CASE REPORT

# Primary anetoderma as a manifestation of systemic lupus erythematosus

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## ABSTRACT

Anetoderma is a rare disorder characterized by elastolysis of elastic fibers, clinically presenting as wrinkled and atrophic depressions, which may be associated with systemic inflammatory conditions such as systemic lupus erythematosus. To date, few cases have been reported. We present the clinical case of a 25-year-old patient with cutaneous manifestations of anetoderma and a positive autoimmune panel.

## INTRODUCTION

Anetoderma, also known as macular atrophy, is a rare clinical condition caused by the loss or reduction of elastic fibers, leading to a loss of skin elasticity. According to the literature, its incidence is higher in women aged 20 to 40 years.[1] The exact prevalence remains unknown. This condition can be primary, occurring in previously healthy skin areas. Historically, it was classified into presentations with prior inflammation (Jadassohn-Pellizzari type) and those without prior inflammation (Schweninger-Buzzi type).[2] However, as both subtypes share identical histology and similar prognosis, this classification system is now obsolete.

In contrast, anetoderma occurring in areas affected by previous skin eruptions, such as acne, chickenpox, discoid lupus erythematosus, secondary syphilis, and the papular rash of HIV disease, is referred to as secondary anetoderma. Its clinical presentation can be highly variable, ranging from oval-shaped atrophic depressions to diffuse macules or well-defined edematous plaques. The etiology is diverse, with various mechanisms described, including autoimmune and infectious disorders.[3,4]

We present the case of a young woman with anetoderma and systemic lupus erythematosus.

## CASE REPORT

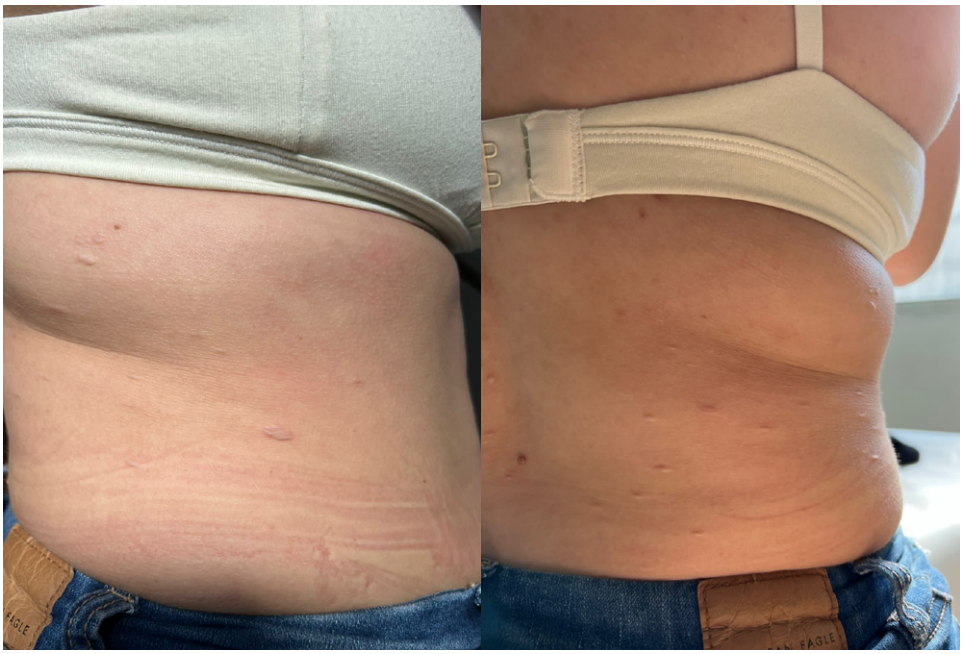
This is the case of a 25-year-old female patient diagnosed with atopic dermatitis since childhood. She presented to our clinic with lesions on the trunk and upper

extremities of five years' evolution, with spontaneous onset and progressive worsening, but asymptomatic. On physical examination, she had multiple oval-shaped lesions with an atrophic, wrinkled appearance, soft and compressible to the touch, showing a positive buttonhole sign (Figures 1 and 2).

A skin biopsy was performed using a 4 mm punch. Histology of one of the trunk lesions showed an intact epidermis, and at the dermal level, orcein staining revealed a marked reduction and fragmentation of elastic fibers (Figure 3).

Routine laboratory tests revealed normochromic normocytic anemia (11.3 g/dL), positive ANA (1:320), positive anti-DNA and anti-Smith antibodies, elevated erythrocyte sedimentation rate (40 mm/h), and low complement levels (C3: 60 mg/dL, C4: 8 mg/dL).

Additional studies (chest X-ray, echocardiogram, electrocardiogram, and abdominal ultrasound) showed no pathological findings. Combining the histopathological report with clinical and laboratory findings, the diagnosis of Primary Anetoderma associated with Systemic Lupus Erythematosus was established.



*Figures 1 and 2. Multiple depressed, oval, circumscribed, skin-colored plaques.*

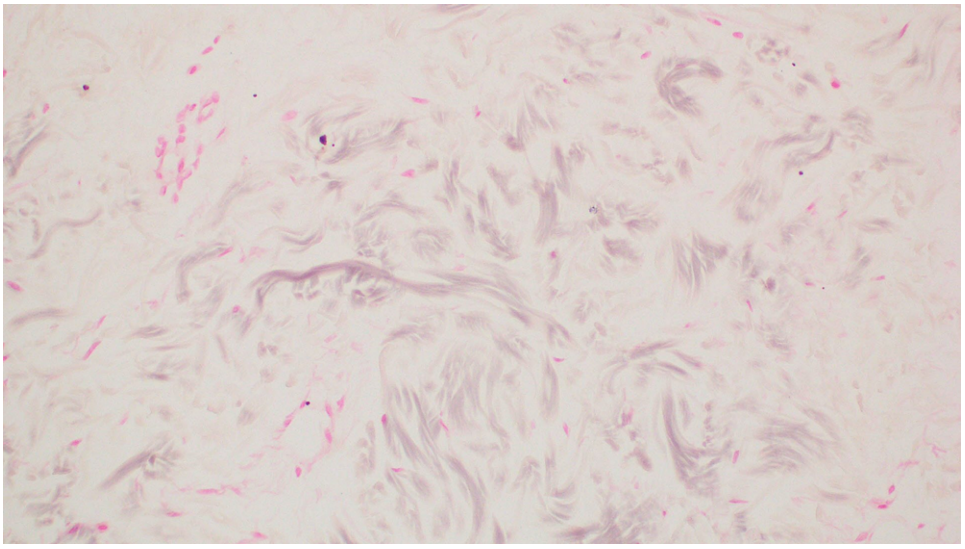


*Figure 3. Skin biopsy with orcein staining. At 40x magnification, it shows reduction and fragmentation of elastic fibers.*

In conjunction with the Rheumatology department, treatment was initiated with Hydroxychloroquine 200 mg/day and Prednisone 10 mg/day.

## DISCUSSION

The term "anetoderma" originates from the Greek roots ***anetos***, meaning relaxation, and ***derma***, meaning skin. Jadassohn first described anetoderma and translated it into English as "macular atrophy." Anetoderma is a rare condition that affects the elasticity of the skin. Clinically, it manifests as circumscribed atrophic plaques that may resemble macules, papules, or patches surrounded by healthy skin. These lesions are characterized by their ability to protrude under pressure (buttonhole sign) and their wrinkled appearance. Their size can range from millimeters to centimeters. The lesion color may vary, appearing whitish, blue, brown, or grayish.[3,4]

This rare elastolytic disorder may be associated with a wide range of autoimmune conditions, including systemic lupus erythematosus and antiphospholipid syndrome, as elastic fibers may serve as potential target tissues. Although the connection between these diseases remains uncertain, it is hypothesized that elastic fibers may act as targets for antibodies against shared epitopes between phospholipids and elastin.[5]

Certain authors support the hypothesis that the presence of antiphospholipid antibodies leads to the formation of microthrombi in dermal blood vessels, causing occlusion and resulting in localized ischemia, which ultimately leads to elastic tissue degeneration.[6] Another proposed mechanism involves reduced elastin production or excessive activity of enzymes responsible for degrading elastic tissue. Additionally, elastic fiber phagocytosis by macrophages and an immune-mediated inflammatory response have been suggested, as evidenced by lymphohistiocytic tissue infiltration with CD4+ lymphocyte predominance.[3]

Recent studies have highlighted the role of matrix metalloproteinases (MMPs), which are capable of degrading the extracellular matrix. The most active MMPs include MMP-2 and MMP-9, also known as gelatinases A and B, respectively. MMP-9 is produced by keratinocytes, fibroblasts, and macrophages, and has a higher capacity for elastin degradation.[7,8] Another theory in the pathophysiology of anetoderma suggests a disruption in elastic fiber assembly. In patients with anetoderma, fibulin-4 deficiency has been identified, which reduces proelastin (a precursor of elastin), thereby altering the entire process of elastic fiber formation and maintenance.[4]

Histologically, disorganized collagen fibers are observed, along with fragmentation of elastic fibers in the superficial and mid-dermis. Perivascular and interstitial infiltration of lymphocytes and histiocytes, accompanied by neutrophils and eosinophils, may be present in the reticular dermis. Orcein staining of elastic fibers reveals fragmentation and loss of these fibers in the papillary and reticular dermis.[9,10]

The differential diagnosis for anetoderma includes elastic tissue disorders characterized by skin atrophy, such as acquired cutis laxa (which shows elastic fiber fragmentation), nevus anelasticus, papular elastorrhexis, and idiopathic atrophoderma of Pasini-Pierini.[11,12]

Regarding treatment, the literature describes the use of pulsed dye laser combined with non-ablative fractional laser, yielding positive results in skin color and texture, as well as histological findings after three sessions.[13] For the underlying pathology, systemic lupus erythematosus, management by a rheumatology specialist is recommended.[14] Close follow-up is necessary, as systemic complications may arise years later, such as thrombotic events, superficial phlebitis, miscarriages, and vasculitis-associated lesions.[6]

## CONCLUSION

Anetoderma is a rare skin disorder affecting elastic fibers. It may be triggered by autoimmune diseases or other conditions, occurring either as a primary disease or as a secondary condition following pre-existing skin lesions. Identifying this condition in a patient should prompt the specialist to conduct a thorough exami-

nation and extensive laboratory investigations to correlate the skin lesions with potential systemic causes. While there is no specific therapeutic approach for this condition, multidisciplinary treatment is recommended for patients with any underlying autoimmune disorders to prevent possible future complications associated with the primary disease.

## CONFLICTS OF INTEREST

The authors declare no conflicts of interest.

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