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Title: Radiological features of solitary pulmonary nodule (SPN) and application of two lung cancer prediction models

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Body: Objective To summarize the imaging features of solitary pulmonary nodules, and compare the two types of lung cancer prediction models for solitary pulmonary nodules. Methods A retrospective study of Ruijin Hospital between 2002 and 2009 with newly discovered SPNs which is less than 30mm. The patients all received pathological diagnosis. Summarize the clinical and imaging characteristics, then validate and compare the diagnostic accuracy of two lung cancer prediction models for estimating the probability of malignancy in patients with SPNs. Results 90 patients were enrolled, of which 32 cases are benign, 58 cases are malignant. Our study showed that we can identify the SPNs between benign and maligant by the SPN edge features of lobulation ($P<0.05$). The area under ROC curve of VA model was 0.712 (95% CI 0.606 to 0.821); Area under ROC curve of Mayo Clinic model was 0.753(95% CI 0.652 to 0.843), and it is superior to VA model. Conclusions It is meaningful for the identification of benign and maligant SPNs by the lobulation sign in CT scan. We can integrate the clinical features and the lung cancer predicting models to direct our clinical work.