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PHOTO QUIZ

Multifocal adrenal nerve tissue?

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A 52-year-old female was referred to our outpatient clinic with a right-sided adrenal incidentaloma. Her medical history was unremarkable besides a well-regulated hypertension for ten years. She stopped smoking 12 years ago. Evaluation in another hospital for macroscopic haematuria with a CT scan revealed a right-sided adrenal mass of 8 cm which compressed the inferior vena cava without signs of vasoinvasive disease. Furthermore, two enlarged para-aortic lymph nodes with a diameter of 3 cm were identified (*figure 1*).

She did not complain of abdominal pain or discomfort. In addition, there were no signs of weight loss, catecholamine or cortisol excess. Physical examination showed no cushingoid features and a body mass index of 40 kg/m^2.

Figure 1. *Right-sided adrenal mass of 80 mm. In the para-aortic region an enlarged lymphnode is visible (diameter 28 mm).*

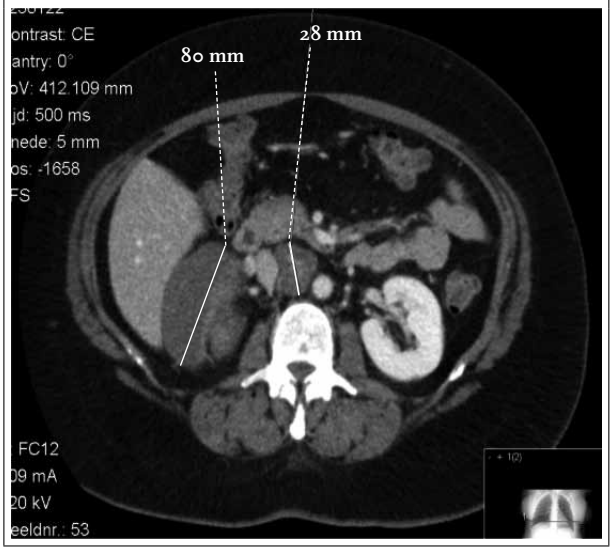
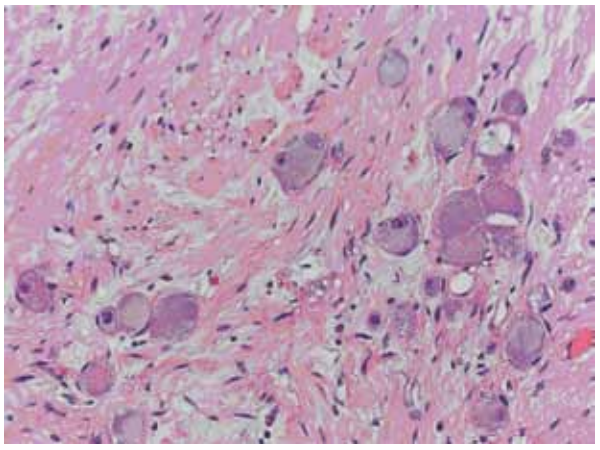


Figure 2. *In the upper left corner neuronal cells. In the middle a group of larger ganglioncells, with in the middle a ganglion cell with a double nucleus, typical for ganglioneuroma.*



Blood pressure was 145/85 mmHg. Breath sounds were normal and no lymphadenopathy was noticed, nor were there any palpable abnormalities of the breasts indicative of carcinoma.

Biochemical evaluation, including 24-hour urinary excretion of catecholamines, cortisol and a dexamethasone suppression test, was normal. Additional mammography and CT scanning of the thorax showed no abnormalities. Since the clinical presentation was suspicious for metastatic disease of an unknown primary tumour a CT-guided biopsy was performed. An admixture of neuronal tissue and ganglion cells was seen (*figure 2*).

WHAT IS YOUR DIAGNOSIS?

See page 290 for the answer to this photo quiz.

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ANSWER TO PHOTO QUIZ (PAGE 286)
MULTIFOCAL ADRENAL NERVE TISSUE?

The biopsy raised the possibility of adrenal ganglioneuroma. Since malignant transformation of ganglioneuromas into peripheral nerve sheath tumours has been described and considering the para-aortic lymph nodes, malignancy could not be excluded completely. A laparotomy was performed and an adrenal mass of 10 cm and two lymph nodes of 2 and 7 cm in diameter, were removed. Pathological examination confirmed the earlier suggested diagnosis of ganglioneuroma of the adrenal gland. The suspected lymph nodes, appeared to be ganglioneuroma foci.

Ganglioneuromas are rare benign tumours originating from the neural crest, specifically the sympathetic ganglion cells; they sometimes develop from chemotherapeutically treated neuroblastomas.[1-4] Neural crest cells are highly differentiated and do not contain mitotic features making them hormonally inactive. However, catecholamine hypersecretion has been reported in up to 20 to 39% of cases. In 40 to 71% ganglioneuromas occur as a composite tumour with pheochromocytoma.[1-6] Pheochromocytomas also arise from the neural crest from parasympathetic cells. When ganglioneuroma is found in combination with a pheochromocytoma, testing for the known genes associated with pheochromocytoma (SD related mutations, NF1, VHL and RET mutations) is advised.

Ganglioneuroma predominantly appear in the posterior mediastinum and retroperitoneum. Approximately 10% develop in the head and neck region.[7-9] Adrenal ganglioneuromas comprise 50% of the retroperitoneal ganglioneuromas and arise from the medulla in 20 to 30% of cases.

Multifocal presentation as seen in this case is rare and is sometimes seen in neurofibromatosis type 1. Ganglioneuromas have a very good prognosis after resection, even when resection has been incomplete.[9,10] This case illustrates that a large adrenal mass with para-aortic lymphadenopathy is not always pathognomonic for metastatic disease with a cumbersome clinical course, but that a rare benign tumour such as ganglioneuroma could be included in the differential diagnosis.

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