Clinical History:

A 45-year-old woman was admitted in our hospital for the investigation of abdominal pain. Physical examination of abdomen revealed a palpable mass in the lower abdomen. General physical examination and the rest of the systemic examination revealed no other abnormality.

Imaging Findings:

The abdominal ultrasound revealed a homogeneous, hypoechoic solid mass in the lower abdomen (Figure 1). Abdominal computed tomography (CT) illustrated a hypodense solid mass, 50 × 40 × 45 mm in size, in the mesentery of lower abdomen. Contrast enhanced CT revealed a well-defined, homogeneously enhanced hypervascular tumour adjacent to the mesentery (Figure 2 a-d).

Discussion:

Background

Paragangliomas are rare tumours arising from the neural crest tissue that develops into sympathetic and parasympathetic paraganglia throughout the body [1]. Paraganglioma of adrenal medulla is known as pheochromocytoma while paragangliomas located outside of adrenal gland are classified as extra-adrenal paragangliomas.

Clinical Perspective

Sporadic and familial paragangliomas are multicentric in 10% and 25–50% of cases respectively [2]. They account for 10% of adult pheochromocytomas. About 70% of sympathetic paragangliomas are intraabdominal, usually found in the perinephric and paraaortic spaces [3]. The remaining 30% are located in the chest. Abdominal paragangliomas mainly occur in retroperitoneum. Less common manifestations of abdominal paragangliomas include the gallbladder, urinary bladder, prostate, spermatic cord, uterus, and duodenum [4]. Paragangliomas located in the mesentery are extremely rare and only a few reports have been published [5-7].

Imaging Perspective

Imaging plays an important role pre-operatively to determine tumour localization and extent of the disease [8]. Ultrasonography is often used to detect and determine the localization of the tumour. Solid or cystic nature of the tumour may also be determined with ultrasonography. On contrast-enhanced CT images, paragangliomas manifest with soft tissue density on unenhanced CT images and highly enhancing masses on contrast enhanced images. Magnetic resonance imaging (MRI) of paragangliomas demonstrates soft tissue masses with low signal intensity on T1 - weighted and high signal intensity on T2-weighted images. Contrast enhanced MRI reveals strong enhancement after administration of intravenous contrast material. A speckled appearance with multiple flow voids
is typical in tumours larger than 2 cm in diameter [9]. Scintigraphy using an analogue of noradrenaline (norepinephrine), Metaiodobenzylguanidine (MIBG), is the best study to confirm the diagnosis of paraganglioma and screen for metastatic or recurrent disease. The newest technique using Fluorine-18-dihydroxyphenylalanine (18F-DOPA) positron emission tomography (PET) imaging localizes paragangliomas with higher accuracy than MIBG scans because of the higher spatial resolution of PET scanning [8].

Outcome
It has been reported in the literature that around 20% of paragangliomas could be malignant with poor survival [10]. While histopathological findings are not much useful to differentiate between benign and malignant paragangliomas, extensive local invasion and distant metastasis to liver, bone, and lymph nodes have been used as indicators for malignancy [11].

The definitive treatment of choice for mesenteric paraganglioma is surgical resection.

Take Home Message, Teaching Points
Extra-adrenal paragangliomas should be kept in mind in the differential diagnosis of solid mass of mesentery even in the absence of clinical and laboratory findings suggesting pheochromocytoma.

Differential Diagnosis List: Mesenteric paraganglioma, Renal cell carcinoma metastasis, Haemangioma

Final Diagnosis: Mesenteric paraganglioma

References:
Description: Abdominal ultrasound grayscale image showing a well-defined homogeneous, hypoechoic solid mass in the lower abdomen measuring ~5 x 4 cm (arrows). **Origin:** Medicalpark Hospital, Department of Radiology, 23200 Elazig, Turkey
Figure 2

*Description:* Axial noncontrast CT of abdomen demonstrates a hypodense soft tissue lesion 50 × 40 × 45 mm in size, in the mesentery of lower abdomen (arrow). *Origin:* Medicalpark Hospital, Department of Radiology, 23200 Elazig, Turkey

*Description:* Axial contrast enhanced CT of abdomen obtained at arterial phase shows an avidly enhancing mesenteric mass (arrow). *Origin:* Medicalpark Hospital, Department of Radiology, 23200 Elazig, Turkey
Description: Coronal contrast enhanced CT of abdomen obtained at arterial phase shows an avidly enhancing mesenteric mass (arrow). Origin: Medicalpark Hospital, Department of Radiology, 23200 Elazig, Turkey
Description: Sagittal contrast enhanced CT of abdomen obtained at arterial phase shows an avidly enhancing mesenteric mass (arrow). Origin: Medicalpark Hospital, Department of Radiology, 23200 Elazig, Turkey