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Armor-like calcinosis in systemic lupus erythematosus

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(Letter to the Editor)

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Running title: Armor-like calcinosis in SLE

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Dear Editor,

A 50-year-old Japanese woman presented with 20 cm sized, tender, intra to subcutaneous, stony hard nodules/plaques on her extremities and trunk (Fig. 1 (a), (b)). She had been undergoing treatment for systemic lupus erythematosus (SLE) for about 25 years. Facial erythema, leukocytopenia, positive anti-nuclear antibody (ANA), positive anti-DNA antibody, and hypocomplementemia led to the diagnosis of SLE during her pregnancy when she was 26 years old. Renal biopsy revealed mesangial proliferative glomerulonephritis. She was treated with an initial dose of 40 mg/day of prednisolone (PSL), which was gradually tapered to 10 mg/day. Blood analysis did not show any active signs of SLE such as increasing erythrocyte sedimentation rate, anti-DNA antibody, hypocomplementemia, or other general symptoms during the last 10 years. Although creatinine-clearance showed moderate renal dysfunction (44 ml/min), serum calcium, phosphorus, calcitonin, parathyroid hormone (PTH), and PTH-related peptide were within normal limits. Roentogenography and computed tomography revealed massive dermal subcutaneous calcification from skin to subcutaneous tissues on the extremities and trunk (Fig. 1 (c), (d)). Histopathology showed perivascular lymphocytic infiltration in dermis and subcutaneous fat lobules, membranocystic degeneration, and massive calcification in subcutaneous fat without any signs of

vasculitis (Fig. 2). These findings led to the diagnosis of lupus erythematosus profundus (LEP) with massive dystrophic calcinosis in SLE. Because the presence of an indurated erythematous halo around the calcified lesions suggested the progression of the lesion, oral PSL was increased to 30 mg/day, which was effective in controlling the inflammatory symptoms. Despite the use of oral aluminum gel, carbon dioxide laser abrasion, and 100-150 mg/day of mizoribine, the calcification gradually progressed, for which only surgical removal was effective. Because of the co-existence of pancreatic cancer, the immunosuppressant was discontinued and 8 mg/day of PSL effectively controlled the patient's SLE as well as the inflammation around calcified nodules.

Cutaneous calcinosis has been classified into metastatic, dystrophic, idiopathic, and iatrogenic subtypes, and among them the dystrophic calcinosis is the most common in collagen diseases. Localized calcinosis cutis induced by dystrophic mechanism due to microangiopathy, or chronic inflammatory condition of skin and subcutaneous tissue is occasionally observed in collagen diseases, such as scleroderma and dermatomyositis. Extensive calcification is well-known in juvenile dermatomyositis[1], while it is quite rare in SLE. Our patient showed armor-like calcinosis on her arms and hips. Since histopathology revealed the lymphocytic panniculitis around the calcification, dystrophic mechanism due to lupus erythematosus

profundus was suggested. Although her SLE had been well controlled by a relatively low dosage of PSL, a tender erythematous halo around the calcinosis remained. PSL (30 mg/day), which succeeded in controlling the inflammation, delayed the enlargement of calcifying lesions. Previous reports show that ANA is negative in more than 50% of LEP patients[2] and the clinical course of LEP are not correlated with the activity of SLE[3]. As LEP sometimes develops following injury such as injection and skin biopsy[4], secondary inflammation/local microangiopathy could participate in the pathomechanism of LEP. Although membranocystic degeneration observed in LEP is often observed in other chronic panniculitis, such as those associated with venous insufficiency[5] or nodular fat necrosis[6], calcification is not necessarily associated with the inflammatory cell infiltration as seen in the present case (Fig. 2 (a) and (b)). Therefore, the membranocystic degeneration per se might be a direct trigger of the dystrophic calcification resulting in the progressive calcification despite of sufficient PSL dose controlling inflammation in our case.

For the treatment of cutaneous calcinosis, no evidence-based protocol has been established. Although low-dose warfarin[7], calcium blocker[8], aluminum hydrochloride[9] or minocycline[10] have been applied for cutaneous calcinosis, these are effective only for small calcium deposition. Therefore the surgical procedure seems to

be the only reliable maneuver for massive calcinosis[4]. Abrasion using CO_2 laser on the painful lesion was not effective for the markedly thickened calcification in our case.

In our case, extensive calcinosis with LEP was manifested in spite of well controlled SLE and only surgical resection was effective. LEP should be carefully evaluated during the clinical course of SLE, because LEP might induce massive calcified lesions with considerable morbidity.

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Figure legend

Figure 1: Clinical features of the case

(a) Calcification of her left upper arm

(b) Calcification of her hip

(c) Roentgenography of her left hip. The left femoral head had been surgically replaced because of her aseptic bone necrosis. Arrow heads indicate calcification.

(d) Computed tomography shows massive calcification of her hips

Figure 2: Histopathology of the lesions

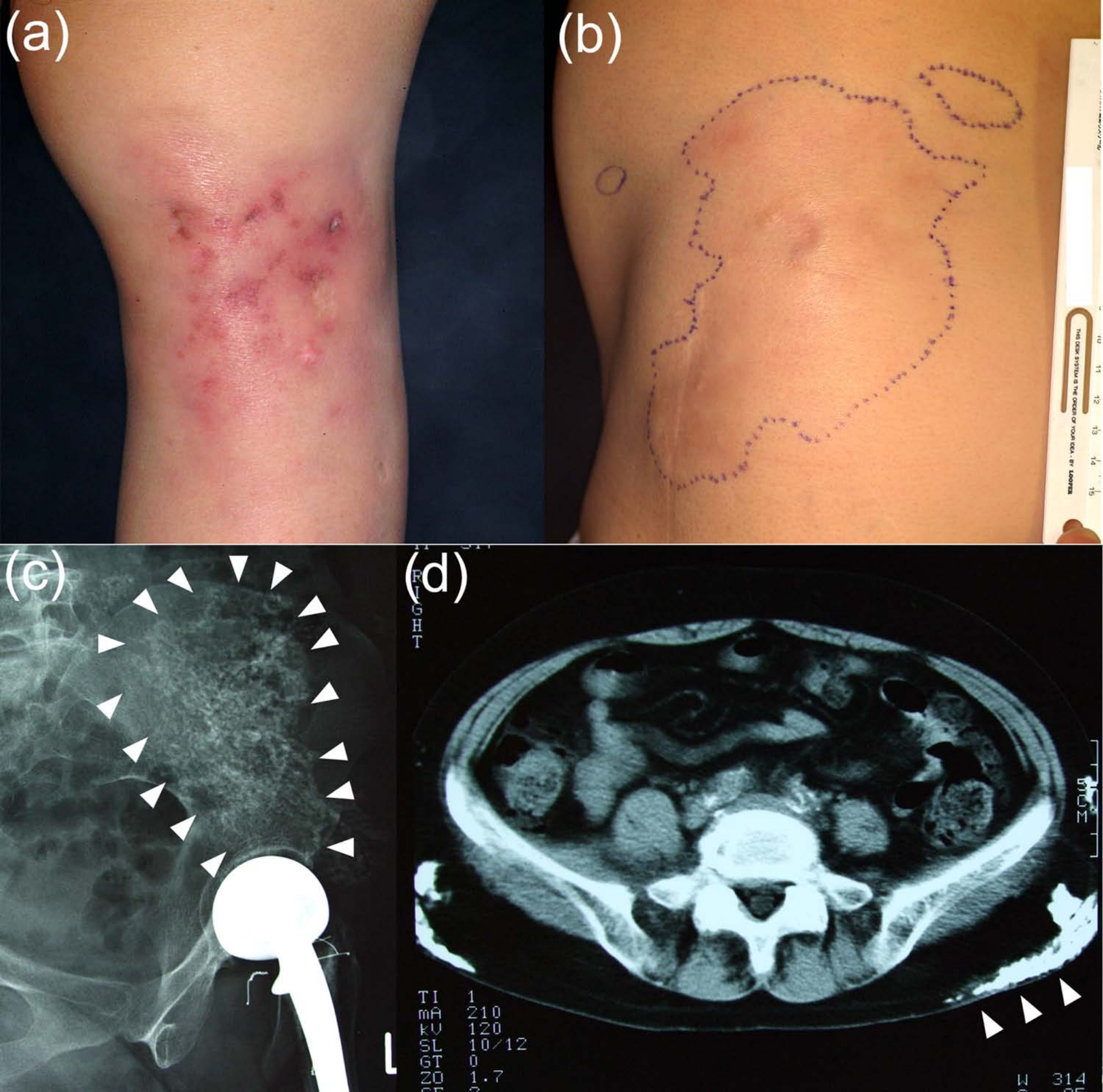
(a) Calcified nodule is located in dermis to subcutaneous fat.

(b) Membranocystic degeneration is observed in fat lobules.

(c) Histopathology of the indurated tender erythema. Inflammatory infiltrates are noted in the subcutaneous fat.

(d) High power view of the subcutaneous fat in (c). Massive lymphocytic infiltrates are observed in fat lobules.

Scale bars indicate 1mm ((a) and (c)) and 200μm ((b) and (d))


(a)
(b)
(c)
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RIGHT
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kV 120
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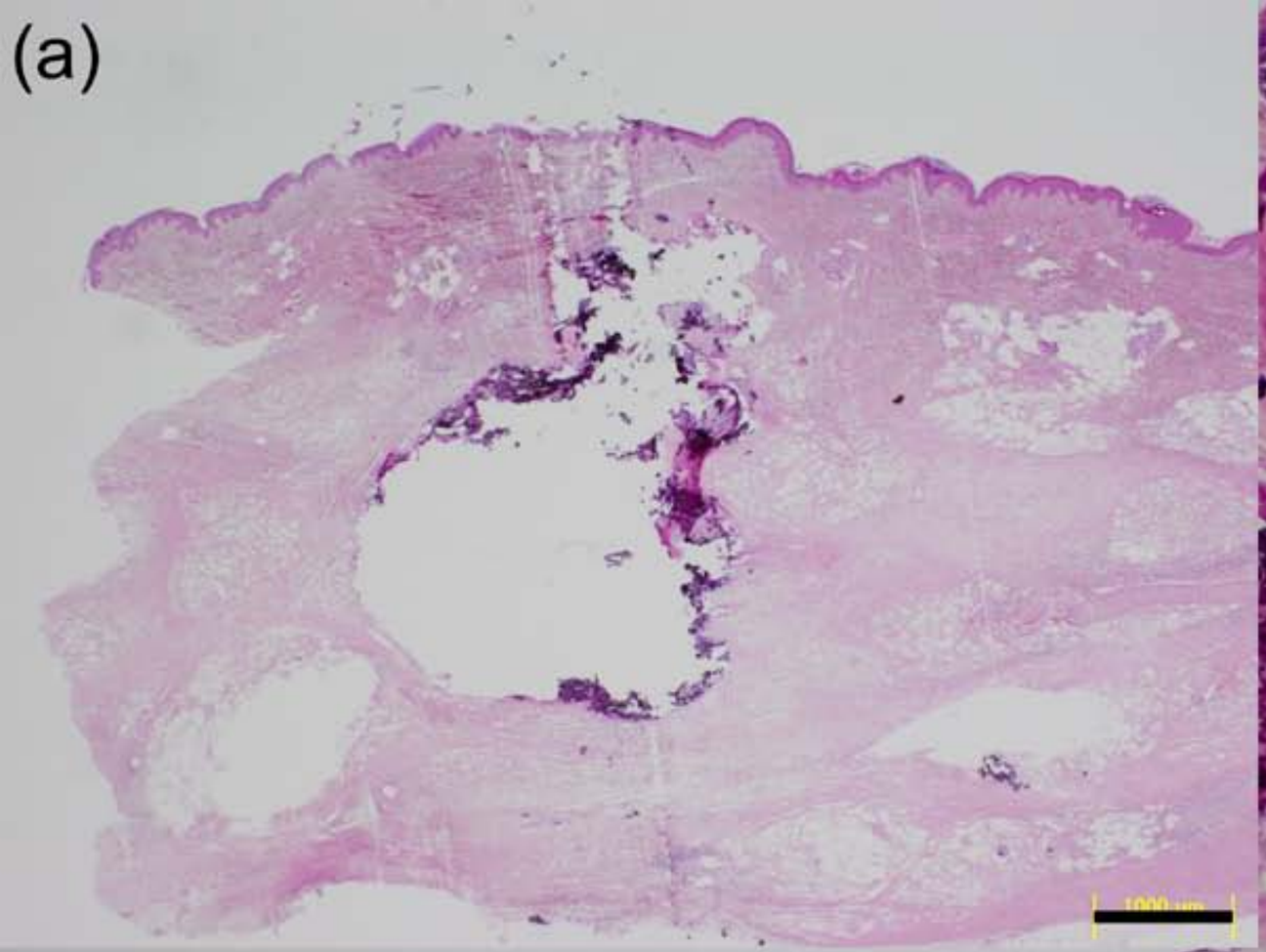
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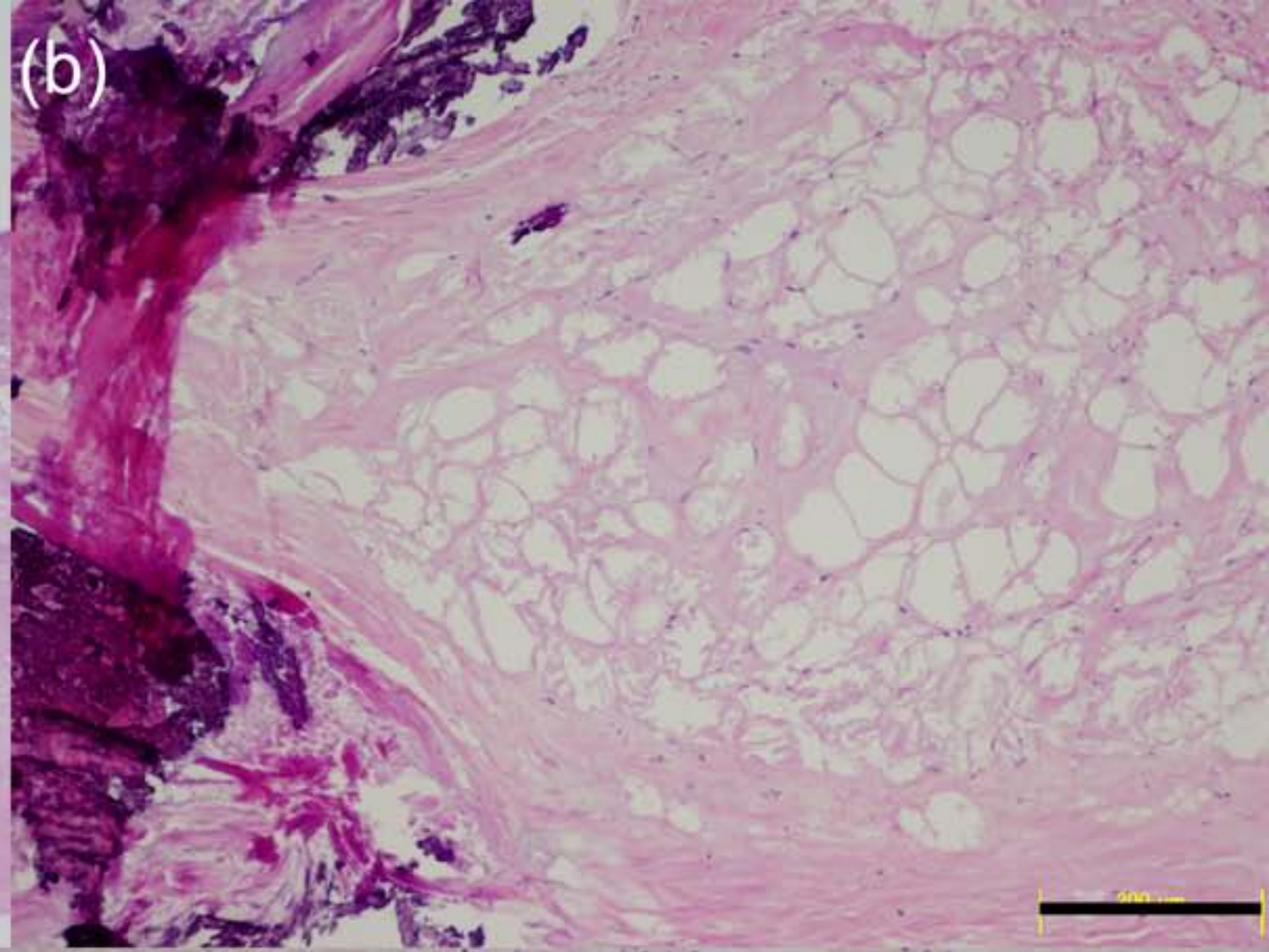
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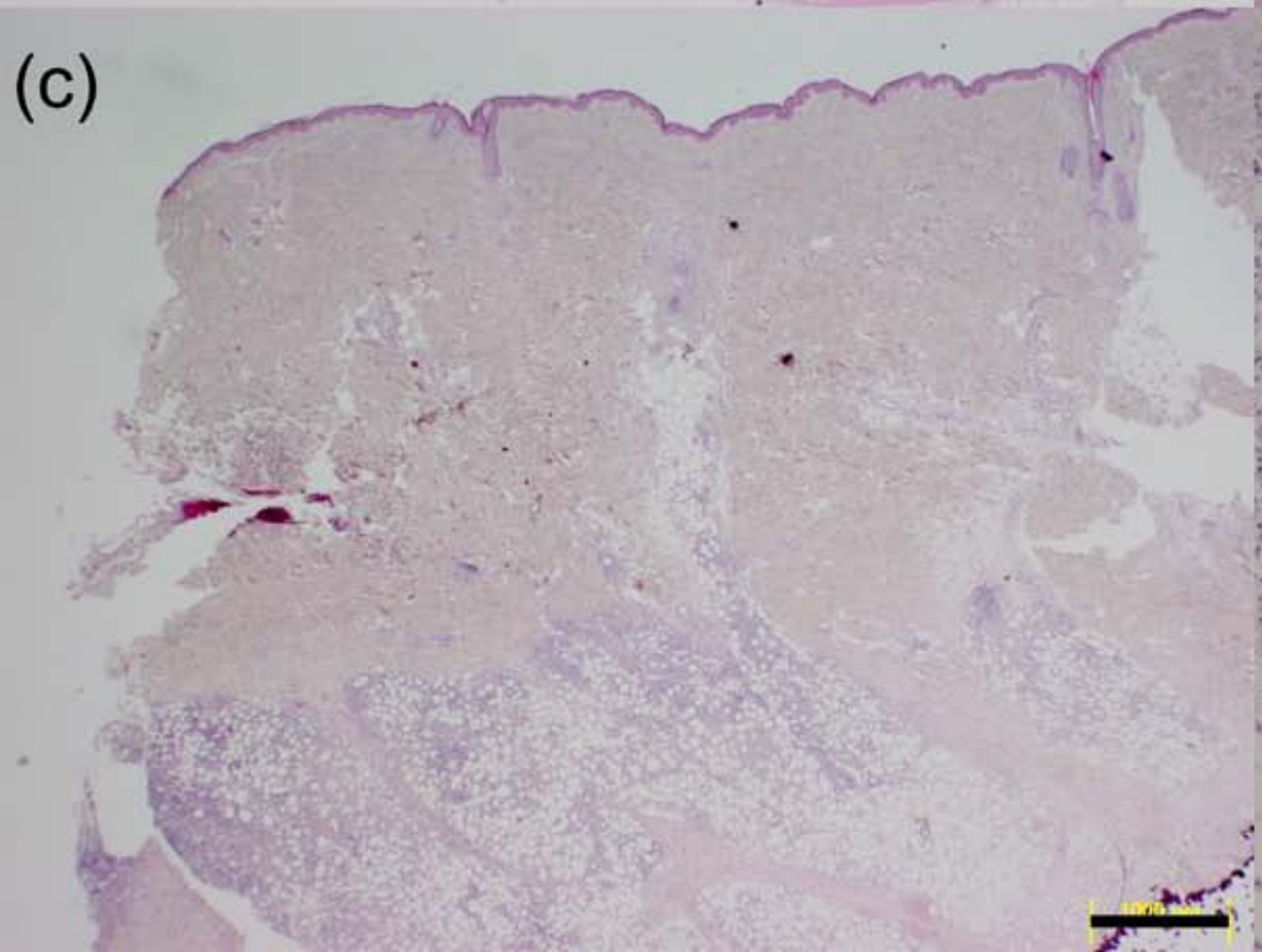
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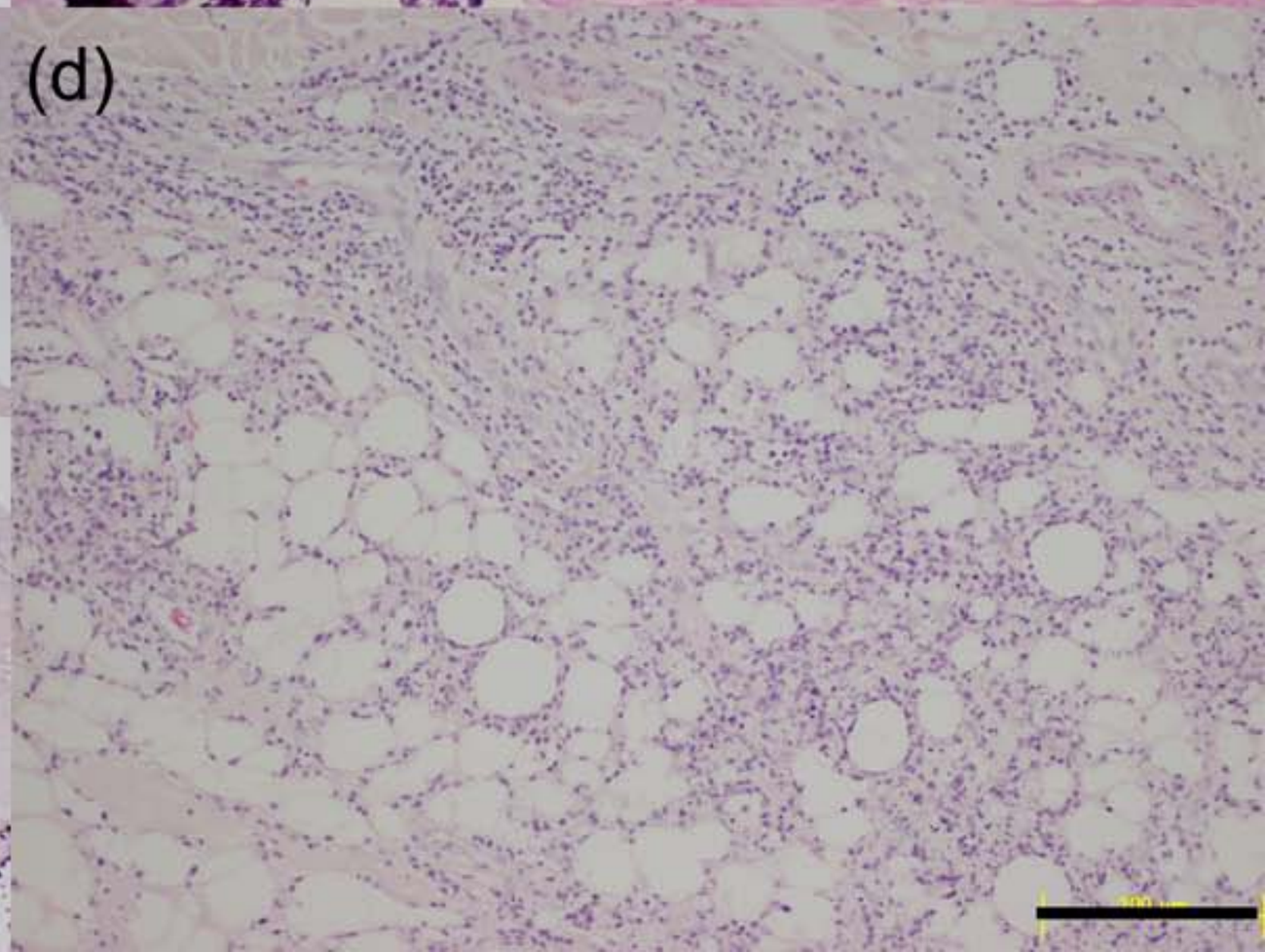
(d)