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Abstract: The diagnostic yield from fluoroscopy-guided bronchoscopic transbronchial biopsy of small solitary pulmonary nodules is low. The hypothesis tested in the present study was that the diagnostic yield can be significantly increased by combining flexible bronchoscopy with CT-guidance using a dedicated low-dose protocol. CT-guided transbronchial biopsies were performed in 15 patients with a newly diagnosed solitary peripheral pulmonary nodule and negative conventional bronchoscopic biopsies under fluoroscopic guidance. For imaging, a multi-detector helical CT unit, adjusted at 120 kV, 15 mAs/slice, 4 x 5 mm collimation, 10 mm reconstructed slice thickness and a maximal scan length of 150 mm, was used. After advancing the biopsy forceps towards the lesion, a CT scan was obtained. When the tip of the forceps reached or penetrated the lesion a biopsy was taken, otherwise the procedure was repeated with a maximum of eight attempts. The effective radiation dose was calculated. The average diameter of the nodules was 23 +/- 6 mm (mean +/- SD) with a maximum distance to the parietal pleura of 18 mm (mean 6.5 mm). A mean of 4.1 (range 2-8) CT scans was performed to localize the lesion. In four patients, the forceps only reached the periphery of the nodule. In one patient, the nodule was missed in all attempts. Histology was malignant in eight patients and benign.
in four patients. In three patients, biopsy results were false negative (benign or non-specific instead of malignant). The overall diagnostic yield was 73%. Complications consisted of two pneumothoraces, one of which necessitated a chest tube. Mean effective radiation dose was 0.55 mSv (range 0.3-1.0). CT-guided transbronchial biopsy can be a valuable diagnostic tool in evaluating solitary pulmonary nodules. This applies for selected patients when other diagnostic methods are either unavailable or inappropriate. The diagnostic yield is high and, when a low-dose protocol is used, radiation exposure can be kept at a minimum.