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A diagnostic dilemma of low-grade adrenal cortical carcinoma in young female patient

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A 33-year-old woman with incidentally diagnosed abdominal mass in ultrasound has undergone evaluation with an MRI exam and 18F-FDG PET-CT scan (fig. 1, 2). Medical history was only significant for hypertension and oligomenorrhea from 6 months. The endocrinology studies were nonspecific. Initial differential diagnosis were ganglioneuroma, adrenal cortical carcinoma (ACC) and pheochromocytoma. Clinical and imaging features supporting diagnosis of ganglioneuroma were age of patient (median age at diagnosis 31 years), normal / lower values of adrenal hormones, generally well-circumscribed margins, progressive enhancement and persistent in delayed phase (assessed in T1w before and after dynamic administration of gadobutrol contrast), no evidence of distant metastasis [1, 2]. Those in favor of ACC consisted of hemorrhage on T1w, heterogeneous T2w signal – higher than a liver, enhanced density of periadrenal fat [1, 2]. The diagnosis of pheochromocytoma was less confident due to relatively low signal on T2w. High FDG uptake (SUV max 9.0) suggested malignant character. For all pathologies parameters like lesion size (11 cm), no presence of drop of signal during out-of-phase sequence, no evidence of IVC invasion, local compressive symptoms showed imaging overlap [1, 2]. Diffusion weighted imaging (DWI) were of high signal within the lesion, with low signal on corresponding ADC maps. However, DWI does not add significant value to differentiating between benign and malignant adrenal lesions according to available evidence [2]. ACC is a very rare and aggressive malignancy, with annual incidence varying between 0.5–2 cases per million [2]. Surgical excision is a primary treatment option for limited disease (stage I–III), followed by adjuvant therapy due to high risk of recurrence even with complete resection [2]. In this case PET-CT showed adrenal/liver SUV ratio >1.8, indicating malignant character of lesion with high accuracy [2]. Patient had open laparotomy, which revealed low-grade ACC, Weiss score 5, Ki-67: 11%.

Article Information and Declarations

Author contributions

Authors contributed to article equally.

Ethics statement

Due to retrospective character of the study and anonymised data the need for informed consent was waived.

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Conflict of interest

None declared

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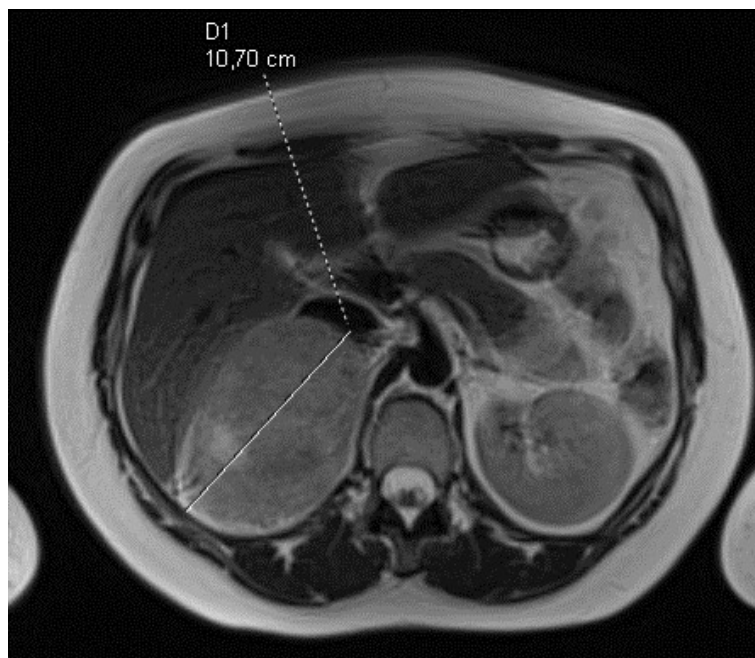


Figure 1. MRI, T2-weighted image showing 11cm oval, well-circumscribed mass with high, heterogeneous signal, higher than adjacent liver

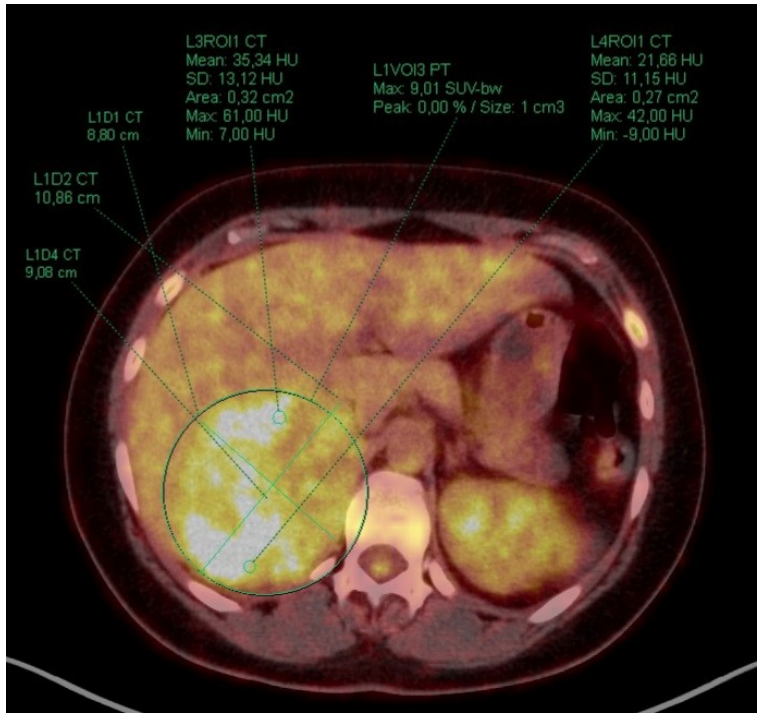


Figure 2. Fluorine-18-FDG PET-CT scan indicating high FDG uptake (SUV max 9.0), more than 3 times higher than adjacent liver