Lepromatous Leprosy and Erythema Nodosum Leprosum

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CASE SUMMARY

History

In May 1996, a 50-year-old Chinese man presented with itchy urticarial-like lesions on the trunk and limbs intermittently for one year. Most of the lesions lasted for about one week. No known exacerbating factors were identified. There was no systemic upset and the past health was unremarkable. There was no preceding prolonged drug intake. The clinical diagnosis was urticarial vasculitis. Biochemical tests, including a complete blood count, erythrocyte sedimentation rate (ESR), liver and renal function tests, immune markers and G6PD levels were normal. The chest X-ray was normal. Skin biopsy showed an unremarkable epidermis. A perivascular infiltrate of lymphocytes admixed with some plasma cells and mast cells were present in the dermis. Nuclear dust was seen among the lymphocytes and plasma cells. The histological diagnosis was consistent with urticarial vasculitis. He was treated with prednisolone 10 mg daily initially and colchicine 0.5 mg twice daily was added two weeks later. Since there was no improvement, dapsone 50 mg daily was prescribed as well. However, the patient defaulted follow-up two months afterwards.

In September 1999, the patient returned, presenting with mild eczematous lesions at both shins and generalized xerosis. There were seldom attacks of urticarial-like lesions after treatment with herbs. Biochemistry revealed increased ESR of 93, increased IgG and IgM (5-fold increased) and serological false positive VDRL, and he was referred to medical unit for further investigations.

In October 2000, he complained of bilateral peri-orbital swelling, hand swelling and loss of lateral eyebrows. He went back to China and skin biopsy done in the Mainland confirmed the diagnosis of leprosy. There was no history of contact with patient having leprosy and no history of travel apart from China.

Physical examinations

The facial skin was erythematous, shiny and thickened. There were diffuse facial swelling and peri-orbital oedema giving early features of leonine face (Figure 1). Both the ulnar nerves and the left popliteal nerve were thickened. The sensation was intact. Erythematous subcutaneous panniculitic nodules were found at forearms (Figure 2) and lower limbs (Figure 3). There was no joint deformity.

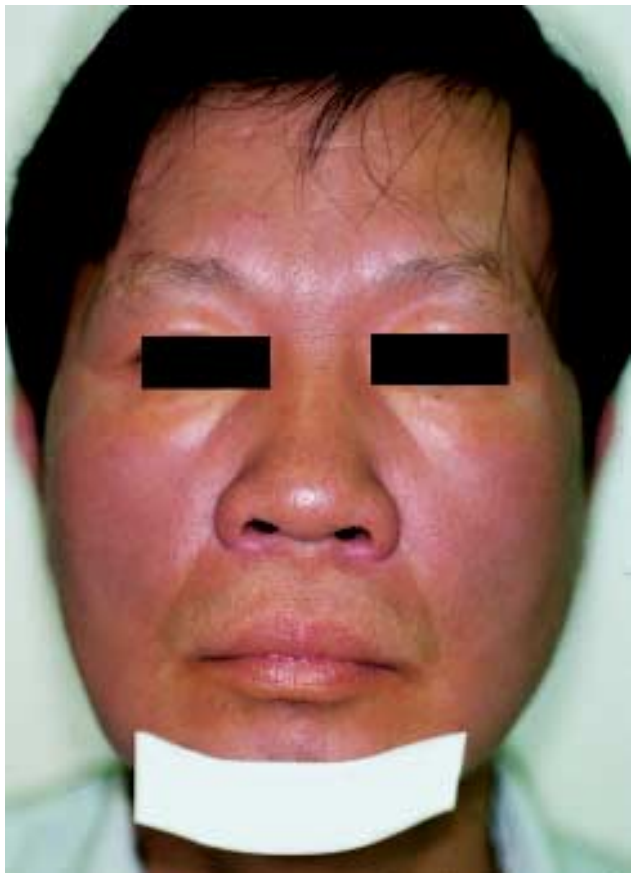

Figure 1: Diffuse facial swelling and peri-orbital oedema showing early features of leonine face

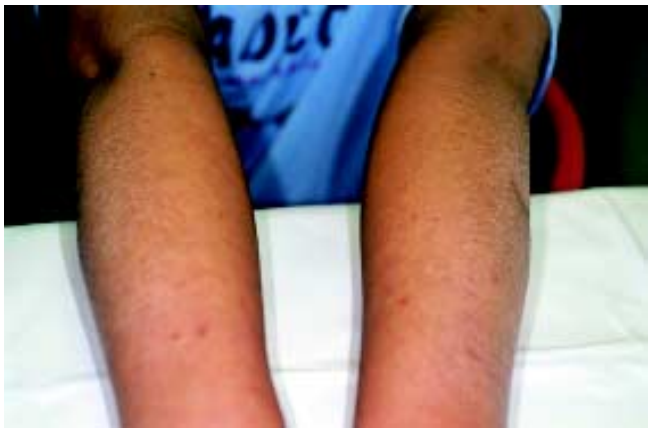

Figure 2: Erythematous subcutaneous panniculitic nodules at forearms

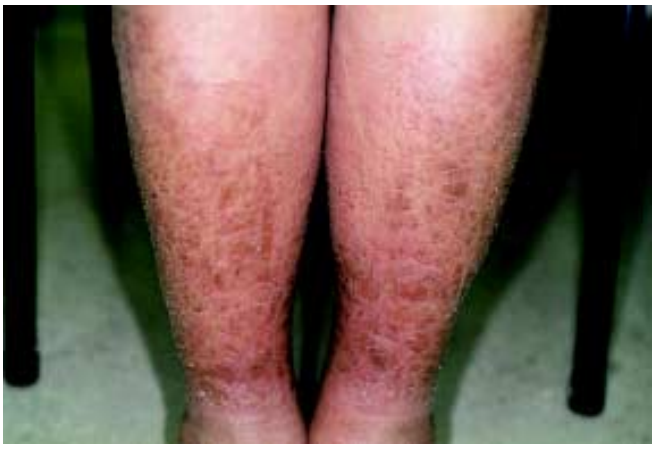

Figure 3: Subcutaneous panniculitic nodules at lower limbs

Investigations

Skin biopsy from pre-auricular skin showed heavy infiltrate of foamy macrophages in the dermis. Many acid-fast bacilli were seen. The histological diagnosis was consistent with lepromatous leprosy. The bacteriological index was two and the morphological index was zero percent. Investigations done for the increased IgM were all normal. He was empirically treated with aspirin for hyperviscosity since November 2000.

Diagnosis

The early manifestations of urticarial vasculitis may represent as a mild erythema nodosum leprosum (ENL) reaction, preceding the onset of a full-blown lepromatous leprosy for five years.

Management

The patient was referred to leprosy clinic and multi-drug therapy including dapsone, clofazamine and rifampicin were prescribed. Family screening including the patient's wife, son and daughter was negative.

REVIEW ON LEPROMATOUS LEPROSY (LL)

Clinical presentations

Nose, testes and eyes are frequently affected. Nasal discharge with or without blood and nasal stuffiness may be the only presentation of lepromatous leprosy (LL). Ulceration on the nasal mucosa is a common finding, causing saddle nose deformity. Eye involvement includes chronic conjunctivitis, episcleritis, scleritis, iritis, lepromatous nodules and erythema nodosum leprosum (ENL) appearing on the conjunctiva. Less commonly corneal leproma and ulcer may develop. Involvement of testes leads first to sterility, while gynaecomastia and impotency develop later. Cutaneous involvement can be divided into three phases: macular, infiltrative and nodular. Macules appear in the early phase of LL are usually small, multiple and symmetrical in distribution. They have a smooth, shiny surface and indistinct margins. There is no loss of sensation in the lesions. In late skin involvement, infiltrative LL and even nodular lesions may appear. The infiltrated skin is thickened, erythematous and shiny. Multiple nodules on the face lead to leonine face. Eyebrow hair, body hair and even scalp hair may be lost. Many peripheral nerves are symmetrically affected. The involved nerves may initially be larger than normal because of enormous bacillary infiltration; in advanced cases, nerves become thin and hard due to fibrosis and result in extensive anaesthesia, claw-hand and foot-drop.[1]

Pathogenesis

Among the board spectrum of clinical manifestations of leprosy, lepromatous leprosy (LL) represents the worse end of this chronic infectious disease. LL develops because of the absence of cellular response to the antigens of mycobacterium leprae. There are many hypotheses for the selective absence of cellular response including interleukin-1 (IL-1) or IL-2 deficiency, a decrease in IL-2 receptors, the presence of suppressor macrophages, the excess of T-lymphocytes, a deficiency of antigen-specific T-lymphocytes, and

receptor blockade.[2] Although the primary clinical manifestations are in the skin and mucosa membranes of the upper respiratory tract (nose, mouth, pharynx and larynx), lepromatous leprosy is a systemic disease.[1]

Treatment

In order to prevent and overcome the emergence of drug resistance and to achieve more rapid arrest of transmission of the disease, the WHO recommends the use of multi-drug therapy (MDT) in the treatment of lepromatous leprosy.[3] Multi-drug therapy includes daily doses of dapsone and clofazimine and monthly dose of rifampicin. The duration is at least two years, preferably until negative skin smears are obtained.

Erythema nodosum leprosum (ENL)

Erythema nodosum leprosum (ENL) or type II reaction is an antigen antibody immune complex reaction. Histologically, ENL is characterized by an inflammatory cell infiltrate in the dermis and adjacent subcutaneous fat. Large numbers of neutrophils are typically present and there is often an acute vasculitis.

Erythema nodosum leprosum occurs mostly in LL, and occasionally in borderline-lepromatous leprosy. It mostly occurs later during the course of treatment, and also occurs in untreated cases of very long duration.[4] It presents with sudden appearance of crops of pink coloured tender nodules or plaques, and may become vesicular, pustular, bullous or gangrenous. The existing lepromatous lesions do not show clinical aggravation. ENL may be the first manifestation of leprosy. It may be associated with oedema of hands, feet or face; iritis, iridocyclitis, epistaxis, muscle pain, bone pain, nerve pain, joint pain, epididymo-orchitis and proteinuria. Mild ENL disappears rapidly, occurs intermittently but severe ENL may persist for years.[5] Mild intermittent ENL is characterized by attacks lasting for about two weeks and followed by a reaction-free period of a month or two.[5]

Analgesic and anti-inflammatory drugs are still the cheapest effective drugs for controlling moderate degrees of pain and inflammation. Antimonials are particularly effective in relieving pain in bones and joints in ENL reactions. The anti-inflammatory effect of thalidomide is useful in ENL reactions, including neuritis and iritis and is helpful in weaning patients off corticosteroid. Clofazimine is indicated for ENL patients who cannot be weaned off corticosteroid or who suffer from persistent ENL and in whom thalidomide cannot be used. Systemic corticosteroid provides the most rapid control of ENL, however, the courses should be short and tapered off accordingly.

Learning points:

The initial changes of lepromatous leprosy may be very subtle. Although erythema nodosum leprosum usually occurs during the treatment of lepromatous leprosy, it may present as the first manifestation in an untreated patient.

References

1. Yawalkar SJ. Leprosy for medical practitioners and paramedical workers. In: Yawalkar SJ, editor. Leprosy, 6th edition. Basle: Ciba-Geigy, 1994:28-43.
2. Abulafia J, Vignale RA. Leprosy: pathogenesis updated. Review. Int J Dermatol 1999;38:321-34.
3. Ji B, Grosset JH. Drugs and regimens for preventive therapy against tuberculosis, disseminated mycobacterium avium complex infection and leprosy. Int J Lepr Other Mycobact Dis 1999;67:S45-55.
4. Jacoboson RR, Krahenbuhl JL. Leprosy, review. Lancet 1999; 20:655-60.
5. Meyerson MS. Erythema nodosum leprosum. Int J Dermatol 1996;35:389-92.