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An unusual case of disseminated peritoneal leiomyomatosis: A case report

Abstract

Disseminated Peritoneal Leiomyomatosis (DPL) is a rare, usually benign condition, marked by multiple leiomyomas in the peritoneal cavity. Although typically benign, DPL can present significant diagnostic challenges.

We describe an unusual presentation of DBL in a 56-year-old woman, presenting with a non-obstructive pericolonic lesion with two small peritoneal nodules. Biopsy was inconclusive due to the mobility of the pericolonic lesion, and [^{18}F]FDG PET/CT showed low grade uptake. The patient went on to have a robotic left hemicolectomy, and post-operative histology revealed a diagnosis of DPL.

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Introduction

Disseminated Peritoneal Leiomyomatosis (DPL), also known as leiomyomatosis peritonealis disseminate, is a rare, usually benign condition where multiple smooth-muscle nodules (leiomyomas) occur along the peritoneal surfaces, predominantly affecting women of reproductive age. The pathogenesis of DPL is not fully understood and is likely multifactorial. Hormonal stimulation is strongly implicated, supported by the predominance of cases in premenopausal women and the frequent demonstration of oestrogen and progesterone receptor positivity on immunohistochemistry [1]. In recent years, increasing attention has focused on an iatrogenic mechanism, particularly following laparoscopic myomectomy or other gynaecological intervention involving with power morcellation. Modern imaging series report a significant proportion of patients with prior uterine surgery, supporting the hypothesis of peritoneal seeding of smooth-muscle cells [2,3], and clinical history is therefore a critical contextual factor when interpreting imaging findings.

The diagnosis of DPL can be difficult as DPL, as DPL can mimic peritoneal carcinomatosis or metastatic gynaecological malignancy on imaging, and the diagnosis usually is confirmed on histology [1].

Case description

A 56-year-old woman, with a history of a previous total hysterectomy, presented with lower abdominal pain and was referred for a pelvic ultrasound, which should a solid mass in the left lower quadrant, in close proximity to the large bowel (Figure 1). A CT was arranged for further assessment, which revealed a lobulated mass lesion which appears attached to the descending colon, with two further small peritoneal nodules. Biopsy was arranged but was inconclusive due to the mobility

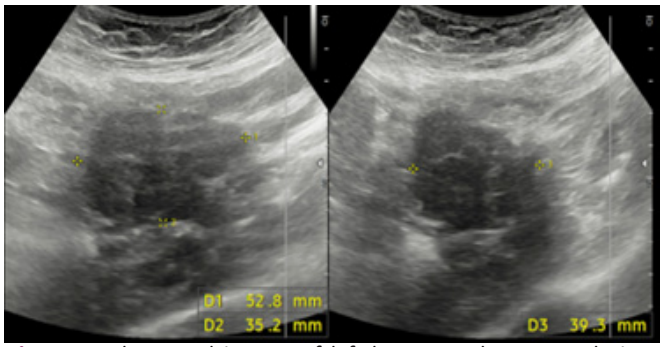

Figure 1: Ultrasound images of left lower quadrant mass lesion, with axial (left) and longitudinal (right) original measurements.

of the pericolonic mass, and the two peritoneal nodules were too small to biopsy. [18F]FDG PET/CT was arranged for further evaluation, and the pericolonic mass showed low-moderate grade [18F]FDG uptake, with low grade uptake in the peritoneal nodules (Figure 2). Due to diagnostic uncertainty, in conjunction with multidisciplinary team meeting discussion and patient preference, a robotic left hemicolectomy was performed, and post-operative histology revealed a diagnosis of DPL.

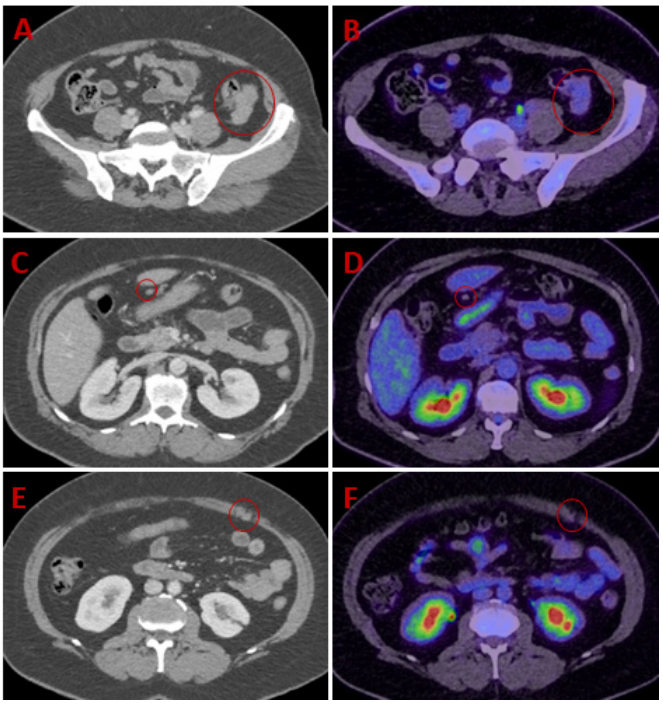

Figure 2: (A & B) show contrast enhanced CT and [18F]FDG PET/Ct images of a lesion in close proximity to the descending colon respectively, with **(C & D)** showing a small perihepatic nodule and **(E & F)** showing a small depositing within the left abdominal wall.

Discussion

Although histologically usually benign, DPL represents a well-recognised diagnostic pitfall, as its imaging appearance frequently mimics peritoneal carcinomatosis or metastatic gynaecological malignancy [2,4,5]. We report here a case of DPL which mimicked a colonic lesion without obstructive symptoms, considered possibly representing a Gastrointestinal Stromal Tumour (GIST).

On cross-sectional imaging, DPL typically presents as multiple, well-circumscribed nodules or masses involving the peritoneum, omentum, mesentery, and pelvic surfaces. CT findings described in recent series include solid soft-tissue lesions with smooth margins and homogeneous or myometrium-like contrast enhancement; larger lesions may demonstrate cystic or degenerative change [2,5]. MRI provides superior tissue characterisation, with lesions commonly demonstrating T1 hypo- to isointensity and T2 hypointensity, reflecting their smooth-muscle composition, with relatively homogeneous post-contrast enhancement similar to uterine leiomyomas [2,4]. Diffusion-weighted imaging may show restricted diffusion, which can further complicate differentiation from malignant peritoneal disease [2]. The role of [18F]FDG PET/CT in DPL remains nuanced, with reported cases, including the case we report here (Figure 2), demonstrating low to moderate [18F]FDG uptake, a feature that may support benign pathology when considered alongside morphology and clinical context [6]. However, a single recent case report by Wang et al [7] described fumarate hydratase–deficient DPL with intense [18F]FDG avidity, closely mimicking disseminated malignancy on [18F]FDG PET/CT, suggesting that metabolic activity alone cannot reliably distinguish benign from malignant peritoneal disease in this setting.

The principal differential diagnosis of DPL is peritoneal carcinomatosis, particularly from ovarian or gastrointestinal primaries. Other considerations include peritoneal sarcomatosis, parasitic leiomyomas, and endometriosis. Imaging features that may favour DPL include smooth lesion margins, lack of invasive behaviour, absence of ascites, and enhancement patterns resembling uterine smooth muscle [2,4,5]. Nevertheless, substantial overlap exists, and imaging alone is rarely diagnostic. As illustrated by this case, biopsy or surgical excision is often required to establish a definitive diagnosis.

Conclusion

DPL is an important benign mimic of peritoneal malignancy, including GI malignancy as reported here. Awareness of the characteristic CT, MRI, and PET/CT features, together with careful evaluation of clinical history—particularly prior uterine surgery—can help narrow the differential diagnosis. However, given the significant imaging overlap with malignant conditions, histopathological confirmation remains essential to avoid misdiagnosis.

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