Quantification of emphysema and fibrosis

The method of quantification of fibrosis and emphysema has been previously described (*Desai et al 2004*). CT scans were reviewed at five levels, i.e. apex to origin of great vessels, main-carina, pulmonary venous confluence, between pulmonary venous confluence and 1 cm above the hemidiaphragm, and 1 cm above the hemidiaphragm. At each level we quantified the overall extent of interstitial lung disease (ILD) (including reticular pattern and ground-glass opacification). The overall extent of ILD was estimated to the nearest 5%. Reticular abnormalities were defined as innumerable interlacing line shadows that were fine, intermediate, or coarse, with associated distortion of the lung architecture while Ground glass opacities were defined as a hazy increase in lung parenchymal attenuation, with preservation of bronchial and vascular markings. Patients with extensive ground glass abnormality (i.e. extent > reticular abnormality) were not included in the study.

Additionally, we assessed the extent of emphysema (defined as areas of well-demarcated areas of low attenuation emarginated by thin wall (<1mm) or no wall). The overall extent of emphysema was quantified to the nearest 5%.

Discrepancies in the extent of ILD and/or emphysema were reviewed jointly and resolved with consensus evaluation. The extent of ILD and emphysema for each consecutive patient was calculated by averaging the scores at each level, as measured by the two radiologists and the mean value was used in analysis.

References

Desai SR, Veeraraghavan S, Hansell DM, Nikolakopolou A, Goh NS, Nicholson AG, Colby TV, Denton CP, Black CM, du Bois RM, Wells AU. CT features of lung disease in patients with systemic sclerosis: comparison with idiopathic pulmonary fibrosis and nonspecific interstitial pneumonia. Radiology 2004: 232(2): 560-567.