A 50 years old lady presented with fever, productive cough and occasional haemoptysis for two weeks. She also had generalized weakness and shortness of breath for same duration. She had chronic bronchitis with recurrent cough and expectoration for last 20 years. She was non-diabetic. She had no past history of tuberculosis. Her respiratory rate was 24 / min. BP was 118/78 mmHg. Pulse 110/min, regular. Chest auscultation revealed diffuse rhonci and crepitations bilaterally. Blood picture revealed leucocytosis and normal eosinophil count (TLC 12500/ mm³ with neutrophil 80% and eosinophil 3%). HRCT of thorax revealed tree-in-bud appearance in both lungs. Ground glass opacities and few bronchiectatic changes were also seen. Sputum for AFB was negative. A case of bronchopneumonia was diagnosed. Patient responded to antibiotics with resolution of symptoms.

Tree-in-bud pattern was first described for endobronchial spread of mycobacterium tuberculosis.1 It is a CT scan finding of chest with visibility of small airways. Intralobular bronchioles (< one millimeter in diameter) are not normally visible on CT scans. Dilatation of bronchioles due to luminal impaction with mucus or pus, and thickening of their walls due to peribronchiolar inflammation lead to visibility of the bronchioles on thin-section CT scan.2 Histopathologically, terminal tufts of tree-in-bud opacities represent inflammation with caseous material in the respiratory bronchioles and alveolar ducts; whereas the stalks represent caseous material in terminal bronchioles. Tree-in-bud opacities may be focal or multifocal, unilateral or bilateral. It is commonly associated with bronchopneumonia, viral bronchiolitis (CMV / respiratory syncytial virus), endobronchial tuberculosis, pneumocystis pneumonia, invasive aspergillosis, bronchioloalveolar cell carcinoma etc. Rare causes include rheumatoid arthritis, Sjogren's syndrome, Langerhans cell histiocytosis, sarcoidosis, inhalation of toxic fumes or gases, primary pulmonary lymphoma, idiopathic disorders (obliterative bronchiolitis and diffuse panbronchiolitis) etc. Congenital causes include cystic fibrosis, dyskinetic cilia syndrome, yellow nail syndrome, or congenital immunodeficiency disorders. Tree-in-bud pattern involving the dependent regions suggest aspiration bronchiolitis. In panbronchiolitis of East Asia, particularly Japan, a typical bilaterally symmetrical tree-in-bud pattern with lower lobe predominance is seen. Occasionally, tree-in-bud pattern may result from abnormalities of the centrilobular pulmonary arteries due to intravascular metastases (commonly in carcinoma of breast or kidney) and microangiopathy.

References

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