CLINICAL IMAGE

An unusual metastasis of atypical pulmonary carcinoid to the renal adipose capsule mimicking primary renal cell carcinoma

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Thoracic computed tomography (CT) performed in a 61-year-old man due to the chronic hoarseness revealed a 65 × 45 × 53 mm inoperable solid lesion, involving the right main bronchus (FIGURE 1A). CT-guided transthoracic core needle biopsy followed and the histopathological examination of the specimen showed an atypical carcinoid of the lung. Serum level of 5-hydroxytryptamine (serotonin) was elevated up to 503 ng/ml (normal range, 40–400 ng/ml). Thoracic, abdominal, and pelvic CT revealed multiple lymph node and bone metastases (FIGURE 1B). The patient refused treatment with everolimus and started therapy with lanreotide (120 mg once in 28 days). Two years later abdominal ultrasonography revealed an exophytic, heterogeneous lesion in the lower pole of the left kidney, bulging out of the renal contour. Since these findings did not rule out malignancy, renal cell carcinoma was suspected. Contrast-enhanced abdominal CT demonstrated a 32 × 40 × 53 mm heterogeneous mass at the abovementioned site and primary renal cancer was also suggested (FIGURE 1C). Neuroendocrine markers (chromogranin A, serotonin, 5-hydroxyindoleacetic acid) levels were within the normal range. No manifestations suggestive of carcinoid syndrome were present. The patient underwent surgery through the retroperitoneal approach. A solid tumor invading the adipose capsule of the kidney with no obvious connection to the renal parenchyma was found. Examination of the resected specimen showed adipose tissue occupied by a solid tumor with infiltrating borders, measuring 60 × 50 × 25 mm (FIGURE 1D). Histopathological examination revealed cells uniformly arranged in a trabecular and insular pattern in the desmoplastic stroma (FIGURE 1E). The cytoplasm was ill-defined and showed weakly eosinophilic staining. The nuclei were ovoid to short fusiform with "salt-and-pepper" chromatin pattern and inconspicuous nucleoli. No necrosis was identified. The immunohistochemical study revealed positivity of the neoplastic cells with antibodies for pankeratin AE1/AE3, synaptophysin (FIGURE 1F), chromogranin A, and thyroid transcription factor-1 (FIGURE 1G). Immunostaining was negative for paired-box gene 8 antibody (FIGURE 1H). The morphological features, together with the immunohistochemical profile of the tumor, in the patient's clinical context, were consistent with the diagnosis of a metastasis of a pulmonary carcinoid to the renal adipose capsule. The patient maintained tight follow-up. Due to the progression of the underlying disease, he was qualified for the palliative radiotherapy.

Atypical pulmonary carcinoids are rare neoplasms belonging to a wide spectrum of the neuroendocrine tumors ranging from typical carcinoids to small cell carcinomas.[1] Atypical carcinoids have a reported overall survival, after 5 and 10 years, of 78% and 67%, respectively.[2] Surgical removal is the treatment of choice. Systemic chemotherapy should be considered in patients with advanced unresectable progressive disease. Regimens showing antitumor activity include somatostatin analogs, doxorubicin / capecitabine, everolimus, cisplatin, and etoposide.[2] There are many literature reports on long-term survival of patients with malignant metastasizing neuroendocrine neoplasms treated with somatostatin analogs.[3] Dissemination occurs in 15% to 20% of atypical carcinoids. The most common sites of metastases are liver, bone, brain, and mediastinal lymph nodes.[4] There has been only 1 reported case of metastasis from the pulmonary carcinoid to the kidney, however, to the best of our knowledge, ours is the first report of metastasis from a lung carcinoid tumor to the renal adipose

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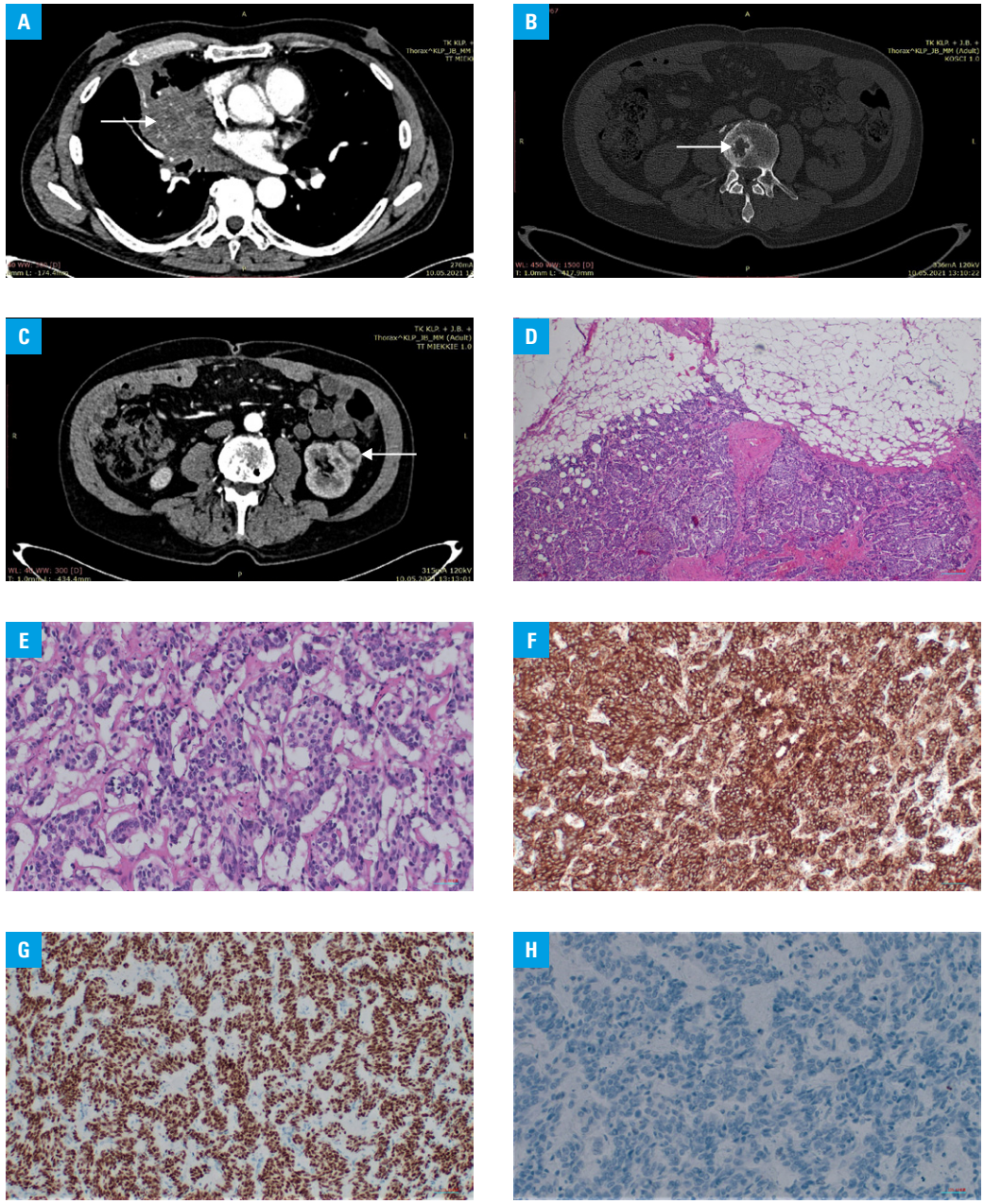

FIGURE 1 Metastatic atypical carcinoid of the lung; **A** – computed tomography (CT) scan of the chest, transverse view, showing a centrally located solid tumor involving the right main bronchus (arrow); **B** – abdominal CT scan, transverse view, showing a bone metastasis in the lumbar vertebral body (arrow); **C** – abdominal CT scan, transverse view, showing a well-defined tumor bulging out of the lower contour of the left kidney (arrow); **D** – histopathological examination of the resected specimen showing a solid tumor infiltrating adipose tissue (hematoxylin and eosin staining, magnification × 100); **E** – hematoxylin and eosin staining revealed cells uniformly arranged in a trabecular and insular pattern in fibrous/desmoplastic stroma (magnification × 20); **F** – immunohistochemical examination with synaptophysin showing strong and diffuse cytoplasmatic positivity (magnification × 10); **G** – immunohistochemical examination with thyroid transcription factor-1 showing nuclear diffuse positivity (magnification × 10); **H** – immunohistochemical examination showing negative immunostaining for paired-box gene 8 antibody (magnification × 20)

capsule.[5] Physicians should be aware that pulmonary carcinoids may metastasize to very unusual sites, even if imaging exams strongly suggest a diagnosis of a primary neoplasm.

ARTICLE INFORMATION

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