Case 26

Red plaques with punched-out appearance

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Patient: A 63-year-old man from Nakhon Ratchasima

Chief complaint: Multiple erythematous plaques on the trunk, face, and extremities for 3 months

Present illness:

The patient first had multiple erythematous plaques on the trunk 21 years earlier. He was diagnosed with leprosy and received an 18-month treatment course 20 years earlier. The lesions resolved but he was lost to follow-up and stopped taking the medications because his skin became darkened after taking them.

Subsequently, he developed numbness of hands, deformity of fingers, left foot drop, dry skin, and conjunctivitis. He noticed multiple erythematous plaques on the trunk, face, and extremities 3 months before visiting our clinic.

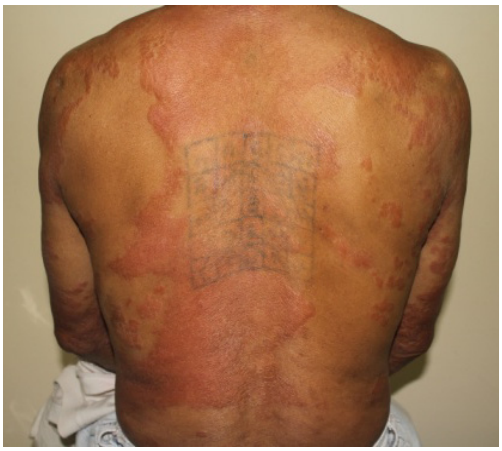
Past history: No underlying disease

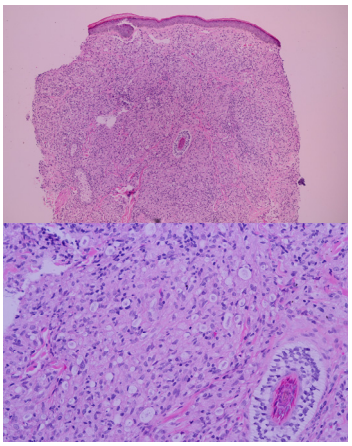
Physical examination:

HEENT: Lagophthalmos, conjunctival injection, and eyebrow hair loss in both eyes
Extremities: Claw hands, deformity of fingers, left foot drop
Neurological system: Sensory impairment with ulcer on tip of fingers, enlargement of both ulnar nerves

Skin examination:

- Generalized dry skin and multiple well-defined bilateral erythematous infiltrative papules and plaques, with some punch out lesions on the trunk, face, and extremities





Histopathology: (S14-9952, face)

- Nodular inflammatory cell infiltrate of foamy histiocytes and giant globi, intermingled with some lymphocytes throughout the dermis

Investigation:

- Slit skin smear: Right ear 6+, left ear 6+, right arm 4+
- CBC, liver and renal functions were normal.

Diagnosis: Borderline lepromatous leprosy with type 1 reversal reaction

Treatment:

- Multibacillary regimen: Rifampin 600 mg monthly, clofazimine 300 mg monthly and 50 mg daily, and dapsone 100 mg daily
- Prednisolone 50 mg daily (1 mg/kg/day)

Discussion:

Leprosy is a chronic infectious disease caused by *Mycobacterium leprae* with prominent involvement of the skin and peripheral nerves.[1] The clinical features vary depending on the CMI of the host to *M. leprae*. Clinical manifestations are preceded by a long incubation period, between 6 months and 20 years (mean 2-4 years). Using the concept of spectral leprosy based on clinical, immunological, and histopathological criteria, leprosy is classified into indeterminate, tuberculoid (TT), borderline-tuberculoid (BT), mid-borderline (BB), borderline-lepromatous (BL), and lepromatous (LL) forms.[2]

When leprosy is suspected, the diagnosis of several forms can be confirmed by slit skin smear by finding bacilli from standard sites (skin lesions, ear lobes, forearms), skin biopsy, lepromin test, molecular identification of *M. leprae* by polymerase chain reaction, and serologic assays for anti-PGL antibodies by means of the enzyme-linked immunosorbent assay (ELISA), which are only sensitive for the diagnosis of leprosy in the setting of multibacillary disease.[3]

The clinical course of leprosy is often interrupted by acute inflammation of immunological reactions (type 1 and type 2 reactions), which primarily affect the skin and nerves, being the main cause of morbidity and neurological disability. Type 1 reversal reaction (T1R) is a result of delayed hypersensitivity, enhancement of CMI with a Th1 cytokine pattern against mycobacterial antigens. It occurs in borderline patients. The lesions are characterized by hyperesthesia, erythema, and edema, with subsequent scaling and sometimes ulceration. Lesions are usually combined with edema of the extremities and neuritis, with minimal systemic manifestations in reactional individuals close to the TT pole, but more pronounced systemic manifestations in those close to the LL pole.[1, 4] Type 2 reaction is due to the formation of immune complexes in association with an excessive humoral reaction with a Th2 cytokine pattern. It typically occurs when patients with lepromatous forms undergo treatment. It represents a small vessel vasculitis (cutaneous and systemic), of which the most common clinical manifestation is erythema nodosum leprosum (ENL). There are general symptoms, such as fever, malaise, myalgia, edema, arthralgia, iridocyclitis, lymphadenitis, hepatosplenomegaly, orchitis, and glomerulonephritis.[1, 4] Neuritis may occur as part of ENL, but may be less dramatic than in T1R.

Peripheral neuropathy of leprosy is mixed (sensory, motor, and autonomic). Nerves may become thickened, irregular, and painful on palpation. Hypoesthesia or anesthesia, paresis or paralysis, decreased muscle strength, amyotrophy, tendon retraction, joint stiffness, vasomotor dysfunction, decreased sebaceous and sweat gland secretions may occur with disease progression. The most commonly affected nerves are the facial and trigeminal nerves, ulnar, median, radial, common fibular, and posterior tibial nerves.[1, 4] Facial nerve lesion leads mainly to decreased muscle strength of the eyes, and nasal and ocular dryness. The lesion of the zygomatic branch produces orbicularis paralysis and lagophthalmos with or without ectropion. The lesion of the ophthalmic branch of the trigeminal nerve mainly causes decreased sensation of the nose and cornea. These changes predispose the patients to keratitis, ulcer, infection, and blindness.[1, 5] The destruction of the fibers of the autonomic nervous system in the nose cause atrophic rhinitis with reduced nasal mucus and decreased blood supply, thus the mucosa becomes pale and fragile with thinned cartilage, which sometimes collapse.

Our patient was diagnosed BL with T1R owing to the skin lesions and involvement of the facial, trigerminal, ulnar, and common fibular nerves, positive slit skin smear, and histopathology.

The WHO recommends multidrug therapy (MDT) for treatment of leprosy. For multiibacillary (MB) leprosy, the patients are treated with rifampin 600 mg monthly, clofazimine 300 mg monthly and 50 mg daily, and dapsone 100 mg daily with 12 doses given in a period of up to 18 months.[3] Adverse effects to these drugs are infrequent and are most usually related to dapsone, including hemolytic anemia in glucose-6-phosphate dehydrogenase deficiency, dapsone syndrome, dyspepsia, hepatitis, erythroderma, agranulocytosis, and methemoglobinemia. Clofazimine causes skin pigmentation and dryness. Rifampin may cause dyspeptic symptoms, skin rash, influenza-like syndrome, thrombocytopenia, hepatitis, respiratory failure, and renal failure.[3] The treatment of T1R is aimed at controlling the acute inflammation, easing pain and reversing nerve damage. Corticosteroids, mainly prednisolone, is still considered the treatment of choice for T1R and prevention of nerve impairment.[4, 6] The mechanism of action of corticosteroids is primarily through the suppression of pro-inflammatory cytokines. The optimal dose and duration of treatment with steroids is still unclear although there is evidence that suggests prolonged therapy improves outcome.[4] MDT should be initiated or continued in those who develop a reaction until completing the MB regimen. Patients, which did not show improvement, should receive 12 additional doses.[3]

Patients should be educated about the reactions. They should be advised to seek help immediately if they experienced any of the symptoms. Early diagnosis and proper management of leprosy and its reactions are very important and can prevent the sequelae and physical disabilities, which not only have an impact on the patient's social and working life, but also be responsible for the stigma and prejudice against the patients.

References:

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