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# Erythema Elevatum diutinum in a pregnant female with coexisting hypothyroidism and rheumatoid arthritis

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## Abstract

Erythema elevatum diutinum (EED) is a chronic and rare variant of leukocytoclastic vasculitis of unknown etiology that is being reported nowadays frequently. It clinically manifests as asymptomatic to tender erythematous papules, plaques and nodules, usually with acral distribution and is rarely accompanied by systemic complaints other than arthralgia. Here, we report a case of a 22 year old pregnant woman with a history of joint pain for 3 years, presenting with erythematous raised plaques on extensors. Histopathological analysis revealed leukocytoclastic vasculitis. Laboratory test revealed hypothyroidism. We report the case because of its rarity, with subsequent review of the literature.

## Introduction

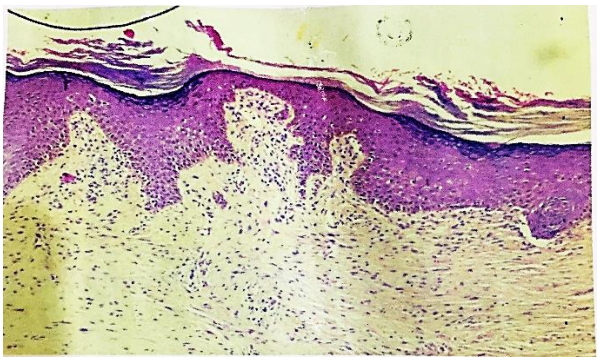
The Erythema Elevatum Diutinum (EED) is a rare chronic cutaneous vasculitis of unknown etiology characterised by the absence of systemic vasculopathy. It was first described by Hutchinson in 1878 and by Bury in 1889. Its name was given by Radcliffe-Crocker and Williams in 1894. It has been reported to occur in association with variety of conditions including autoimmune diseases, such as rheumatoid arthritis, celiac disease, systemic lupus erythematosus, Sjögren syndrome, antiphospholipid antibody syndrome, pyoderma gangrenosum, diabetes mellitus type 1 and hypothyroidism; infectious diseases, hematologic diseases, such as monoclonal gamopathy, non-Hodgkin lymphoma, chronic lymphocytic leukemia and multiple myeloma; neoplastic diseases, as breast and lung cancer; and infectious diseases, as streptococcus infection, HIV and hepatitides. Here we report a case occurring in association with hypothyroidism and rheumatoid arthritis.

## Case Report

A 22 year old pregnant female presented with erythematous persistent plaques over dorsum of hands and both elbows and extensor aspect of both legs for 6 months. Lesions initially started as erythematous papules over both lower legs which gradually progressed to form plaques which later ulcerate and heal with hyperpigmentation as well as atrophic scarring. History of similar episode 3 years back and was symptom free for one and a half year between the two episodes. There was also a history of joint pain in both knees for 3 years and complain of amenorrhea for 5 months.

On examination there were symmetric, moderately firm, thick erythematous plaque over dorsum of joints of both hands and on both elbows along with few crusted lesions over both lower limb with areas of hyperpigmented macules and atrophic scarring.(Fig. 1)

Based on history and clinical examination a tentative diagnosis of Erythema elevatum diutinum (EED) was made which was substantiated further by a skin biopsy from a representative lesion showing moderate hyperkeratosis, acanthoss, focal parakeratosis, with underlying marked dermal sclerosis, hyalinised collagen, focal moderate chronic inflammation, few neutrophills, eosinophills.



Routine laboratory investigations were normal except elevated erythrocyte sedimentation rate (55 mm at the end of 1st hour), serum thyroid stimulating hormone was raised (26 IU/L) and rheumatoid factor positive (40 IU/L). Retroviral and hepatotropic viral serologies were negative. Mantoux test was negative. Other immunological and serological tests were also negative. Her pelvic ultrasound demonstrated a single live fetus of gestational age 20 weeks.

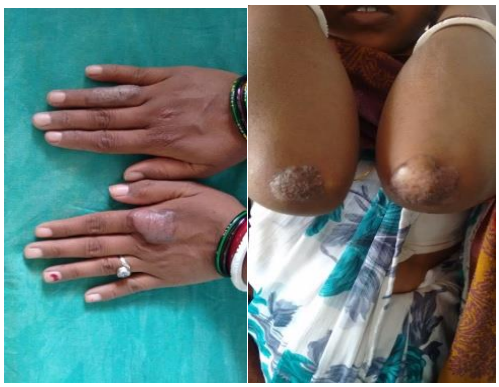


**Fig. 1: Erythematous plaque on extensor aspect of first metacarpophalangeal joint of left hand and interphalangeal joint of right hand and both elbows**

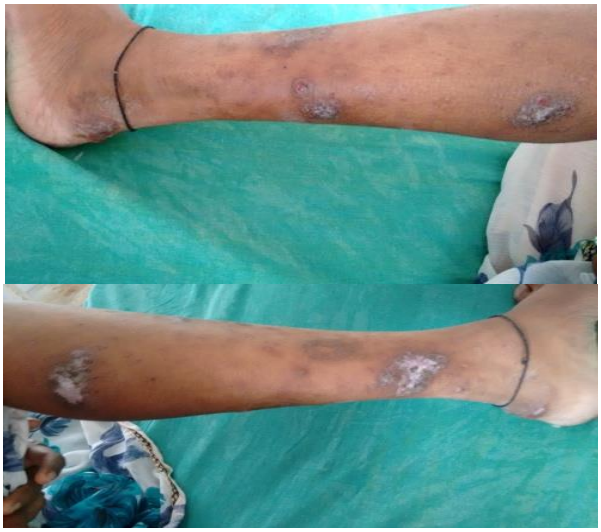


**Fig. 2: Lesions healing with hyperpigmentation and atrophic scarring**

Patient was started on 100 mg dapsone per day with considerable clearing up of cutaneous lesions within a couple of weeks' time and the patient was lost to follow-up after 2 months.

## Discussion

Clinically, EED manifests as tender reddish-brown papules, nodules, or plaques. Lesions are typically distributed symmetrically with a predilection for the extensor surfaces of the joints, including the hands, feet, elbows and knees, and the buttocks and Achilles tendons. The affected areas may be asymptomatic or painful, often exhibiting a burning sensation after exposure to cold environments. Patients are often systemically well, but symptoms such as arthralgia and myalgia may occur in some cases.[2] Histologically, a spectrum from Leukocytoclastic vasculitis to vessel occlusion and dermal fibrosis may be observed.[3] EED may occur at any age, typically affecting adults age 30 to 60, although 1 case series reported 2 peaks of incidence: 1 in the sixth decade with an equal sex ratio and 1 in childhood with a greater incidence in females.[4] The natural history of EED is of a chronic course with spontaneous remissions, although duration of disease has been reported to be variable. One series of 13 patients reported that 4 patients had no further episodes after their initial presentation, whereas one patient's condition persisted for 39 years.[4] EED occurs in association with a number of conditions including hematologic disease (IgA gammopathy, multiple myeloma), infectious disease (tuberculosis, HIV, streptococcal infection), immunologic disease (rheumatoid arthritis, inflammatory bowel disease), and malignancy (squamous cell carcinoma, breast cancer, B-cell lymphoma).[1,3] A typical case is reported, from the anatomo-clinical point of view, of EED associated with hypothyroidism, corroborating a report in the literature of Hashimoto thyroiditis as a possible autoimmune disease related to EED.[13] Screening for associated disease, particularly hematologic disorders, is crucial to ensure that appropriate treatment is initiated early.

EED is a chronic, recurrent condition, and the treatment of choice is dapsone, which is reported to be effective in 80% of cases.[2] However, colchicine, mycophenolate mofetil, hydroxychloroquine, tetracycline or sulphonamide antibiotics, systemic and intralesional corticosteroids, and cyclophosphamide may also be beneficial.[1-7] Due to the disease's chronic nature, stopping treatment may cause the skin lesions to recur. Therapy is found to be more effective in earlier lesions and less effective in chronic fibrotic lesions. In patients with an associated disease, treatment is more successful if the underlying disease is also targeted such as treating HIV with an antiretroviral, or celiac's disease with a gluten free diet.[12]

Usually the patient's general state of health is not affected, and the systemic involvement is almost inexistent.[8] Joint pain is the most common systemic symptom, and there have been reports of severe burning pain in the cutaneous areas involved, pruritus, and constitutional symptoms.[9] In our case, there was important arthritis in the wrists, elbows, and knees in association with an elevation in the inflammatory activity assay (erythrocyte sedimentation rate) along with raised RA factor. The major rheumatological diseases reported in association with EED are as follows: rheumatoid arthritis; relapsing polychondritis; systemic lupus erythematosus; Sjögren's syndrome; and juvenile idiopathic arthritis.[8,10] Such associations are most often seen in young female patients.[11] Although no rheumatological disease was characterized in the case reported, arthritis was severe and caused patient's initial consultation.

The histopathologic findings are not pathognomonic, although they can be highly suggestive.[8] The early lesions of EED evidence signs of a leukocytoclastic vasculitis, with fibrin, neutrophils and fragments of neutrophils in the wall of small vessels of the middle and superficial dermis. All such elements are compatible with the description of our patient's

histopathologic findings. In late lesions, the findings include the combination of granulation or scar tissue along with proliferation of fusiform cells in the dermis, and the possible association with multinucleated giant cells. The deposition of circulating immune complexes in perivascular dermis triggers the inflammatory cascade, which causes vascular injury and consequent fibrosis. Some rheumatological diseases, such as Behçet's disease, cryoglobulinemic vasculitis, Henoch-Schönlein purpura, and hypersensitivity vasculitis, can show the histopathologic findings of leukocytoclastic vasculitis in association with characteristic cutaneous manifestations, and should always be considered in the differential diagnosis of EED. The typical distribution pattern of the skin lesions in that pathology helps to confirm the diagnosis.[8]

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