Role of imaging in progressive-fibrosing interstitial lung diseases

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Imaging techniques are an essential component of the diagnostic process for interstitial lung diseases (ILDs). Chest radiography is frequently the initial indicator of an ILD, and comparison of radiographs taken at different time points can show the rate of disease progression. However, radiography provides only limited specificity and sensitivity and is primarily used to rule out other diseases, such as left heart failure. High-resolution computed tomography (HRCT) is a more sensitive method and is considered central in the diagnosis of ILDs. Abnormalities observed on HRCT can help identify specific ILDs. HRCT also can be used to evaluate the patient?s prognosis, while disease progression can be assessed through serial imaging. Other imaging techniques such as positron emission tomography-computed tomography and magnetic resonance imaging have been investigated, but they are not commonly used to assess patients with ILDs. Disease severity may potentially be estimated using quantitative methods, as well as visual analysis of images. For example, comprehensive assessment of disease staging and progression in patients with ILDs requires visual analysis of pulmonary features that can be performed in parallel with quantitative analysis of the extent of fibrosis. New approaches to image analysis, including the application of machine learning, are being developed. ©ERS 2018.