Title: The role of dynamic magnetic resonance imaging in the evaluation of pulmonary nodules and masses

Body: Objective: The aim of our study was to determine whether dynamic magnetic resonance imaging (MRI) with use of kinetic and morphological parameters reveals significant differences between malignant and benign pulmonary lesions, and thus to evaluate the utility of dynamic MRI in the management of pulmonary nodules. Materials and Methods: Thirty one patients (4 women and 27 men) underwent 1.5 T MRI, and 10 consecutive dynamic series were performed every 30 seconds by using 3D fast low-angle shot (FLASH) sequences. Percentage increase in signal intensity (%SI) of lesions was determined for each time point. Time-enhancement curves of the lesions were drawn and classified into four types (Type A, B, C, D). Early peak (EP) value and maximum peak (MP) value of the curves were calculated and compared with the patients' diagnosis. In addition of the comparison of the parameters between the groups, Receiver Operating Characteristics analysis was used to assess sensitivity, specificity, positive predictive value, negative predictive value of EP and MP parameters. Results: Most of the malignant nodules showed stronger enhancement with higher EP and MP values. There were significant differences between benign and malignant lesions. Sensitivity, specificity, positive predictive value and negative predictive value were 75%, 93%, 92% and 78% for EP and 93%, 86%, 88% and 93% for MP, respectively. Conclusion: A combination of kinetic and morphological evaluation in dynamic MRI provided accurate differentiation between benign and malign pulmonary lesions. It was a useful and noninvasive method of evaluating pulmonary nodules. Key Words: Pulmonary nodules, dynamic MRI, kinetic parameters.