Sir,

We would like to highlight an important forgotten sign on chest computed tomography (CT) known as the “beaded pulmonary artery” sign. This sign is diagnostic of pulmonary tumor emboli also known as pulmonary tumor thrombotic microangiopathy (PTTM) in a given clinical context. PTTM is a clinic pathologic entity in which the tumor cells embolize to the pulmonary vasculature leading to widespread tumor emboli with fibrocellular intimal proliferation and thrombus formation in small pulmonary arteries and arterioles in patients with metastatic carcinomas. The clinical course is very rapid, and antemortem diagnosis is usually difficult, particularly in patients without a cancer history. Gastric cancer is the most commonly associated malignancy. Other commonly associated malignancies include those of the kidneys, lung, breast, colon, and pancreas.

Contrast-enhanced chest CT reveals dilated and beaded pulmonary arteries, diffuse ill-defined centrilobular micronodules, and patchy peribronchovascular ground-glass opacities [Figures 1 and 2]. Dilated pulmonary arteries are due to intravascular and perivascular tumor within the medium-to-small pulmonary arteries. Small, peripheral areas of ground-glass opacities distal to dilated beaded pulmonary arteries suggest small pulmonary infarcts. This sign should be distinguished from beaded septum and tubular opacities seen in bronchiectasis and pulmonary arteriovenous malformation. The beaded septum sign is seen in lymphangitic carcinomatosis due to spread of tumor in pulmonary capillaries, lymphatic vessels, and septal interstitium.

We wish to emphasize that both clinicians and radiologists who are regularly seeing and interpreting chest CT scans should be aware of this sign.

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Sir,

Lung cancer spreads frequently to the adrenal gland; [1,2] at this side, the prevalence of an incidental lesion ranges from 0.4%-5% of radiologic studies by computed tomography (CT) imaging. [3,4] Although in the setting of oncologic patients, the term "incidentaloma" may not be appropriate, a tremendously discovered adrenal lesion by radiologic studies in the 20% of the cases is a probable metastasis. [4]

The increase in the prevalence of incidentally adrenal masses is parallel to the ample use of imaging and represents a clinical problem; [5] in addition, the imaging procedures have a fundamental role to establish the nature of very unusual lesions in other sites. [6,7]

In daily clinical practice, in patients with lung cancer, the differentiation by imaging of a small (2–3 cm) incidental nonfunctioning adrenal nodule from metastasis is crucial in the treatment decision-making. Particularly, the main diagnostic challenge is to differentiate lipid-poor adenoma from metastasis. [8]

The abundance of lipids in the adrenal adenoma determines attenuation values of <10 HU and is suggestive of a benign adenoma at CT. [9] Conversely, in the lipid-poor adenomas (10%–40% of all adrenal adenomas), [10] similarly to the metastasis, the lipids are scarce, higher attenuation values are revealed at CT and may be indistinguishable from malignancy. [11]

Calculation of contrast washout rate by CT allows the diagnosis of lipid-poor adenoma; however, this methodology is not always possible: many CT examinations do not undergo unenhanced or delayed (15 min) contrast-enhanced CT.

Magnetic resonance (MR) imaging is equivalent to CT for characterizing adenomas measuring 20 HU or less. MR imaging is less sensitive than CT for lipid-poor adenomas measuring > 20 HU. [12] The accuracy of the MR imaging in diagnosis of lipid-poor cortical adrenal adenoma is of 91.3%–93.5%. [13] On diffusion-weighted MR imaging, the adenomas similarly to the adrenal metastasis demonstrate restricted diffusion. [14]

Incidental non-functioning adenoma is a circumscribed expansile of the adrenal cortex with a similar structure to that of normal tissue of the adrenal cortical gland in terms of vascularization and amount of lipid droplets (lipid-rich and lipid-poor). [15]

Based on this histopathologic data, we believe that the "comparative enhancement" at multiphasic MR imaging can be a reliable method to determine the vascularization of the normal adrenal cortex and to distinguish lipid-poor adenoma from metastasis when a nodule is revealed in patients with lung cancer.

Comparative enhancement represents an innovative approach for the quali-quantitative assessment of the vascularization of the normal adrenal cortex contralaterally or ipsilaterally to the adrenal cortical nodule. The quantitative analysis of enhancement is performed positioning a circular region-of-interest into a magnified image of adrenal gland (contralaterally or ipsilaterally to the adrenal nodule) and into a homogeneous area of the adrenal nodule on unenhanced and in post-contrast arterial, venous and delayed (5 min) phase MR imaging. Time-signal intensity curve (TIC) from multiphasic MR imaging for normal adrenal gland and adrenal lesion is determined, and the patterns of TIC