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CASE REPORT

Intra-abdominal Desmoid Tumour

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ABSTRACT

A patient with a rapidly growing post-traumatic intra-abdominal desmoid tumour is presented. Although desmoid is classified pathologically as a benign tumour, its infiltrative nature leads to a locally aggressive mass with a high recurrence rate after surgical treatment. In view of its non-specific imaging appearance, pathological examination is required for the correct diagnosis. The major role of imaging examination is to define the extent of the tumour and to detect related complications. Both computed tomography and magnetic resonance imaging are comparable for the assessment of the lesion. However, a high signal on T2WI at magnetic resonance imaging is correlated to a fast growing lesion. Surgical treatment is advocated for this type of tumour.

Key Words: *Desmoid, Magnetic resonance imaging, Surgery, Tomography, X-ray computed, Trauma*

INTRODUCTION

Desmoid tumour is a rare tumour caused by proliferation of fibroblastic cells. The tumour lesion may arise from fascia and aponeurosis of muscle. A strong association with previous trauma such as surgery and Gardner syndrome is well known. Desmoid tumour remains unfamiliar to most clinicians, but it should be considered as a differential diagnosis in certain clinical settings.

CASE REPORT

A 45-years-old Chinese male who had previously had abdominal surgery for traumatic mesenteric injury and bowel gangrene complained of a lower abdominal mass below the midline surgical scar. A mobile intra-abdominal mass was palpable on physical examination.

Computed tomography (CT) scan of the abdomen and pelvis was performed. A large slightly heterogeneous soft tissue mass with mild contrast enhancement was noted immediately below the anterior midline abdominal surgical scar. The mass was well defined and appeared to be abutting the anterior abdominal wall (Figure 1).

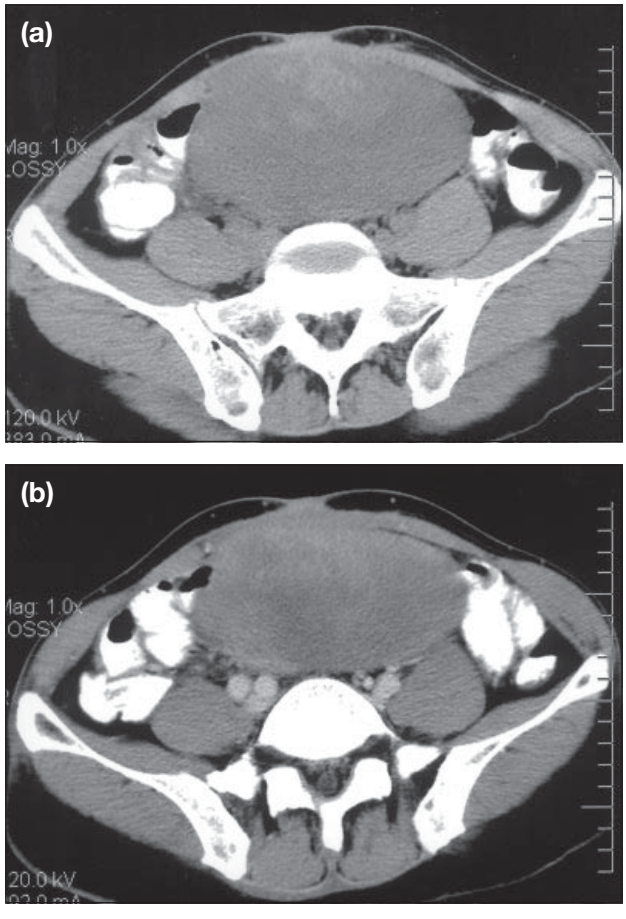

Figure 1. Axial sections of the computed tomography scan (a) with and (b) without contrast demonstrating the well defined large soft tissue tumour mass. It was of mildly mixed density on pre-contrast scan and appeared slightly enhanced with contrast injection.

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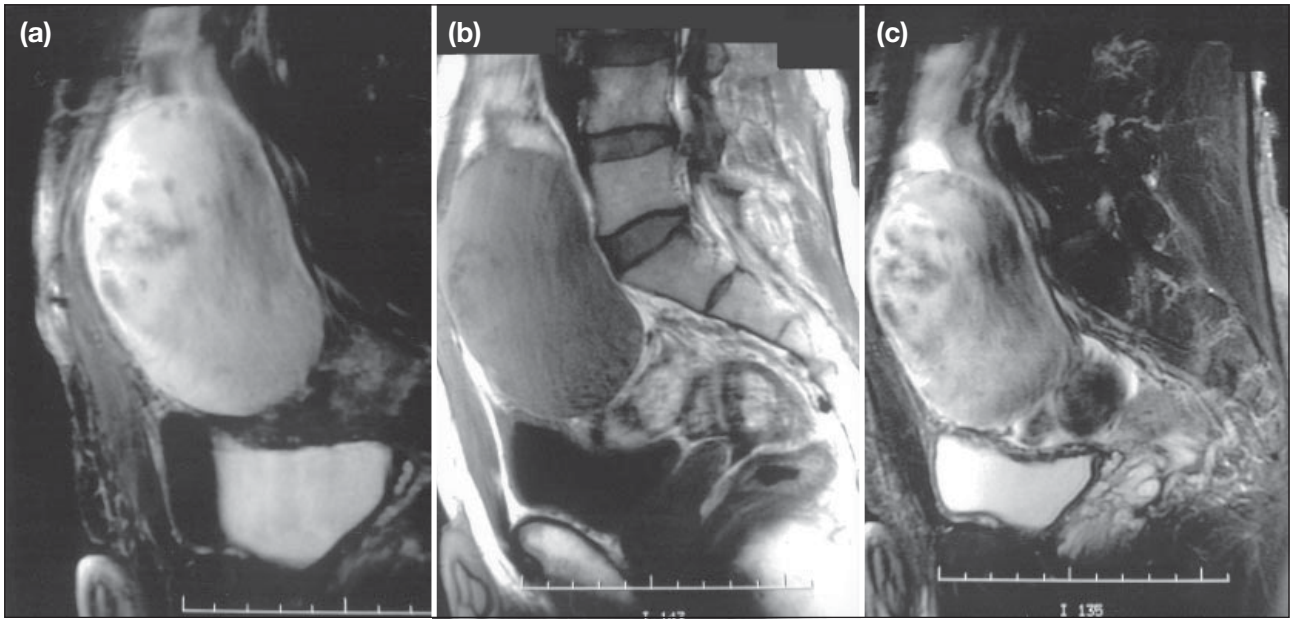

Figure 2. Sagital magnetic resononance imaging. (a) Sagittal fat saturation T1 image with contrast injection showing the heterogeneously enhancing mass lesion. The contrast enhancement was more readily appreciated with magnetic resonance images compared with computed tomography scan. (b) Sagittal T1 and (c) T2 images of magnetic resonance imaging. The tumour was isointense to hypointense to muscle on T1 image and of mixed high signal intensity on T2 images.

Magnetic resonance imaging (MRI) was later performed and this demonstrated a heterogeneously enhancing intra-abdominal mass as seen in the CT examination (Figure 2a). The mass was isointense to hypointense to muscle on T1- and of mixed high intensity on T2-weighted images (Figures 2b and 2c).

Biopsy was subsequently performed and desmoid tumour was diagnosed. The tumour mass was then surgically resected. At operation, a large lesion was noted just beneath the midline surgical scar, which adhered to the distal ileum and could not be freed from the tumour (Figure 3). Part of the distal ileum was resected with the desmoid tumour and end-to-end ileo-ileal anastomosis was performed. Adjuvant chemotherapy or radiotherapy was planned for the patient after surgery.

DISCUSSION

The patient had 2 abdominal operations approximately 1 year previously for bowel gangrene caused by mesenteric injury and complicating abscesses. The case has been previously reported.[1] After only 1 year, the patient presented with a large abdominal mass just beneath the surgical scar. The heterogeneously enhancing soft tissue mass noted on CT scan was non-specific. Various soft tissue tumours could present similar finding. However, with a history of previous surgery, desmoid tumour was offered as a differential diagnosis. MRI findings were also non-specific with similar features of a heterogeneously enhancing mass. The signal appearance on pre-contrast images, isointense to low signal on T1- and heterogeneously high on T2-weighted images, did not help with tumour characterisation. Pathological diagnosis by biopsy of the mass was necessary to confirm the diagnosis.

Desmoid tumour is a rare lesion. Neither radiologists nor clinicians are so familiar with this diagnosis when the tumour is first encountered in their practice. In view of the non-specific imaging findings, radiologists may not be able to make a correct diagnosis of the tumour.

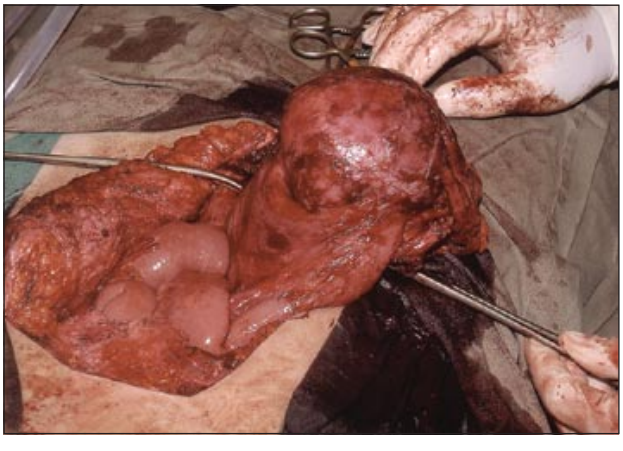

Figure 3. Resection of the tumour mass. The close relationship and attachment of the mass to the adjacent mesentery and bowel structure is well illustrated.

For the surgeon and oncologist, difficulties are also encountered in the management of this 'benign' tumour. For an intra-abdominal desmoid tumour, the mass may arise from the anterior abdominal wall, mesentery, and retroperitoneum. Although desmoid shows benign microscopic features, the lesion is locally aggressive with infiltrative growth into surrounding structures. The pressure effect and invasion to local structures leads to significant morbidity and mortality. A high recurrence rate after surgery of approximately 25% is well documented[2,3] because of the infiltrative nature of the lesion with resultant incomplete resection at operation.

Desmoid tumour could be assessed by a number of imaging examinations. In view of the non-specific imaging appearance of the soft tissue mass, the role of imaging is mainly to define the extent of the tumour and to detect complications such as small bowel obstruction and hydronephrosis.[4] Both CT and MRI are used extensively for this purpose. Desmoid lesions may have ill defined margins or, conversely, may appear as a well defined mass.[5] At CT, the tumour is of variable attenuation with respect to muscle. Moreover, variable enhancement is also noted with contrast injection. MRI findings are similar to those seen with CT. On T1WI, the lesion is usually of low signal. Variable T2 signal appearance and contrast enhancement are noted for the tumour. Healy et al noted that both MRI and CT were comparable in assessment of the site and margin of the desmoid tumour.[6] However, contrast enhancement was more readily demonstrated on MRI as was shown in this patient. A specific finding of the relationship between high T2 signal intensity and marked growth of the tumour at follow-up imaging was delineated in this study. With the better soft tissue contrast resolution of MRI and contrast agent used, it comes as no surprise that MRI is more sensitive for demonstrating tumour enhancement. The desmoid lesion in this patient is also of mixed high signal intensity on T2 weighted images.

This patient had 2 abdominal operations 1 year before the presentation of this tumour. It is therefore reasonable to assume that the tumour had attained its large size within the year and would be a fast growing tumour. The characterisation of this subset of fast-growing desmoid tumour does have clinical implications. The management of intra-abdominal desmoid tumour is difficult. Related to the unpredictable behaviour and infiltrative nature of the lesion, both surgical and non-surgical treatments have been used to treat the disease with disappointing results. Difficulty is encountered in achieving complete resection of the tumour as it may infiltrate to vital surrounding structures. Non-surgical treatment such as chemotherapy or radiotherapy shows variable results. Middleton et al advocate surgical treatment for large and rapidly growing desmoid tumours as they usually do not respond to non-surgical treatment.[7]

In conclusion, this patient had a fast-growing post-traumatic intra-abdominal desmoid tumour. The variable and non-specific imaging features make radiological diagnosis difficult. In the correct clinical context of previous abdominal surgery or injury, or Gardner syndrome, the radiologist should be alerted to this rare disease.

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