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Abstract

Diagnosis of Solitary Pulmonary Nodules Using MRI: A Feasibility Study

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Abstract

Abstract: Solitary pulmonary nodule (SPN) is explained as a separate, well-determined obscurity with the maximum size of 3cm which is enclosed by typical lung tissue and is not related to any other anomalies in the lung or adjacent lymph nodes. Among imaging modalities MRI has more benefits such as high spatial resolution and usage of nonionizing radiation, however, the efficacy of this imaging modality in lung nodules diagnosis has not been well established. Thus CT scan is considered a proper modality for the SPN diagnosis. The objective of this study was to evaluate the accuracy of MRI in the detection of SPNs which has verified by CT scan. The study was conducted as a prospective case-control study. 32 SPN patients whose disease confirmed by CT scan findings and 11 patient with normal CT scan were included in this study. Sensitivity, specificity, positive and negative predictive values of MRI were determined. The location and the size of pulmonary nodules as well as different MRI sequences were evaluated. Statistical analysis revealed that T1w sequences (27%) had the least diagnostic sensitivity, T2w images, and Fat-sat slices had 55% and 36% sensitivity respectively. Specificity of T1w, T2w, and Fat-sat images were 97%, 90% for the last two imaging sequences. According to the results, it can be concluded that although the specificity of different MRI sequences was $\geq$ 90%, low sensitivity and breath holding technique prevents its clinical routine usage for the suspected patients with SPN or early detection of pulmonary nodules in high-risk patients.

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