A role of HRCT in diagnosing idiopathic pulmonary fibrosis (IPF)

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Idiopathic pulmonary fibrosis (IPF), the most common form of the idiopathic interstitial pneumonias, is a chronic, progressive, irreversible and usually lethal lung disease of unknown cause. It occurs usually in middle or elder adults and is associated with a histopathological or radiological pattern typical of usual interstitial pneumonia (UIP). Characteristic appearances of UIP pattern on high-resolution CT (HRCT) are predominantly subpleural and basal reticular opacities, often associated with traction bronchiectasis, with little or no ground-glass opacifications (GGO). The presence of honeycombing cysts is common and critical for making a definite diagnosis of UIP. After clinical exclusion of other interstitial disease with known etiology or systemic diseases, it is important to recognize the HRCT pattern of UIP or IPF. According to the official ATS/ ERS/JRS/ ALAT statement: Idiopathic Pulmonary Fibrosis: Evidence-based Guidelines for Diagnosis and Management (Am J Respir Crit Care Med 2011; 183: 788-824), two categories of UIP patterns are defined, including UIP pattern (subpleural basal predominance, reticular abnormality, honeycombing with or without traction bronchiectasis), and possible UIP pattern (subpleural basal predominance, reticular abnormality). Any findings inconsistent with UIP pattern should be also recognized to exclude UIP, including upper lobe predominance, peribronchovascular predominance, extensive GGO (extent > reticulation), profuse micronodules (bilateral, predominantly upper lobes), discrete cysts (multiple, bilateral, away from areas of honeycombing), diffuse mosaic attenuation/air-trapping (bilateral >=3 lobes), consolidation in bronchopulmonary segment(s)/lobe(s). Chest CT provides important information of the lung parenchyma and mediastinum, such as pulmonary emphysema, bronchogenic carcinomas, bronchopneumonia, etc. which will be important to clinical diagnosis and patient management. In this lecture, the basic concept of CT and definition of HRCT findings essential for diagnosing IPF will be reviewed.