LETTER / Thoracic imaging

Pyogenic spondylodiscitis due to pleurovertebral fistula complicating radiofrequency ablation of pulmonary carcinoma

Keywords Radiofrequency ablation; Infectious complications; Spondylodiscitis; Spinal infection

Lung radiofrequency ablation (RFA) has been established as a safe and useful treatment for unresectable lung malignancies [1]. However, RFA may be associated with minor to severe complications as reported in a large series of 1000 RFA [2]. We report herein the case of a spondylodiscitis that occurred after RFA in a 68-year-old woman presenting many risk factors for developing complications.

This woman had a history of heavy smoking complicated by chronic obstructive pulmonary disease (COPD), right upper lobectomy for a squamous cell carcinoma (PT3N0M0) in 2002 and postoperative radiotherapy. In 2011, follow-up CT showed the occurrence of a single pulmonary nodule, 15-mm in diameter, in the previously irradiated lung in the apical segment of the right lower lobe, abutting the pleura (Fig. 1). Transthoracic needle-core biopsy showed squamous cell carcinoma. Owing to comorbid factors (FEV1, 930 ml), percutaneous CT-guided RFA was indicated and was performed in January 2012 under general anesthesia, under CT guidance (Fig. 2) using an expandable electrode (CoAccess LeVeen; Radiotherapeutics, Sunnyvale, Calif, USA), 30-mm when fully expanded. The first position of the electrode was at the centre of the nodule; the needle was heated with a maximal power of 69 W (16 36). Then, the electrode was repositioned posteriorly and we delivered 90 W (6 36). As the tumor abutted the pleura, internal electrodes were deployed in the pleura and subpleural space. Prophylactic antibiotics (amoxicillin-clavulanate [2g/day]) were administered immediately before the procedure and continued for 2 days. Immediately after the procedure was completed, CT showed no pneumothorax or pleural effusion. The patient was discharged from the hospital 2 days after RFA.

In February, the patient complained of fever (38.5 °C) and productive cough. An infectious pneumonia and pleurisy was diagnosed and she received 12 days of amoxicillin metronidazol with favorable evolution. In May 2012, the patient complained of persistent upper thoracic spine pain without fever or neurological deficit. C-reactive protein was elevated (104 mg/l). A bone scintigraphy showed abnormal uptake in T6-T7 vertebrae. CT scan demonstrated localized pleural collection with air fluid level in the area of pleural RFA, communicating with the thoracic spine and forming a pleurovertebral fistula (Fig. 3). Sagittal T2-weighted MRI showed increased signal intensity in the T5, T6 and T7 vertebral bodies consistent with spondylodiscitis and an anterior epidural abscess (Fig. 4). Transthoracic needle drainage of

Figure 1. CT in prone position shows a pulmonary nodule abutting the pleura in the upper segment of the right lower lobe.

Figure 2. Maximum intensity projection during RFA shows electrodes deployed in the pleura and subpleural space.
Infectious spondylodiscitis has been diagnosed with increasing occurrence in the last years and up to 30% are post-procedural [5]. Three routes of pathogen spread are described: hematogenous, direct external inoculation, and spread from contiguous tissue [5]. In our case, infection was probably inoculated into the disc space either at the time of the RFA or more probably later during the episode of infectious pneumonia and pleurisy through localized necrosis of the pleurovertebral space following RFA. A pleurovertebral fistula was noticed and necrotic changes of the pleura and the extrapleural space around the site of needle insertion may have created a fistula between the ablation zone and vertebral space [3]. Local infection could have been favored by coagulation necrosis in bone induced by previous radiotherapy and current RFA.

*Pseudomonas aeruginosa* is rarely isolated in spondylodiscitis [6]. *P. aeruginosa* is an opportunistic pathogen thought to infect patients with severe lung disease and, in particular, COPD patients which was the case in our patient. Immunosuppression due to cancer and COPD may have favored colonization of the airways by *P. aeruginosa*, then infectious pneumonia and pleurisy after RFA. In our case, spondylodiscitis was diagnosed late, because clinical signs of thoracic spine infection appeared late after infectious pneumonia and pleurisy. Such delay is commonly reported in the literature and is usually 2–6 months between occurrence of first symptoms and diagnosis [5]. Treatment associated drainage of the pleural collection and adapted antibiotic therapy. Due to the poor clinical status of the patient and absence of neurological deficit, fixation of the affected thoracic segment was not performed.

**Disclosure of interest**

The authors have not supplied their declaration of conflict of interest.

**References**


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