Light chain amyloidosis presenting as retiform purpura

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Key words: amyloid; multiple myeloma; retiform purpura.

INTRODUCTION

Retiform purpura is a cutaneous sign indicative of vascular damage leading to ischemia, purpura, and necrosis.[1] Dermal vascular compromise occurs because of damage of the endothelium or occlusion of the vessel lumen. Herein, we present a patient with retiform purpura, found to have immunoglobulin light chain amyloidosis.

CASE REPORT

A 55-year-old man with a history of cocaine use, pyoderma gangrenosum, and smoldering lambda light chain multiple myeloma presented to the emergency department with a 2-week history of painful cutaneous lesions of the trunk and lower extremities. The patient was hemodynamically stable and had violaceous, retiform plaques with overlying necrotic eschars involving the axillae, flanks, buttocks, and thighs on physical examination (Fig 1). There was no palpable lymphadenopathy. Review of systems was notable for a 50 lbs weight loss over 11 months and tingling in hands and feet, bilaterally. One year prior, he was admitted for pyoderma gangrenosum and the bone marrow biopsy revealed smoldering lambda light chain multiple myeloma without any end-organ damage.

Laboratory evaluation was notable for leukocytosis with neutrophilic predominance, normal renal function, elevated erythrocyte sedimentation rate and c-reactive protein, and normal coagulation factors. The antineutrophil cytoplasmic autoantibody (ANCA) tests for myeloproxidase antibody IgG (p-ANCA) and serine protease 3 antibody IgG (c-ANCA) were negative. Additionally, the urine toxicology was positive for cocaine and opiates.

Abbreviation used:

ANCA: anti-neutrophil cytoplasmic autoantibody

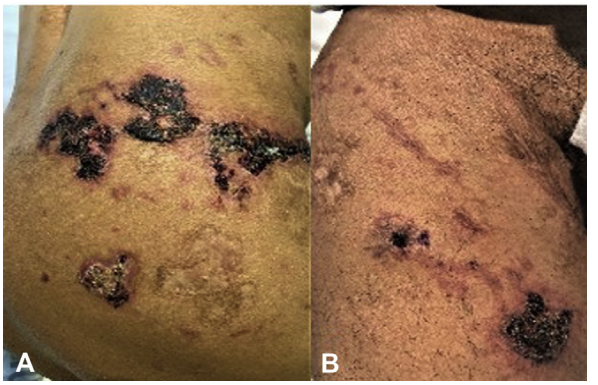

Fig 1. Violaceous retiform plaques, with overlying necrotic eschars involving the (**A**) right flank and (**B**) right thigh.

In the emergency department, punch biopsies of skin were performed for hematoxylin-eosin staining and bacterial, fungal, and acid-fast bacillus tissue cultures. The hematoxylin-eosin staining showed amorphous pink deposits in vessel walls (Fig 2, *A* and *B*), which exhibited classic orangeophilia with the Congo red stain (Fig 2, *C*) and apple-green birefringence when polarized. Furthermore, there was no evidence of either vasculitis or vasculopathy on pathology. Immunofluorescence microscopy (Fig 2, *D*) confirmed lambda light chain amyloidosis. Kappa to lambda light chain ratio was 0.05 mg/dL (normal range is 0.26-1.65 mg/dL). Cardiac magnetic

From the Department of Dermatology, Columbia University Irving Medical Center, New York.
Funding sources: None.
IRB approval status: Not applicable.
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JAAD Case Reports 2021;12:34-6.
2352-5126

https://doi.org/10.1016/j.jdcr.2021.03.051

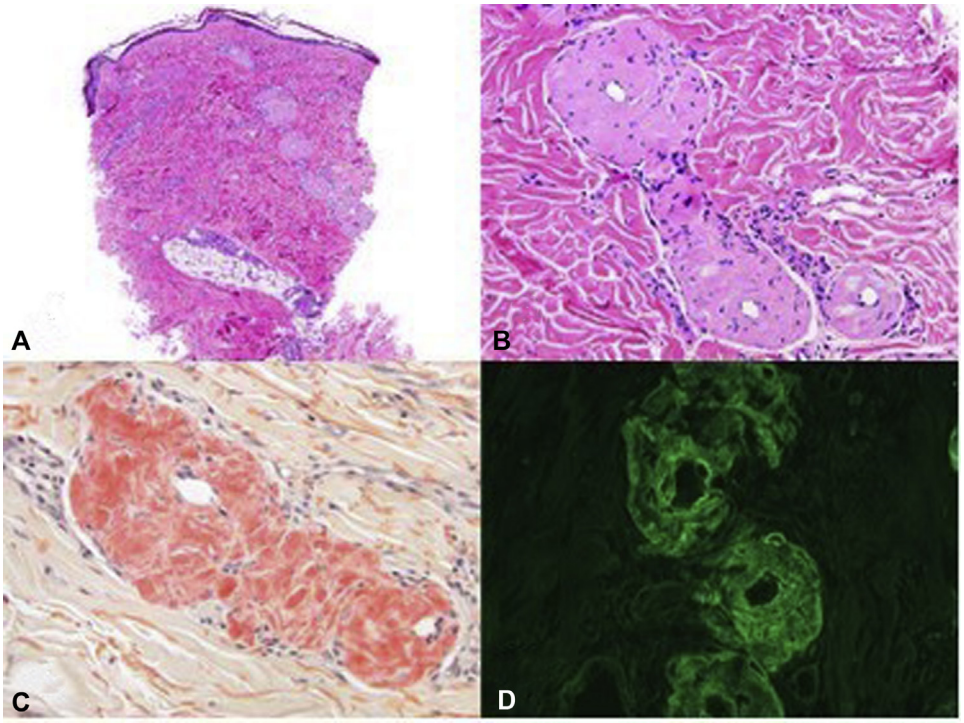

Fig 2. Punch biopsy of a back lesion. **A**, Low power (×40) and (**B**) high power (×200) hematoxylin and eosin stains showing perivascular deposits of eosinophilic, amorphous globular material, consistent with a myeloid. **C**, Congo red stain (×400) is positive in these deposits. **D**, Direct immunofluorescence studies performed on the biopsy indicate light chain amyloidosis-lambda type.

resonance imaging demonstrated subendocardial foci of late gadolinium enhancement in the left ventricle consistent with the presence of amyloid deposition and/or cocaine-induced ischemia. No organ involvement was identified on the computed tomography scan of the abdomen and pelvis. Treatment with cyclophosphamide, bortezomib, and dexamethasone with daratumumab was initiated for systemic light chain amyloidosis in concert with oncology. The patient demonstrated a resolution of the existing lesions with chemotherapy; however, he continued to develop new, although less severe, lesions consistent with retiform purpura. He was initiated on amlodipine as the vasodilator properties may ameliorate cocaine-induced vasospasm contributing to the development of new lesions. The patient's distal extremity neuropathy also improved with chemotherapy. During the follow-up, the patient's cutaneous lesions were found to have been completely healed.

DISCUSSION

Amyloidosis is characterized by the deposition of amyloid, a fibrillary β-pleated sheet protein, in various organs.[2] Cutaneous amyloidosis is classified into primary cutaneous (including macular, lichenoid, and nodular) and systemic. Systemic amyloidosis includes the subtype of amyloid protein, including light chain, amyloid A in the setting of systemic chronic inflammatory conditions, and senile and hereditary transthyretin amyloid. Primary light chain amyloidosis is frequently idiopathic or associated with plasma cell dyscrasias including multiple myeloma and can present with cutaneous and extracutaneous involvement.[3]

Cutaneous involvement is identified in approximately one-quarter of patients with primary systemic amyloidosis.[4] The common clinical presentations include macroglossia and periorbital purpura.[5] In addition, petechiae, purpura, and ecchymosis have been reported in the axillary and anogenital regions, particularly at the sites of trauma.[3] It is hypothesized that amyloid fibrils bind to and result in deficiency of Factor X, resulting in a bleeding diathesis that manifests in areas of skin and blood vessel fragility.[2,4]

Here, we report a case of retiform purpura as a manifestation of cutaneous amyloidosis. We hypothesized that the amyloid deposition in blood vessel walls resulted in cutaneous vasoconstriction leading to the inability of the vessels to accommodate for changes in cutaneous blood flow. This presentation

was not consistent with levamisole-induced vasculitis as there was no evidence of vasculitis or vasculopathy on pathology and the ANCA labs were negative. However, cocaine-induced vasospasm likely exacerbated the vasoconstriction, resulting in ischemia and cutaneous necrosis.

In conclusion, we suggest that cutaneous amyloidosis be considered in the differential diagnosis of retiform purpura. Further studies are needed to identify the true incidence of this finding and delineate the underlying mechanism of amyloidosis leading to retiform purpura.

Conflicts of interest

None disclosed.

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