Unusual Eosinophilic Infiltration of the Skin in a Patient with Precedent Kimura's Disease

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A 25 year old man presented with erythematous and indurated plaques on the upper and lower extremities that were preceded by insect bites while traveling in central Africa. The patient had a past history of Kimura's disease, asthma, and allergic rhinitis. Histologic examination revealed panniculitis showing massive eosinophilic infiltration. The dermis showed eosinophilic infiltration without flame figures. The patient responded well to oral corticosteroids. This patient did not fit the diagnosis of eosinophilic panniculitis, eosinophilic cellulitis, hypereosinophilic syndrome or eosinophilic vasculitis. (Ann Dermatol 8:(1)30~33, 1996).

Key Words : Kimura's disease, Eosinophilic infiltration

Eosinophilic panniculitis was first reported by Burket and Burket[1] in 1985. It has a variable clinical picture ranging from pruritic papules and plaques to purpura, pustules and nodules. Histologically there is intense eosinophilic infiltrate in the subcutis. Most patients have a history of atopy or heightened allergic reactivity. In addition, immunoreactive diseases, malignancies, drugs, and insect bites can contribute to the local eosinophilia[2].

Eosinophilic cellulitis was first descibed by Wells[3] in 1971. It is characterized by large erythematous and edematous plaques with the histological features of dermal eosinophilc infiltration and flame figure granulomas. The triggering factors causing this disorder are similar to the factors that are associated with eosinophilic panniculitis[4].

Hypereosinophilic syndrome is a multisystem disease characterized by peripheral blood eosinophilia and infiltration of eosinophils into many organs including the skin[5]. The cutaneous lesions show predominantly perivascular infiltrate of eosinophils and microthrombi in some cases[6].

Eosinophilic vasculitis shows glucocorticoid responsive pruritic erythematous, purpuric papules and angioedema associated with peripheral blood eosinophilia with necrotizing vasculitis, fibrinoid necrosis of vessel walls and eosinophil infiltration[7].

We report a case showing features of the above mentioned diseases but not coexistant since there was insufficient clinical and histological evidence to confirm any of these diagnoses.

REPORT OF A CASE

A 25 year old Korean man was first seen at our clinic in May 1994 with a 3 month history of erythematous and indurated plaques on the left arm and right leg with visible stinging sites, pain, and pruritus.

The medical history was significant. The patient had had asthma from 4 to 15 years of age and allergic rhinitis for 10 years with only intermittent palliative treatment. In August 1992, he was diagnosed with Kimura's disease by an excision biopsy of the right cervical lymph node. Treatment with oral prednisolone and radiotherapy resulted in complete remission with no recurrence of the skin lesions or peripheral eosinophilia. In February

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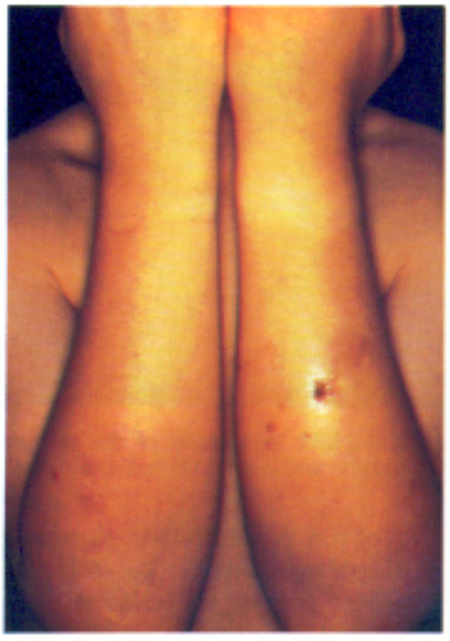

Fig. 1. Coin sized erythematous indurated plaques on the left forearm.

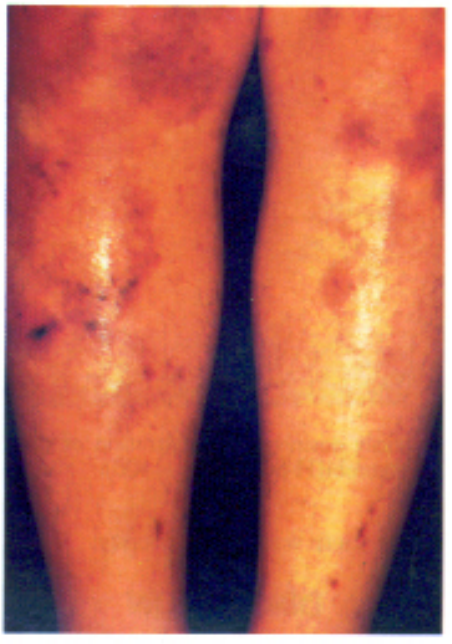

Fig. 2. Egg sized erythematous indurated plaques on the right leg.

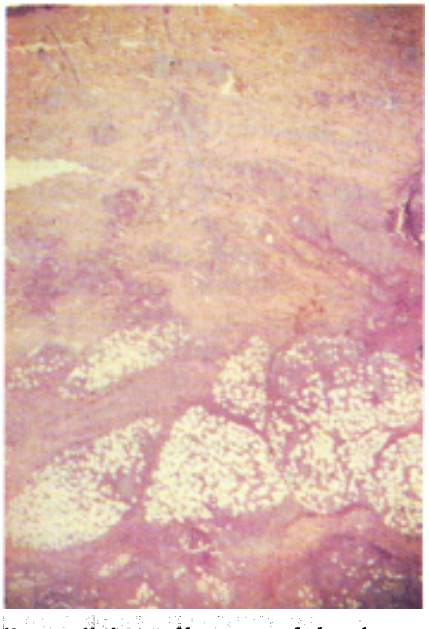

Fig. 3. Diffuse cellular infiltration of the dermis and subcutis(H & E stain, ×40).

1994, he visited central Africa as a medical volunteer and suffered numerous insect bites during his stay with subsequent development of the skin lesions.

Physical examination revealed several coin to egg sized, erythematous and indurated plaques with stinging sites on the left arm and right leg (Fig.1, 2). He complained of stiffness and limitation of movement of the left arm and right leg due to the induration. Laboratory test results included a white blood count of 15,000/mm^3 with 50% eosinophils and a total eosinophil count of 6,720/mm^3. A chest roentgenogram showed no abnormalities of the heart, lungs or mediastinum. Peripheral blood smears for filiaris and stool samples for ova and parasites were negative. An allergy skin prick test showed strong positive reactions for *Dermatophagoides farinae* and *Dermatophagoides pteronyssinus*. Serum IgE levels were in excess of 1,000 IU/L. A skin biopsy from the left forearm revealed a diffuse cellular infiltration of the dermis and subcutis(Fig. 3) with mainly perivascular cellular infiltrate of eosinophils with small numbers of lymphocytes and histiocytes in the dermis and microthrombi(Fig. 4). The subcutis showed massive infiltration of eosinophils, both septal and lobular (Fig. 5). The panniculitis subsided with a 2 week course of prednisolone 10mg per day with a combination of antihistamines including astemizole, hydroxyzine, and diphenhydramine. However, the symptoms recurred when the prednisolone was stopped. Prednisolone was given for the next 3

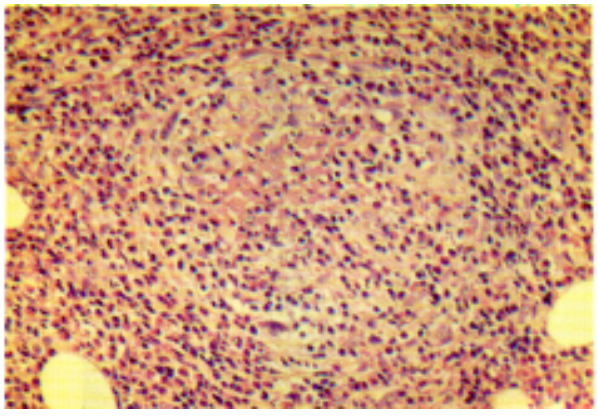

Fig. 4. Mainly eosinophilic infiltration of the dermis and microthrombi(H & E stain, ×400).

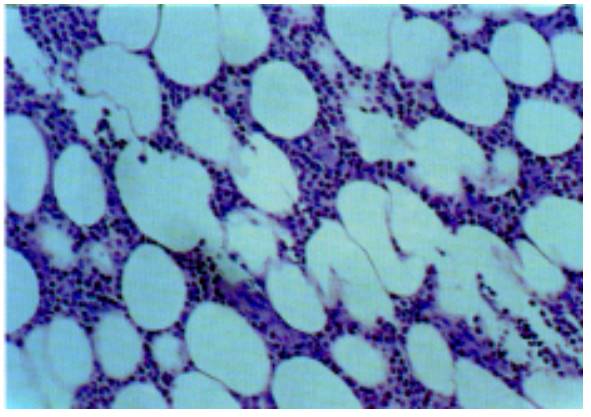

Fig. 5. Eosinophilic infiltration of the subcutaneous tissue, both septal and lobular (H & E stain, ×400).

months and there was no recurrence.

DISCUSSION

Eosinophilic panniculitis is a rare form of panniculitis first reported by Burket and Burket[1] in 1985. In 1986 Winkelmann and Frigas[2] asserted that it was a non specific diagnosis occuring in patients with a reason for eosinophilia such as atopy or heightened allergic reactivity thus revealing a wide pattern of systemic disease. There is no common census on the etiology or pathogenesis. However, local or systemic eosinophilia from increased allergic responses due to atopic dermatitis, vasculitis, insect bites, dermatophytoses, and drugs seems to be the cause[1,2]. Kimura's disease might also be another possible cause according to our case history. Eosinophils are attracted to the subcutis by chemotaactic factors such as histamine, eosinophil chemotactic factor of anaphylaxis (ECF-A), C5, C5a, C567 complex and leuko- triene B4. Degranulation of eosinophils results in tissue damage by various enzymes and proteins such as lysophospholipase, acid phosphatase, major basic protein, and leukotriene C4[8,9].

Our patient had a past history of asthma, allergic rhinitis, and Kimura's disease all of which may could have contributed to the consequent peripheral blood eosinophilia. The insect bites suffered during the trip to central Africa seem to have triggered a hypersensitivity reaction with the development of the skin lesions. However, other members of the medical volunteer team to Africa suffered similar insect bites without subsequent development of the forementioned skin lesions. It seems plausible that all theses predisposing and triggering factors present in this patient led to the massive peripheral eosinophilia and eosinophilic infiltration of the skin.

The skin symptoms of eosinophilic panniculitis consist of multiple, inflammatory nodules with pain. Papules, vesicles, and wheal like lesions can also occur. These lesions soon progress into subcutaneous nodules or plaques usually involving the extremities. The clinical features of our patient did not show any noduar subcutaneous component as described above or as stated by Winkelmann and Frigas[2] for recognizing eosinophilic panniculitis. It was also different from eosinophilic cellulitis which presents as a localized area of erythema and edema in the acute stage followed by a brawny, edematous plaque that is typically slate gray with violaceous borders and central clearing. Early lesions of eosinophilic cellulitis show dermal edema and dermal infiltrate of eosinophilis without vasculitis. Flame figures consist of granular eosinophilic material composed of major basic protein that is adherent to collagen and is surrounded by histiocytes and giant cells of the foreign body type[3,4,10]. They appear later but can be found in bullous pemphigoid, herpetiformis gestationis, dermatophytosis, insect bites, and eczema as well[11-15]. In the stage of resolution, there may be a grayish and atrophic appearance resembling morphea until the skin gradually returns to normal. The histological changes of eosinophilic cellulitis are mainly limited to the dermis which helps to differentiate this from eosinophilic panniculitis.

Histologically there is intense eosinophilic infiltrate in the fat lobules of the subcutis in eosinophilic panniculitis[1,2]. Flame figures characteristic of eosinophilic cellulitis appeared at the border of the dermis and subcutis in the case reported by Burket and Burket[1] but our case did not show these changes. The course of both eosino- philic panniculitis and celluitis is usually self limited. Systemic corticosteroids seems to be of benefit for both disorders[1,11,12].

The hypereosinophilic syndrome ia a multisystem disease with a significant mortality rate. The diagnostic criteria includes peripheral blood eosinophilia, failure to diagnose parasitic, allergic, or other known causes of eosinophilia, and presumptive signs and symptoms of multiple organ involvement. Cutaneous manifestations are present in about half of the patients and consist of pruritic erythematous papules or as urticaria and angioedema[5]. The histopathology is nonspecific with heavy eosinphilic infiltration and microthrombi[6]. The histopathologic findings of our patient showed massive eosinophilic infiltration and microthrombi in addition to the peripheral blood eosinophilia. However, our patient had a past history of asthma, allergic rhinitis, and Kimura's disease all of which could have contributed to the peripheral blood eosinophilia. In addition, there was no evidence of multiple organ involvement.

Eosinophilic vasculitis as reported by Chen[7] is a new disease entity that might have features overlapping with our case but there were significant differences between the three cases desrcibed by Chen and the present case. Clinically the presence of palpable purpura and the absence of asthma was emphasized but our case showed just the opposite. Morever, histopathologically there was no evidence of necrotizing vasculitis with fibrinoid necrosis of the vessel walls.

Our patient with the following features of: peripheral blood eosinophilia; massive eosinophilic infiltration of the dermis and subcutis; and no signs and symptoms of multiple organ involvement, did not exactly fit the diagnosis of eosinophilic panniculitis, eosinophilic cellulitis, or hypereosinophilic syndrome.

Thus we report a case of unusual eosinophilic infiltration of the skin in a patient with precedent Kimura's disease.

REFERENCES

1. Burket JM, Burket BJ: Eosinophilic panniculitis. J Am Acad Dermatol 1985;12:161-4
2. Winkelmann RK, Frigas E: Eosinophilic panicultis: a clinicopathological study. J Cutan Pathol 1986; 13:1-12
3. Wells GC: Recurrent granulomatous dermatitis with eosinophilia. Trans St Johns Hosp Dermatol Soc 1971;57:46-56
4. Wells GC, Smith NP: Eosinophilic cellulitis. Br J Dermatol 1979;100:101-8
5. Chusid MJ, Dale DC, West BC et al: The hypereosinophilic syndrome. Medicine(Baltimore) 54:1-27, 1975
6. Fitzpatrick JM, Johnson C, Simon P et al: Cutaneous microthrombi:A histologic clue to the diagnosis of hypereosinophilic syndrome. Am J Dermatopathol 9:419-422, 1987
7. Chen KR, Pittelkow MR, Daniel Su WP et al:Recurrent cutaneous necrotizing eosinophilic vasculitis. Arch Dermatol. 1994;130:1159-1166
8. Glass LA, Zaghloul AB, Solomon AR: Eosinophillic panniculitis associated with chronic recurrent parotitis. Am J Dermatopathol 1989; 11:555-9
9. Weller PF: Eosinophils and polymorphonuclear leukocytes. In:Fitzpatrick TB, Elsen AZ, et al, eds. Dermatology in General Medicine. 3rd ed. New York:McGraw-Hill Book, 1987:435-442
10. Spigel GT, Winkelmann RK: Wells' syndrome. Recurrent granulomatous dermatitis with eosinophilia. Arch Dermatol 1979;115:611-3
11. Wood C, Miller AC, Jacobs A, et al: Eosinophilic infiltration with flame figures. Am J Dermatopathol 1986;8:186-193
12. Dijkstra JW, Bergfeld WF, Steck WD, et al: Eosinophilic cellulitis associated with urticaria. J Am Acad Dermatol 1986;14:32-8
13. Schorr WF, Tauscheck AL, Dickson KB, et al: Eosinophilic cellultis(Wells' syndrome) histologic and clinical features in arthropod bite reaction. J Am Acad Dermatol 1984;11:1043-9
14. Melski JW: Wells' syndrome, insect bites, and eosinophils. Dermatol Clinics 1990; 8:287-293
15. Clark DP, Anderson PC: Eosinophilic cellulitis caused by arthropod bites. Int J Dermatol 1988;27:411-2