FK-506 ointment: an effective adjuvant therapy to treat a dramatic case of pyoderma gangrenosum of unilateral hand

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Pyoderma gangrenosum (PG) is a cutaneous ulcer developing so rapidly that may mimic a fulminating infection. The correct treatment is nonsurgical, and surgery may get the condition worse. FK-506 ointment (0.1% Protopic, Astellas Pharma AG, Fribourg) is usually indicated for inflammatory skin diseases, such as atopic dermatitis and psoriasis or for acute rejection reversal of human hand transplantation. A few reports of PG affecting the functions of hands can be found in the scientific literature and this report describes the first case treated by FK-506 ointment as an adjuvant therapy.

CASE REPORT

A 67-year-old right-handed man was admitted to our Institution with reddish-bluish skin and painful pustules growing on the dorsal sides of the proximal phalanxes of the index and middle fingers. A minor trauma made by a kitchen-knife two weeks before preceded the appearance of the lesions. No associated systemic disease was found in our patient. The routine blood tests on admission revealed that the white cells were counted for 12.7×10⁹/L, haemoglobin for 14.0 g/dl, C-reactive protein for 55 mg/l, and erythrocyte sedimentation rate (ESR) for 14.

A misdiagnosis of necrotizing fasciitis was made, so according to the infectious disease, service of full doses of antibiotic therapy through intravenous injection was started with 600 mg Clindamycin three times per day plus 500 mg Ciprofloxacin twice a day at the beginning (six days) then combining with 500 mg Imipenem four times per day. Meanwhile, three uneventful sequential surgical debridments were made. All cultures taken from the lesions were negative. After 7 days, no clinical improvement was detected in spite of aggressive surgical and antibiotic care (Fig. 1). However, new pustules grew rapidly on the ulnar side of the hand and on the dorsal side of the thumb and on the metacarpophalangeal (MP) joint. We consulted our dermatologist and the diagnosis of PG was immediately considered based on the necrotic fingers failing to improve with multiple debridments, broad antibiotic coverage and multiple negative cultures. Findings of a skin biopsy with the specimen taken from the proximal phalanx of the index finger confirmed the diagnosis of PG, a bullous variant.

Histological examination showed a necrotic suppurating process involving the dermis and the deep subcutis (subepidermal edema with bulla formation). Numerous polymorph neutrophils were detected in the dermal layer, which was accompanied by epidermal hyperplasia. On the contrary, no signs of vasculitis were shown (Fig. 2).

Antibiotic therapy was then stopped and 40 mg prednisone daily combined with FK-506 ointment (Protopic 0.1%, Astellas Pharma AG, Fribourg) twice a day was administered for the first three weeks. Protopic was applied in one thin layer only in the areas of the skin affected by PG to avoid sun exposure and no bandages, dressings or wraps being used for covering the skin. At this stage, full-thickness skin loss on the dorsal side of
the index and middle fingers, on the dorsal side of the thumb, on the MP joint and on the ulno-volar side of the hypothenar eminence was clear. In only 72 hours, all reddish and bluish pustules got pinker and smaller and granulation tissues grew really rapidly (Fig. 3A). A colonscopy excluded Crohn’s disease or regional enteritis and specific blood tests excluded rheumatoid arthritis, chronic active hepatitis, myeloproliferative disorders, iron deficiency anemia, myeloma, leukemia and diabetes mellitus. Oral prednisone was progressively tapered and steroid + FK506 ointment (once a day from Week 3 to Week 12) were stopped after three months with complete “restitution ad integrum” either aesthetically or functionally (Fig. 3B). Neither local skin burning/pruritus nor general side effects relating to the use of the ointment were detected 6 months after complete resolution of all symptoms.

Fig. 1. Progressively-grown pustules in spite of surgical debridment on the right hand before starting prednisone + FK-506-ointment therapy. A: Five days after admission; B: Seven days after admission.

Fig. 2. Bioptic examination of pyoderma gangrenosum (PG), a bullous variant. A: Dermal massive neutrophilic infiltration (HE x10); B: Dermal neutrophils with abscess formation and no signs of vaculitis (HE x 40).

Fig. 3. A: Clinical appearance of the hand 72 hours after prednisone + FK-506-ointment therapy. B: Clinical appearance of the hand after 5 months of follow-up.
DISCUSSION

This case confirmed the typical characteristics of PG with a painful red pustule rapidly enlarging and becoming necrotic and ulcerating, resistant to antibiotic therapy and surgical debridments. All cultures were negative and correct diagnoses were made thanks to clinical findings made by a dermatologist and histologic examination. Surgical procedures (debridments and/or skin grafts) are contraindicated.4,5

Historical management of PG consists of local wound care, treatment of associated medical conditions and oral administration of high-dose corticosteroids (prednisone, 100 mg/day).6 PG responds also to oral dapsone,7 azathioprine,5 cyclosporin,8 clofazimine or sulfasalazine9 or intralesional steroid injections.10 FK-506 ointment is a calcineurin inhibitor usually indicating for chronic treatment of atopic dermatitis and psoriasis8 or for acute rejection reversal of human hand transplantation3. We therefore confirm the safety and effectiveness of FK-506 ointment adjuvant therapy, which is also useful in reducing the recommended doses of steroid and length of therapy and avoiding inappropriate surgical therapy.

REFERENCES


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