


## IMAGING IN THORACIC CANCER

# Echoendoscopic appearance of mediastinal metastasis from papillary renal carcinoma

Roberto Piro<sup>1</sup> , Roberto Tonelli<sup>2,3</sup>, Alberto Cavazza<sup>4</sup>, Sofia Taddei<sup>1</sup>, Enrico Clini<sup>3</sup> & Nicola Facciolongo<sup>1</sup>

1 Pulmonology Unit, Azienda Unità Sanitaria Locale - IRCCS di Reggio Emilia, Reggio Emilia, Italy

2 Clinical and Experimental Medicine PhD Program, University of Modena Reggio Emilia, Reggio Emilia, Italy

3 Respiratory Disease Unit, Department of Medical and Surgical Sciences, University of Modena Reggio Emilia, Reggio Emilia, Italy

4 Pathology Unit, Azienda Unità Sanitaria Locale - IRCCS di Reggio Emilia, Reggio Emilia, Italy

Endobronchial ultrasound bronchoscopy (EBUS) is increasingly used in the diagnostic workup of mediastinal diseases.<sup>1</sup> When abnormal mediastinal lymph nodes are radiologically detected, the sensitivity of EBUS has been reported to range from 88% to 93%.<sup>1</sup> In the case reported here, we present the echoendoscopic appearance of mediastinal metastasis from papillary renal carcinoma, stressing the importance of assessment via this ultrasound technique in the diagnostic process.

A 45-year-old, Caucasian, former smoker male was admitted to the general ward with a history of considerable weight loss (10 kg over the previous two months) and abdominal pain. His previous medical history did not show anything relevant. When his family history was investigated, he reported that his father had undergone abdominal surgery for a renal tumor at the age of 48, and had died at the age of 78 due to heart failure. Physical examination was not significant. An ultrasound examination followed by a computed tomography (CT) scan of the abdomen was then performed which revealed a left renal mass with a right kidney nodule and multiple abdominal lymphadenopathies. To complete staging, the CT scan was extended to the whole body revealing several mediastinal masses with inhomogeneous appearance (Fig 1). The patient underwent linear probe EBUS that showed the presence of several solid lesions embedded in cysts with a

## Keywords

Bronchoscopy; EBUS/TBNA; papillary renal carcinoma; transbronchial needle aspiration

## \*Correspondence

Roberto Piro, Pulmonology Unit, Azienda Unità Sanitaria Locale - IRCCS di Reggio Emilia, Reggio Emilia, Via Amendola 2 42123 Reggio Emilia, Italy.

Tel: +39 0522 295579

Fax: +39 0522 296182

Email: roberto.piro@ausl.re.it

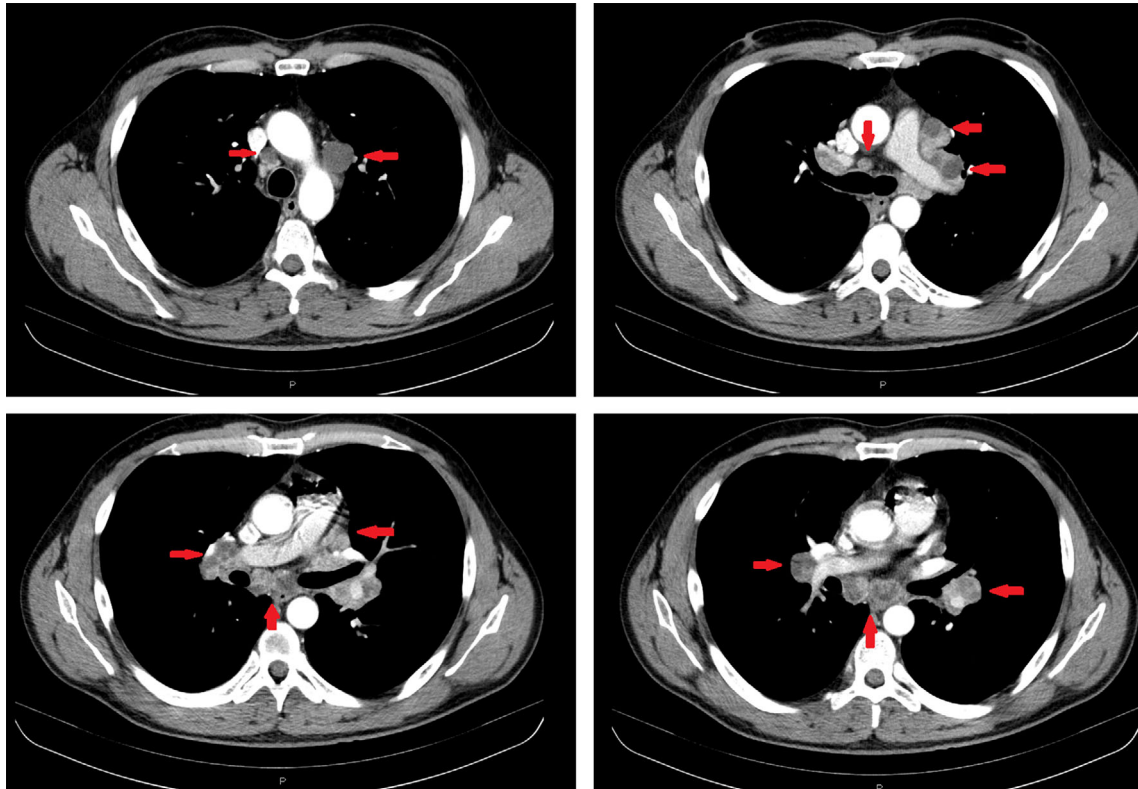
Received: 9 September 2020; Accepted: 28 September 2020.

doi: 10.1111/1759-7714.13704

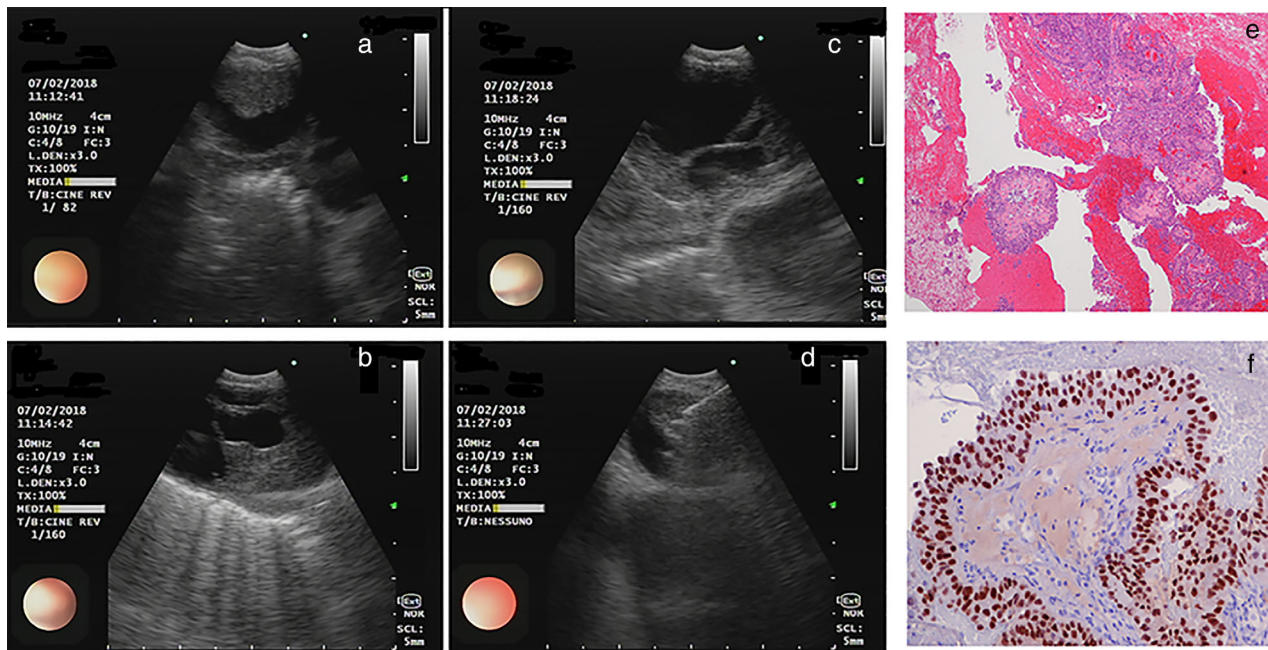
Thoracic Cancer 9999 (2020)

thick wall and anechoic content (Fig 2a-c); the nodular lesions were located both in the hilar and mediastinal stations (4L, 4R, 7, 10R, 10L and 11R). Ultrasound-guided transbronchial needle aspiration (EBUS/TBNA) with a 22 G needle in 7 and 11L stations, sampling both the solid and liquid components, which appeared blood tinged macroscopically, and with a total of seven needle passes, were performed (Fig 2d). Cytological examination revealed the presence of several aggregates of moderately atypical epithelial cells, with large eosinophilic cytoplasm, arranged in papillary structures (Fig 2e). Immunohistochemistry analysis showed positivity for PAX8<sup>2</sup>(Fig 2f); TTF1, calretinin and thyroglobulin were negative. Both sampled lymph node stations had the same characteristics. A diagnosis of papillary carcinoma compatible with renal origin was thus made. The patient was treated with sunitinib but died 14 months later.

Although cystic appearance is not frequent in papillary renal carcinoma,<sup>3</sup> unilocular cystic masses surrounded by thick-wall fibrous capsules and filled with hemorrhagic/necrotic contents have been previously reported.<sup>4</sup> To the best of our knowledge this is the first report to describe ultrasound appearance and diagnosis through transbronchial needle aspiration of mediastinal and hilar metastases of cystic papillary renal carcinoma. Here, we present a rare case of intrathoracic metastases of papillary renal carcinoma in which echoendoscopic study was essential to highlight the peculiar cystic morphology nature and to perform ultrasound-guided needle aspiration, which was safe and effective in order to achieve a diagnosis (Fig 2). Given that renal cell carcinoma may metastasize to mediastinal lymph nodes (even without any abdominal lymph node involvement),<sup>5</sup> it should be considered in the differential diagnosis of mediastinal abnormalities, particularly when a mass is located in the kidneys. In light of strong renal cell carcinoma resistance to chemo- and radiotherapy, and its high metastatic index enhanced by hypoxia-inducible factors (HIFs), the early and precise identification of



**Figure 1** CT images showing the presence of abnormal mediastinal and hilar lymph nodes (red arrows).



**Figure 2** (a–c) Echoendoscopic images of pathological mediastinal lymph nodes showing the presence of solid structure embedded in cysts with a thick wall and anechoic content. (d) Echoendoscopic image of a pathological lymph node showing transbronchial sampling with hyperechoic appearance of the 21 G needle. (e) Cytological examination (cell-block). (f) Immunohistochemistry stain showing positivity for PAX8.

neoplastic cells, even far from the site of origin, alongside with deep characterization of their biomarkers, may favor efficient therapeutic strategies. This case further confirms the usefulness of EBUS/TBNA in the study of mediastinal and hilar lesions, even in patients with cystic morphology.

## Disclosure

The authors have no conflicts of interest to declare.

## References

- 1 Colella S, Vilmann P, Konge L, Clementsen PF. Endoscopic ultrasound in the diagnosis and staging of lung cancer. *Endosc Ultrasound* 2014; **3** (4): 205–12.
- 2 Xiang L, Kong B. PAX8 is a novel marker for differentiating between various types of tumor, particularly ovarian epithelial carcinomas. *Oncol Lett* 2013; **5** (3): 735–8. <https://doi.org/10.3892/ol.2013.1121> Epub 2013 Jan 10.
- 3 Honda Y, Goto K, Nakamura Y *et al.* Imaging features of papillary renal cell carcinoma with cystic change-dominant appearance in the era of the 2016 WHO classification. *Abdom Radiol* 2017; **42** (7): 1850–6.
- 4 Peckova K, Martinek P, Pivovarcikova K *et al.* Cystic and necrotic papillary renal cell carcinoma: Prognosis, morphology, immunohistochemical, and molecular-genetic profile of 10 cases. *Ann Diagn Pathol* 2017; **26**: 23–30 Epub 2016 Oct 20.
- 5 Miyazaki K, Sato S, Kodama T, Kurishima K, Satoh H, Hizawa N. Mediastinal lymph node metastasis of renal cell carcinoma: A case report. *Oncol Lett* 2016; **11** (2): 1600–2.