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TYPE : ORAL PRESENTATION

CATEGORY : NON - VASCULAR INTERVENTION

TITLE

Early detection of pneumothorax after lung radiofrequency ablation on chest radiograph by using artificial intelligence

BACKGROUND

To retrospectively evaluate usefulness of artificial intelligence (AI) assistance to detect pneumothorax early after lung radiofrequency ablation (RFA) on chest radiograph.

METHODS

Between February 2016 and October 2023, a total of 355 lung RFA sessions were performed, and chest radiograph was acquired within 3 hours. 94 radiograph images were excluded from this study due to chest drainage placement immediately after RFA (70 sessions) or lack of follow-up CT images (24 sessions). Detectability of pneumothorax was evaluated on the remaining 261 chest radiographs (73.5%, 261/355). Presence of pneumothorax was confirmed by CT within 2 days after RFA. A 1-year experienced radiology resident checked the presence of pneumothorax without and with AI assistance. Sensitivity, specificity, and accuracy were compared without and with AI assistance.

RESULT

Sensitivity, specificity, and accuracy were 50.0%, 97.9% and 84.3% without AI assistance. Although specificity was same (98.4%, p=0.99), significant improvement was observed in both sensitivity (52.7%, p<0.001) and accuracy (85.4%, p=0.002) with AI assistance.

CONCLUSIONS

AI helps to improve detectability of pneumothorax early on chest radiograph after lung RFA.

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