



Case Report

Ultrasound and contrast enhanced CT imaging of a colon mesentery leiomyosarcoma

Peter Obel Otto^{a,*}, Martina K. Loft^{a,b,c}, Peter Grimm^a, Søren Rafael Rafaelsen^{a,b,c}, Malene Roland V. Pedersen^{a,b,c}

^a Department of Radiology, Vejle Hospital, University Hospital of Southern Denmark, Denmark

^b Danish Colorectal Cancer Center South, Vejle Hospital, Vejle, Denmark

^c Department of Regional Health Research, University of Southern Denmark, Odense, Denmark

HIGHLIGHTS

- Primary mesenteric leiomyosarcoma is a very rare, aggressive neoplasm.
- Tumour recurrence and metastatic spread is a significant risk following surgical treatment.
- Follow-up is warranted and likely improves patient survival rates.

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ABSTRACT

Primary leiomyosarcoma of the colon mesentery is an extremely rare neoplasm, and only a small number of cases have been reported. We describe a case of leiomyosarcoma originating in the colonic mesentery, in a 68-year-old woman. Ultrasound showed a heterogeneous mass with varying vascularization in the left fossa. Central areas of the mass were hypochoic, without detectable vascularization. Contrast enhanced computed tomography (CECT) of chest and abdomen showed a contrast enhanced tumour, with central non-enhanced areas. The tumour was radically resected and histopathology showed primary leiomyosarcoma. Two years after primary surgery, follow-up CECT revealed a local recurrence, which was re-resected. Subsequent follow-up CECT since have shown no sign of recurrence.

1. Introduction

Primary tumours arising from the mesentery are rare and most of these are mesenchymal in origin. The majority are histologically benign, often leiomyomas [1]. Primary leiomyosarcoma originating from the colon mesentery is a rare entity with few cases reported in the literature [2–4]. The purpose of this case report is to discuss the imaging features, treatment options and prognosis of this rare tumour.

2. Case presentation

A 68-year-old woman attended her general practitioner due to intermittent pain in her lower left abdomen during six months. Patient symptoms included alternating stools without visible blood. No fever or weight loss. On examination a palpable mass was present in the lower

left abdominal quadrant. The patient was referred to the local hospital radiology department for further investigation.

A transabdominal ultrasound examination demonstrated an intra-abdominal oval shaped heterogeneous mass measuring $6.5 \times 5.5 \times 8.1$ cm with respect to the surrounding structures (Fig. 1a). The mass was located in the left fossa anteriorly to the psoas muscle. Colour Doppler showed several intra-tumoural vessels as well as central hypochoic areas without detectable Doppler signal (Fig. 1b).

A complementary contrast enhanced computed tomography (CECT) of the chest and abdomen was performed (Siemens Somatom, Siemens Medical Solutions, Germany). The CT protocol parameters were 120 kV, 0.5 s rotation time, pitch 0.6, and reconstruction slice thickness of 3 mm in three imaging planes. The patient was placed supine with arms above the head. The patient was intravenously injected with non-ionic contrast agent Optiray 300 mg/mL (Bracco Imaging,

* Corresponding author.

E-mail address: peter.obel.otto@rsyd.dk (P.O. Otto).

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Italy). The scan was performed with a delay of 35 s upon reaching the trigger value. No side-effects due to the contrast agent were encountered. No oral contrast agent was used.

The CECT showed a tumour located concordant to the ultrasound finding, beneath the abdominal wall, medial to the descending colon, anterior to the psoas muscle (Figs. 1c and 2). The tumour appeared well defined, slightly lobulated and with contrast enhancement apart from central non-enhancing areas. No regional or distant lymph node enlargement or signs of metastatic disease. As the tumour appeared located extra intestinal close to the ovaries, preliminary diagnosis was an ovarian tumour on the left side.

The patient underwent surgery at the gynaecological department one week later. During laparotomy, normal ovaries were seen, and the tumour was found in the mesentery of the sigmoid colon. The tumour was macroscopically radically resected.

Histopathology revealed a Leiomyosarcoma with, uniform smooth

muscle cells for mitosis and less than 50 % necrosis, corresponding to grade 1. The specimen was sent for review at the national sarcoma centre. Final conclusion after immunophenotypical staining the tumour tissue for smooth muscle actin, desmin and vimentin: a R0 resected primary colon mesenteric leiomyosarcoma.

CECT follow-up of chest and abdomen performed 3, 6, 12 and 18 months after surgery showed no signs of recurrence. Follow-up CECT after 24 months showed a solitary contrast-enhancing tumour measuring 1.8 × 2.3 × 2.3 cm, at the location of the original tumour (Fig. 1d). The tumour was re-resected and histopathology reconfirmed a leiomyosarcoma. Subsequent follow-up CECT performed at 3, 6, 9 and 12 months post re-resection showed no signs of repeated recurrence.

3. Discussion

The presented case of a colon mesenteric leiomyosarcoma showed

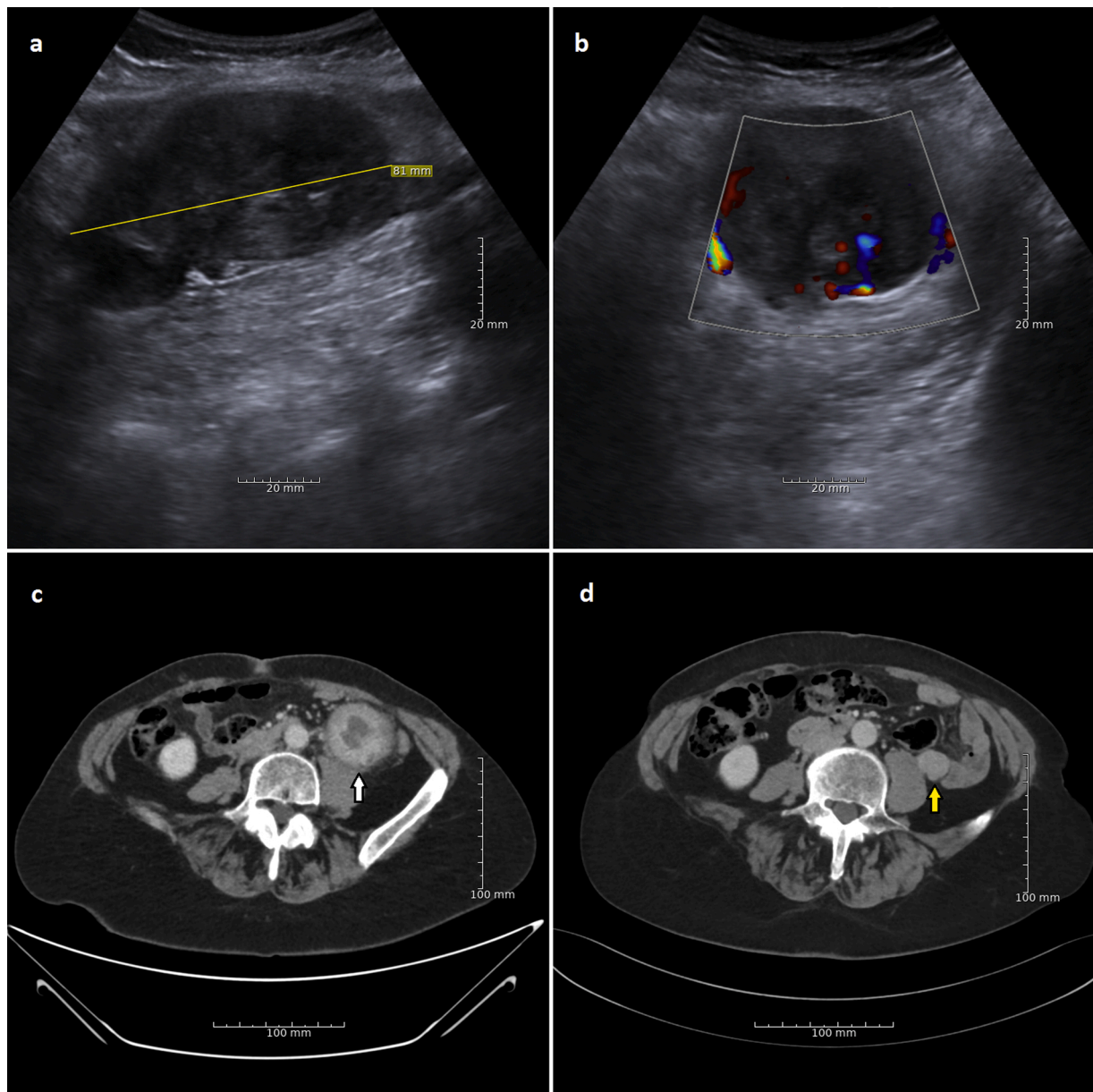


Fig. 1. a: B-mode ultrasound image with a 8.1 cm heterogeneous mass located above the left psoas muscle. b: duplex image show vascularity within the mass and central hypoechoic areas without detectable vascularization. c: Axial CECT image show an intra-abdominal contrast enhancing tumour, with non-enhanced central areas, located medial to the descending colon (white arrow), anterior to the left psoas muscle. d: Follow-up axial CECT image 24 months after surgery show local tumour recurrence (yellow arrow).



Fig. 2. Coronal CECT image show an intra-abdominal contrast enhancing tumour, with non-enhanced central areas, located medial to the descending colon, lateral to the aortic bifurcation (yellow arrow).

imaging features that were in accordance with the histopathological findings. Doppler ultrasound displayed tumour vascularization and central hypoechoic areas without vascularization. This was concurred by the contrast enhanced CT scanning, showing central areas without enhancement. Histopathology revealed widespread necrosis in the tumour tissue, estimated to be about 30 % of tumour volume. The tumour necrosis could explain the patient's abdominal pain. The tumour was located further cranial than would be expected for an ovarian tumour. Since the tumour location was in the sigmoid mesentery, the tumour would not have been detectable by colonoscopy.

The CT appearance was comparable to that of other published cases of leiomyosarcomas and presented a heterogeneous soft-tissue lesion, with hypodense areas due to necrosis, often lobulated and sometimes ill-defined [3–8]. Some leiomyosarcomas present with calcifications [6,8]. In our case, the tumour was well-defined and no calcifications were seen.

Magnetic resonance imaging (MRI), appearance of mesenteric leiomyosarcomas have reported with low intensity on T1-weighted imaging and most of the tumour displayed with high intensity on T2-weighted imaging in the only MRI reported case. The patient in this case had peritoneal tumour recurrence nine months after surgery [9], similar to this case.

A CT study of 51 soft tissue sarcomas located at the extremities and trunk wall, found sarcomas with non-enhancing tumour areas have poor prognosis [10].

Leiomyomas are common but difficult to differentiate from leiomyosarcomas based upon imaging features. Diffusion weighted MRI may be useful in detecting leiomyosarcomas [11]. Uterine sarcomas showed lower apparent diffusion coefficient (ADC) values compared to leiomyomas [12].

Some reports have demonstrated the usefulness of CT enteroclysis to

visualize leiomyosarcoma in patients suspected for gastrointestinal disease [8,13].

Transabdominal ultrasound is a well-established widely available and cheap modality for investigating the bowels, when gastrointestinal disease is suspected [14]. Furthermore, ultrasound elastography have shown a significant difference in mean stiffness for benign and malignant superficial soft tissue tumours, but the confidence intervals were overlapping [15]. Further studies using elastography are warranted.

The treatment approach for mesenteric leiomyosarcoma is surgical excision with a wide margin [4,16]. Our patient underwent radical surgical treatment. The patient had local recurrence on follow-up CECT 24 months post-surgery. The reoccurred tumour was resected. CT follow-up since have so far shown no signs of new recurrence. Most reports in the literature suggest a poor prognosis for patients with mesenteric leiomyosarcomas [3,4,17,18]. Our case as well as others signify the relevance of follow-up imaging post-surgical treatment [3,9].

Ethics

Patient consent obtained. The local hospital committee on health research (20/12314) has approved this study.

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Declaration of Competing Interest

The authors declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.

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