Screening for Interstitial Lung Disease in Systemic Sclerosis: Diagnostic Accuracy of HRCT Image Series with High Increment and Reduced Number of Slices - A Prospective Study

Summary / Zusammenfassung
Prevalence of lung involvement in SSc is high, and diagnosis is essential. HRCT, a non-invasive and sensitive technique, represents the gold standard for diagnosis of ILD. HRCT can detect lung involvement prior to appearance of symptoms and provides diagnostic information. To reduce radiation dose, a reduced CT scan protocol with a limited number of slices can be used.

Based on a previous retrospective study which proved the feasibility of a scan protocol with reduced number of slices, we prospectively evaluate a scan protocol including only 9 CT slices with baso-apical gradient. We will assess feasibility of this protocol in clinical setting, as well as radiation dose and diagnostic accuracy for detection of ILD compared to standard HRCT in 206 patients with SSc.

Publications / Publikationen

Abstract
OBJECTIVES: The objective of this study is to assess diagnostic accuracy for the detection of interstitial lung disease (ILD) in image series with high increment and reduced number of slices in patients with systemic sclerosis (SSc). METHODS: 45 patients with SSc underwent high-resolution CT (HRCT). Three series of secondary captures were reconstructed as follows: series 1, series with 10 mm increment and 1 mm slices; series 2, seven axial images with baso-apical gradient; series 3, three axial images were obtained at the apical, at the level of the carina and basal. The presence and extent of ILD, and the degree of diagnostic confidence were recorded. The effective dose for each image series was estimated. Standard HRCT was the standard of reference. RESULTS: The prevalence of ILD was 55% (25/45). Diagnostic sensitivity and accuracy of series 1, series 2 and series 3 were 100% and 94.4%, 94% and 97.8%, 92% and 97.8%, respectively. The extent of ILD was underestimated in series 3 (p<0.05). Estimated dose reduction was more than 90% in all image series. CONCLUSIONS: HRCT image series with low sampling rate allow an accurate detection of ILD with very-low-radiation dose, making this approach potentially valuable for screening in patients with SSc.

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