both (6).

The most common MRI appearance of a teratoma is that a heterogeneous anterior mediastinal mass. The soft tissue elements are isointense with muscle characteristics, while cystic components show low signal intensity on T1-weighted images and high signal on T2-weighted images. Visualization of fat is, high signal intensity on T1-weighted images that useful in determining the diagnosis. MRI is also useful in the evaluation of the inflammation around the tumor (7).

In conclusion, immature teratomas are rare tumors that differ from benign teratomas. The differentiation can only be made by careful histological examination. CT is the radiological modality choice for the diagnostic evaluation of these tumors and also combination of MRI best defines the characterisation, location and operability of tumor.

REFERENCES