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CASE REPORT

Decubital Ischaemic Fasciitis: a Rare Pseudosarcoma

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ABSTRACT

This report is of a patient with decubital ischaemic fasciitis. A 64-year-old woman presented with a right buttock mass for 1 month. She had a past history of a malignant fibrous histiocytoma at the right forearm, which had been treated. Ultrasound and magnetic resonance imaging of the buttock lesion showed a subcutaneous mass near the bony prominence of the anterior superior iliac spine. The lesion contained blood products and fat tissue. Contrast enhancement was noted and a well-preserved fat plane was present between the lesion and the underlying iliotibial band. The diagnosis was confirmed by excisional biopsy. The magnetic resonance imaging features of this lesion are not well described in the literature and the sonographic appearance of this lesion has not been described. Decubital ischaemic fasciitis can simulate soft tissue sarcoma, both clinically and pathologically. It is therefore important to recognise the imaging features to avert a misdiagnosis of sarcoma.

Key Words: *Fasciitis; Magnetic resonance imaging; Sarcoma; Ultrasonography*

中文摘要

褥瘡缺血性筋膜炎：一種罕見假肉瘤

蘇超駒、李安慈、紀紹綱、袁銘強

這份報告是描述一個患有褥瘡缺血性筋膜炎的病人。這病人是一位患有右臀部腫塊一個月的64歲女子。她曾經患有一個右前臂惡性纖維性組織細胞瘤, 後來已被治癒。超聲波掃描及磁共振成像顯示一個皮下腫塊位於右悢前上棘附近。病灶內包含血塊和脂肪組織。病灶顯示顯影增強以及一層保存完好的脂肪位於病灶與髂脛帶之間。切除性活組織檢查證實了診斷。這種病變的磁共振成像特徵在醫學文獻中沒有詳細的描述，而超聲波掃描的特徵更是從未提及。於臨床和病理檢查中，褥瘡缺血性筋膜炎可以模擬惡性軟組織肉瘤。因此，必須認識褥瘡缺血性筋膜炎的影像特徵，以避免誤診惡性軟組織肉瘤。

INTRODUCTION

Decubital ischaemic fasciitis, also known as atypical decubital fibroplasia and ischaemic fasciitis,[1,2] is usually found in the deep subcutaneous layer overlying a bony prominence or pressure point of debilitated and immobilised elderly patients. Reported anatomical sites include the soft tissue overlying the shoulder, posterior chest wall, sacrum, greater trochanter, buttock, thigh, arm, bony excrescence of melorheostotic deformity and, most recently, the vulvovagina region.[1-4] Decubital ischaemic fasciitis is a reactive mass-forming non-neoplastic lesion. The formation of this pseudosarcomatous lesion is

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probably related to pressure-induced intermittent ischaemia,[5] tissue breakdown and regenerative changes.

Apart from the series of 3 patients reported by Ilaslan et al,[6] there have been no other descriptions of the magnetic resonance imaging (MRI) features of decubital ischaemic fasciitis in the literature, and the sonographic appearance has not been described before. Decubital ischaemic fasciitis can mimic soft tissue sarcoma, both clinically and pathologically, so it is important to recognise the imaging features to avoid misdiagnosis and unnecessary intervention.

CASE REPORT

A 64-year-old woman presented in 2007 with a history of a pigmented right buttock mass for 1 month. The patient had a history of malignant fibrous histiocytoma in her right forearm. Surgical resection of the forearm mass was performed and postoperative adjuvant radiotherapy was completed 1 month before she presented with the buttock mass. She had schizophrenia, but she was independent in activities of daily living. There were no episodes of fever or injury associated with the buttock lesion. At physical examination, the lesion was palpable and measured about 4 cm in size. There was pigmentation of the skin overlying the palpable mass. Laboratory investigations were unremarkable.

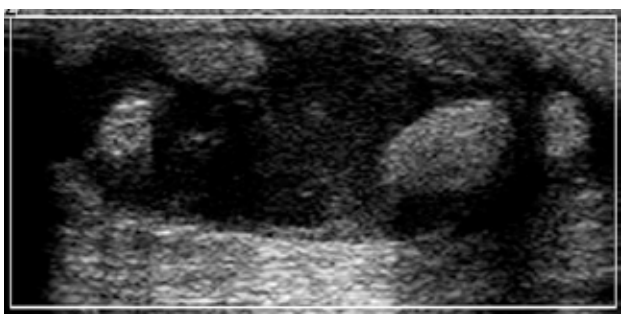

Figure 1. Longitudinal ultrasound image showing multiple echogenic nodules with posterior acoustic shadowing and no vascularity at the peripheral part of the mass, which correspond to blood products on histological examination.

As the patient had a previous history of a sarcoma of the right forearm, a positron-emission tomography scan was performed, which revealed mildly increased uptake over the area of the right buttock mass. Ultrasound scan showed a gently lobulated hypoechoic subcutaneous lesion with multiple subcentimetre echogenic oval nodules at the peripheral part of the lesion, which demonstrated posterior acoustic shadowing (Figure 1). MRI confirmed the presence of a subcutaneous nodule inferior and lateral to the anterior superior iliac spine. The lesion measured 3.2 x 1.2 x 4.0 cm. Most of the lesion was hypointense in T1-weighted sequence and hyperintense in T2-weighted sequence, and demonstrated contrast enhancement. The peripheral echogenic nodules identified by ultrasound corresponded to the T1-weighted hyperintense and T2-weighted hypo- or hyperintense foci, with no contrast enhancement (Figure 2), and were compatible with blood products on histological examination (Figure 3). Some fat tissues with signal intensity matching the subcutaneous fat in all sequences were also found within the lesion (Figure 4). The mass extended alongside, but was separated from, the iliotibial tract by a well-preserved fat plane (Figure 5). No abnormal signal or contrast enhancement was seen in the iliotibital tract. Cortical and marrow signals of the adjacent anterior superior iliac spine were normal. Cutaneous tissue overlying the mass was mildly thickened and showed contrast enhancement (Figure 4).

Based on the clinical history of such a rapidly developing soft tissue mass in a patient with a previous history of malignant fibrous histiocytoma, an excisional biopsy was performed under local anaesthesia. Pathological

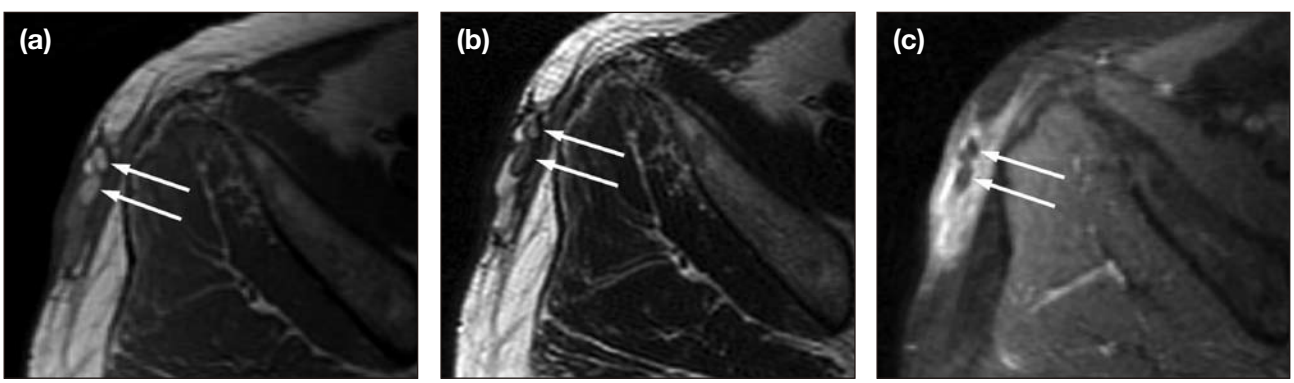

Figure 2. Axial magnetic resonance images showing T1-weighted hyperintense, T2-weighted hypointense, and non-enhanced blood products (arrows) at the lesion's periphery. (a) T1-weighted image; (b) T2-weighted image; and (c) Gadolinium-enhanced and fat-saturated T1-weighted image.

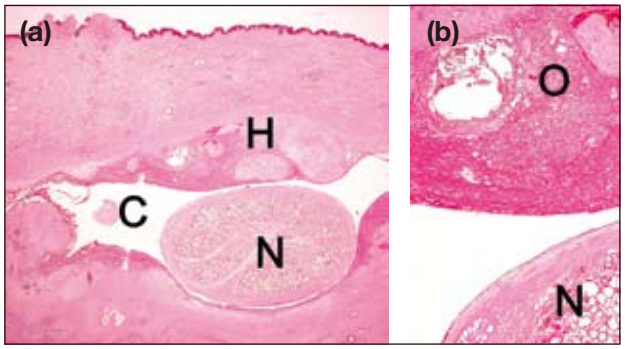

Figure 3. Histological examination of decubital ischaemic fasciitis showing (a) a central zone of fat necrosis (N) and cystic change (C), rimmed by a peripheral zone of haemorrhage, fibrin, endothelial, and fibroblastic proliferation (H) [original magnification, x 1]; and (b) increase in vascularity at the peripheral zone of the lesion — central fat necrosis (N) rimmed by fibrin and organisation with endothelial-lined vascular spaces (O) are present (original magnification, x 4).

examination confirmed the diagnosis of decubital ischaemic fasciitis. There was central liquefactive necrosis of fibroadipose tissue, surrounded by a zone of fibroblastic and vascular proliferation with atypical fibroblastic and endothelial cells. According to the medical records, there was no local recurrence of this lesion.

DISCUSSION

The entity of decubital ischaemic fasciitis was first described as atypical decubital fibroplasia by Montgomery et al in 1992.[1] These authors reported 28 patients with this distinctive type of pseudosarcomatous fibroblastic proliferation, which was found in the deep subcutaneous layer. Most patients in the series were physically debilitated and immobilised. Perosio and Weiss then described another series of 6 patients with similar lesions using the term ischaemic fasciitis.[2] The term decubital ischaemic fasciitis was adopted by Ilaslan et al, who first described the MRI features of this lesion in a series of 3 patients.[6] The term decubital ischaemic fasciitis comprehensively implies the aetiological cause and pathological changes of this lesion.

Decubital ischaemic fasciitis is usually found in the deep subcutaneous layer overlying a bony prominence or pressure point of debilitated and immobilised elderly patients. Reported anatomical sites include the soft tissue overlying the shoulder, posterior chest wall, sacrum, greater trochanter, buttock, thigh, arm, bony excrescence of melorheostotic deformity, and the vulvovagina region.[1-4] Decubital ischaemic fasciitis is a non-neoplastic lesion and is considered to be a degenerative and reparative process. The formation is probably related to pressure-induced intermittent ischemia,[5] tissue breakdown, and regenerative changes. Local recurrence of decubital ischaemic fasciitis rarely occurs and no metastasis has been reported in the literature. Of the approximately 40 published patients, only 4 developed local recurrence.[1-3,5,7,8]

Ultrasound scan of the mass in this patient revealed a gently lobulated hypoechoic lesion with multiple subcentimetre echogenic nodules at the peripheral part of the lesion. The nodules demonstrated posterior acoustic shadowing. The nodules were T1-weighted hyperintense and T2-weighted hypo- or hyperintense foci, showing no contrast enhancement on MRI. On histological examination, the position of these nodules corresponded to the lesion's peripheral zone, which consisted of small or ectatic vessel proliferation, haemorrhage, fibrin, thrombin, and fibroblastic proliferation. The echogenic nodules were therefore compatible with blood products.

Areas of fat tissue were also identified in both the periphery and centre of the mass. Fat tissue at the periphery of the lesion can be explained by the inclusion of adjacent normal subcutaneous fat at the proliferative

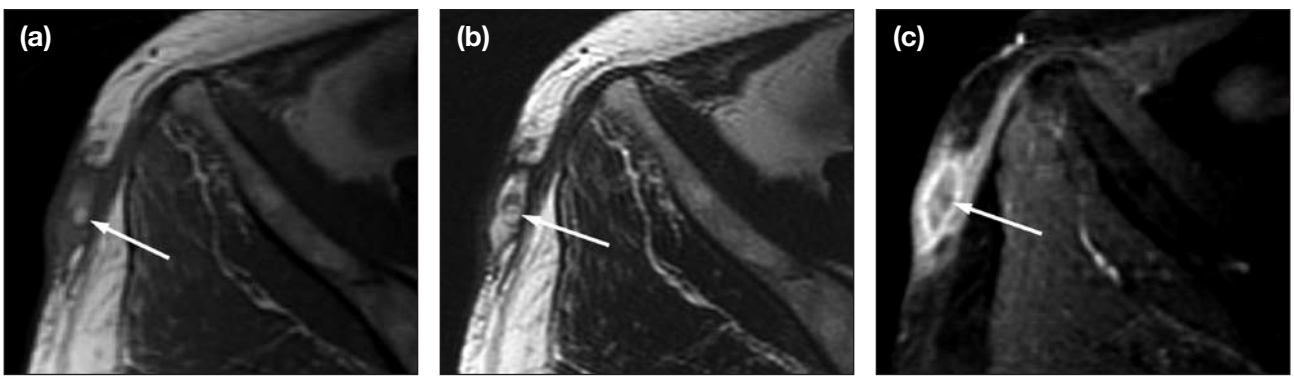

Figure 4. Axial magnetic resonance images showing macroscopic fat (arrow) in the centre of the lesion. There is peripheral contrast enhancement of the lesion, and overlying skin thickening with contrast enhancement. (a) T1-weighted image; (b) T2-weighted image; and (c) Gadolinium-enhanced and fat-saturated T1-weighted image.

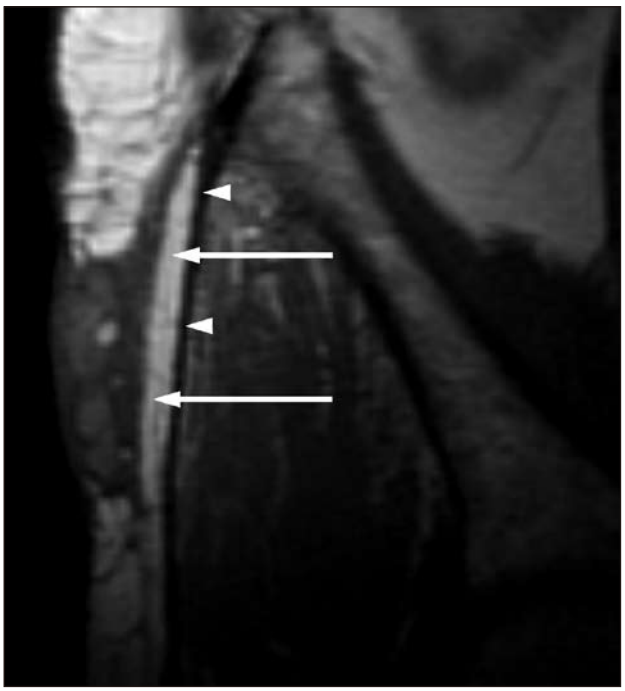

Figure 5. Coronal T1-weighted magnetic resonance image showing a well-preserved fat plane (arrows) between the mass and underlying iliotibial band (arrowheads).

margin of the lesion. Macroscopic fat noted at the centre of the lesion would correspond to an area of fat necrosis, which is characteristically present in the centre of decubital ischaemic fasciitis. This imaging finding is consistent with the central ischemia and necrosis noticed by Ilaslan et al.[6] The presence of macroscopic fat within the necrotic area was clearly demonstrated in this patient.

Areas with contrast enhancement were mainly noted at the periphery of the lesion. Histological examination of these areas revealed increased vascularity with endothelial-lined vascular spaces and capillary proliferation in fibrin. Non-enhanced areas of necrosis were present in the centre of the lesion.

Thickening of the skin with abnormal contrast enhancement was present overlying the mass-forming lesion in this patient. This feature was not present in the series described by Ilaslan et al.[6] In their series, the skin overlying the lesion was intact.[6] Although extension of decubital ischaemic fasciitis, which is primarily a subcutaneous lesion, into the dermis or epidermis is not a common phenomenon, it is well documented. All of the 28 patients described by Montgomery et al showed minor dermal extension, and 2 showed foci of epidermal erosion.[1]

Distinction of decubital ischaemic fasciitis from malignancy such as liposarcoma, which is also fat-containing, or other soft tissue sarcoma could rely on its relationship with the adjacent structures. In the series described by Ilaslan et al, decubital ischaemic fasciitis straddled the iliotibial band on both sides without causing any abnormal signal or contrast enhancement of the iliotibial band.[6] In this patient, the lesion was in close superficial proximity to the iliotibial band, but a clear and well-defined fat plane was preserved between the structures. No abnormal marrow signal was present in the adjacent osseous structures either in this patient or in the series by Ilaslan et al.[6] These features could help to distinguish decubital ischaemic fasciitis from more aggressive malignancy.

Decubital ischaemic fasciitis is well known to mimic a sarcomatous lesion pathologically.[1] If fine-needle aspiration cytology is used as a tool for tissue diagnosis, the findings could be interpreted as suspicious or strongly suggestive of malignancy.[9] It is therefore important for radiologists to recognise the characteristic imaging features of decubital ischaemic fasciitis, or at least note it as a differential diagnosis. Communication between the pathologist and radiologist will help to avert a misdiagnosis of malignancy.

This report is of an unusual example of decubital ischaemic fasciitis in a patient without a history of immobilisation. However, given the characteristic features on MRI and ultrasonography, radiologists should be able to recognise this rare lesion and distinguish it from other malignant growths, although this condition does have overlapping features with other soft tissue tumours. During ultrasonography, this subcutaneous lesion was hypoechoic and nodules of echogenic blood products were present in the peripheral part of the mass. On MRI, the periphery of the lesion showed increased vascularity with contrast enhancement and central areas of non-enhanced fat necrosis were present. Macroscopic fat was noted within the central area of fat necrosis. Fat and blood products were also depicted at the periphery of the lesion. Cutaneous tissue overlying the mass was also involved. Soft tissue and osseous structures adjacent to this benign lesion were intact.

In conclusion, decubital ischaemic fasciitis is a rare pseudosarcomatous lesion that is found in the deep subcutaneous layer overlying a bony prominence or pressure point in a debilitated and immobilised elderly patient. The underlying aetiological cause is related to pressure-induced intermittent ischaemia. Since most decubital ischaemic fasciitis can be treated by

con-servative local excision, it is important to be aware of this entity and avoid misdiagnosis and unnecessary intervention.[1,4,9]

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