

Pulmonary metastasis causing spontaneous pneumothorax

Clinical presentation & general epidemiology: Pulmonary metastasis is a common encounter in day to day radiology practice. Metastases to lungs occur through either a hematogenous route or through the lymphatics. Metastatic disease to the lungs can be either single or multiple. Pulmonary metastasis can have a myriad of imaging findings based on the primary site and the type of the tumor. They can be cystic or solid, calcified or cavitating and miliary or lymphangitic in pattern. In cases of cavitating/cystic lesions, spontaneous pneumothorax can be the first sign of a pulmonary metastasis(1). Pneumothorax occurs more often in patients with metastases from sarcomas than in patients with carcinomas. Rupture of the subpleural cystic metastasis or formation of a bronchopleural fistula can lead to recurrent pneumothorax in patients with known underlying malignancy(2).

Imaging features: The chest radiograph is the initial imaging modality used for the evaluation of suspected pulmonary pathology. Depending upon the primary site, chest radiographs may show cavitating, calcified, miliary or cannon ball pattern of metastases. In case of pulmonary metastasis with pneumothorax, chest radiograph shows hyperlucent zone devoid of lung markings with a medially displaced visceral pleural line. Multiple solid and cystic nodules may be noted bilaterally. Chest CT scans are the imaging modality of choice for the evaluation of the pulmonary metastases. Typically, metastases are well circumscribed, randomly distributed soft tissue nodules. They are often of variable size and sometimes a pulmonary vessel can be seen extending to the margin of the nodule (so-called feeding vessel sign) (3). Calcification or cavitation within the metastasis can be easily evaluated with CT. Focal or diffuse interlobular septal thickening with or without nodularity may be seen with lymphangitic carcinomatosis. Presence of concomitant pleural, mediastinal, or osseous metastases can also be evaluated with CT. CT is also helpful in assessing potential complications such as pneumothorax, pleural/pericardial effusions, vascular and bronchial invasion and pulmonary thromboembolic disease.

Prognosis, treatment or therapeutic options: In patients with pulmonary metastasis and spontaneous pneumothorax, closed chest tube drainage can be done to relieve the patients' symptoms. However, treatment with chest tube drainage alone is not sufficient in cases of recurrent pneumothoraces. Chemical pleurodesis may be needed in patients with recurrent pneumothorax. Surgical treatment in the form of closure of bronchopleural fistula and resection of solitary/limited metastasis may be considered if the pneumothorax is resistant to conventional treatment and also in those patients with controlled primary disease and good pulmonary reserve(4).