Interesting image

Incidental finding on a SPECT/CT of a retroperitoneal leiomyosarcoma imitating a hiatal hernia in $^{131}$I whole-body scan in thyroid cancer evaluation

Hallazgo casual en una SPECT/TC de un leiomiosarcoma retroperitoneal que simula una hernia de hiato en la gammagrafía de cuerpo completo con $^{131}$I para la evaluación de un cáncer de tiroides

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A 50-year-old female patient with a previous diagnosis of papillary thyroid carcinoma treated with thyroidectomy and radioiodine therapy was admitted to the hospital for her routine follow-up procedures. On her $^{131}$I whole-body scan, radioiodine accumulation in the lower mediastinum was detected. The planar images after drinking additional water showed a persistent abnormality in the lower mediastinum (Fig. 1). The patient’s detailed medical history did not reveal a previous diagnosis of hiatal hernia. However, the patient described faint gastrointestinal symptoms such as early satiety and postprandial abdominal discomfort during the last 8 months. SPECT/CT images helped to localize more precisely the uptake in the stomach, which was compressed and displaced anteriorly by a huge retroperitoneal mass located in the left hypochondrium ahead of the spleen and to the left of the stomach. The retroperitoneal mass did not display any $^{131}$I uptake (Fig. 2). An enhanced state-of-the-art CT of the chest, abdomen and pelvis confirmed the presence of a large heterogeneous contrast-enhanced retroperitoneal mass suggestive of a sarcoma without lymphatic or distant involvement (Fig. 3). Laparotomy revealed a mass of 19 cm in the omental transversity. A complete surgical resection was performed and pathology showed a well-differentiated retroperitoneal leiomyosarcoma.

Retroperitoneal sarcomas are relatively rare neoplasms that comprise approximately 10–15 percent of all soft tissue sarcomas. They occur predominantly in middle-aged individuals, although the presentation age range is broad. Leiomyosarcomas of the retroperitoneum generally arise from the inferior vena cava, its branches, or any small vessel. They are usually clinically silent until they are large enough to compress or invade surrounding structures. Retroperitoneal sarcomas are most commonly detected as an incidentally discovered abdominal mass in an asymptomatic or minimally symptomatic patient and at the time of diagnosis most tumours are already large and locally advanced. Contrast-enhanced CT is the imaging method of choice to characterize a retroperitoneal mass, evaluate its extent, and the presence or absence of distant metastases (most commonly in lung and liver). The most important prognostic factors for survival are the possibility of performing a complete surgical resection at the time of initial presentation and the histologic grade of differentiation.

Radioiodine is excreted in gastric mucosa and is seen in the oesophagus after swallowing of saliva. Radiotracer accumulation in the lower mediastinum has been previously reported as a false-positive result in $^{131}$I whole-body scan due to hiatal hernia showing a similar pattern as in our case. However, in our patient, SPECT/CT imaging correctly localised the uptake in the stomach ruled out the diagnosis of hiatal hernia and contributed to diagnosing a non-suspected malignant neoplasm. Hybrid imaging combining SPECT and CT allows a more accurate anatomic localization and helps to resolve unusual biodistribution of radioiodine on the planar images. Besides, the CT component may contribute to detecting unsuspected pathologies that in our case have dramatically changed the health status of the patient.

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Fig. 1. $^{131}$I whole-body scan and planar image performed following withdrawal of her thyroid hormone replacement therapy showed radioiodine accumulation in the mediastinum (endogenous TSH levels: 80.70 mIU/L, normal range: 0.27–4.20 mIU/L, thyroglobulin serum levels 1.33 ng/ml, normal range: 1.40–78.00 ng/ml).

Fig. 2. Thoracic and abdominal SPECT/CT images helped to localize more precisely the uptake in the stomach, which was compressed and displaced towards the thoracic cavity by a large retroperitoneal mass (A: fusion; B: SPECT; C: CT images in axial views).

Fig. 3. A transverse contrast-enhanced CT scan of the abdomen showed a large retroperitoneal mass.

References