A Rare Case of Well’s Syndrome

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Abstract

Wells’ syndrome is a rare, idiopathic dermatosis characterized clinically by an acute, erythematous plaque resembling cellulitis and histopathologically by an eosinophilic dermal infiltration and flame figures. Also known as eosinophilic cellulitis, it was first described by Wells in 1971, and since then only 80 to 100 cases have been reported. The etiology of Wells’ syndrome is largely unknown. Nevertheless, although often self-limited, the disease has a tendency to recur. We describe a rare case of Wells’ syndrome presenting on the left lower leg of a 68-year-old woman and review the literature on the topic.

Case Report

A 68-year-old woman with no significant medical history presented with a pruritic eruption on her left lower extremity of several months’ duration. She denied history of insect bite or trauma prior to the onset of the lesion. Physical examination revealed a large erythematous plaque with surrounding erythematous papules over the lateral aspect of the left lower extremity (Figure 1). Laboratory investigations, including a complete blood count and total leukocyte counts, were within normal limits.

Histopathologic examination from a biopsy of the plaque revealed a superficial and deep infiltrate of lymphocytes and eosinophils with flame figures (Figures 2, 3). Based on clinicopathologic correlation, a diagnosis of Wells’ syndrome was established. Her skin lesions improved significantly with topical high-potency steroids.

Discussion

Wells’ syndrome, also known as eosinophilic cellulitis, is a rare but usually benign dermatosis that has been reported in all age groups.6 It often presents as a mildly pruritic, tender, erythematous plaque that most frequently affects the extremities. The edges are annular or arcuate with violaceous borders.8 The plaque’s color generally evolves from bright red to gray over the course of a few days, and it often resolves without scarring.6 Although Wells’ syndrome most commonly presents as a plaque or nodule, it may also present as papules, vesicles, or hemorrhagic bullae.

The diagnosis of Wells’ syndrome is based on clinical features and histopathologic findings of eosinophilic infiltration limited to the epidermis and dermis, though it may extend into the subcutaneous tissue and underlying muscle. An infiltrate of eosinophils, eosinophilic debris, and histiocytes between collagen bundles form the classic “flame figures.” Eosinophilic degranulation may also be visualized with immunofluorescent stains showing eosinophilic major basic protein (MBP).9 Infiltration into the epidermis causes epidermal spongiosis and vesiculation. Subdermal infiltration results in bullae formation. Blisters of Wells’ syndrome contain eosinophils and are predominantly subepidermal, multiloculated, and spongiotic.6 Peripheral blood eosinophilia may or may not be found. Other laboratory findings associated with Wells’ Syndrome include increased eosinophilic cation protein (ECP), and increased interleukin-5 (IL-5). ECP and IL-5 levels correlate with severity of disease.

Although its etiology is largely unknown, the proposed mechanism of Wells’ syndrome is an activated line of CD3+ and CD4+ T-cells that result in hyper-secretion of IL-5. This cytokine promotes eosinophil recruitment and degranulation.10 Eosinophils play a role in parasitic and allergic reactions. They contain toxic cationic proteins that play a role in inflammation and local tissue damage. MBP damages parasites, but also damages mammalian cells and tissue. Eosinophil-derived neurotoxin plays a role against viral infection, but as the name implies, it is neurotoxic. Other proteins secreted by eosinophils promote histamine release, neutrophil activation, tumor lysis, peroxidation, serotonin release, and clot formation.4 The various functions of eosinophils are useful in many circumstances,
but may generate edema, erythema, pruritus, and tissue damage in the presence of eosinophilia.

Although flame figures are a hallmark of Wells’ syndrome, they are not a specific finding. They can be found in other conditions with eosinophil-rich infiltrate, such as atopic dermatitis, contact dermatitis, tinea, scabies, arthropod bites, and bullous pemphigoid. Infectious cellulitis and erysipelas are very similar in clinical presentation to Wells’ syndrome, but differ in that their infiltrates are predominantly neutrophilic. Febrile eosinophilic cellulitis with toxocariasis infection presents with eosinophilia, migrating cellulitis, and Toxocara larvae on serology. Other differentials to consider include drug eruption, granuloma annulare, hypereosinophilic syndrome, chronic urticaria, and Churg-Strauss syndrome.

Wells’ syndrome has an excellent prognosis; however, it has the tendency to recur, which may prolong resolution. Systemic associations occur in fewer than 25% of patients with Wells’ syndrome and can include malaise, fever, arthralgia, and asthma, among other conditions. An association between the bullous form of Wells’ disease and non-Hodgkin lymphoma has been reported. The most common complication of Wells’ syndrome is blistering; however, long-term complications, such as reticular pigmentation and scarring alopecia, do rarely occur.

Treatment of Wells’ syndrome depends on its severity. Mild cases may resolve with potent topical corticosteroids. Severe cases usually improve dramatically with systemic corticosteroids. Calcineurin inhibitors, griseofulvin, antihistamines, cyclosporine, dapsone, colchicine, minocycline, and antimalarials have also been proven effective.

### Conclusion

Wells’ syndrome is a rare condition with few documented cases and should be included in the differential of resistant cellulitis, granuloma annulare, chronic urticaria, and drug eruption. A detailed history regarding triggers and medications should be done to exclude other diseases that can mimic Wells’ syndrome clinically and histologically. The lesions generally respond well to treatment but have a tendency to recur.

### References