Large painless verrucous plaque on the foot

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CLINICAL FINDINGS

A 29-year-old man presented to our clinic with verrucous lesions on the left foot since last 2 years. The condition started as a painless papule after trauma and then the lesion enlarged slowly over the last 10 months. The lesion sometimes discharged pus. There was no response to antimicrobial therapy over a 6-week period. The patient had a history of persistent cough with occasional sputum which he attributed to smoking. His personal and family histories were not contributory.

Cutaneous examination revealed a well defined, irregular, hyperkeratotic and verrucal plaque measuring about 11cm x 5cm on the lateral side of the left foot (Fig. 1). The surface of the lesion showed multiple erosions and fissuring with atrophy, depigmentation and hyperpigmentation on the edges. A small area showed a superficial bulla with eroded surface that appeared 1 week prior of examination. Examination of the regional lymph nodes showed no lymphadenopathy and systemic examination did not reveal any abnormalities.

A chest X-ray showed a patchy infiltrate in the right middle lobe and Mantoux test was moderately positive – 11 mm induration, while other routine hematological and biochemical investigations were within normal limits without significant abnormalities.

What is your clinical differential diagnosis?

Tuberculosis (TB verrucosa cutis) and deep fungus infection (mycetoma or chromoblastomycosis)

PATHOLOGICAL FINDINGS

A skin biopsy from the lesion showed marked epidermal hyperplasia with irregular downward extensions of rete ridges. The horny layer showed hyperkeratosis associated with focal areas of confluent parakeratosis. The follicular ostia were dilated and filled with parakeratotic keratin with areas of intrafollicular neutrophilic abscess. The dermis showed patchy infiltrate in the upper dermis that was formed of well-defined granulomatous tubercles (Fig. 2). Two types of tubercles were recognized, the majority were non caseating tubercles formed of collections of epithelioid histiocytes with numerous multinucleated Langhan's and foreign body giant cells and surrounded by a quite number of lymphocytes (Fig. 3). Few tubercles showed central caseation surrounded by lympho-histiocytic infiltrate with few giant cells (Fig. 4). Ziehl-Neilson (ZN) staining and culture of skin biopsies for *M. tuberculosis* and atypical mycobacteria were negative. Other special stains (PAS, Gram's and Giemsa) failed to demonstrate any other microbes.

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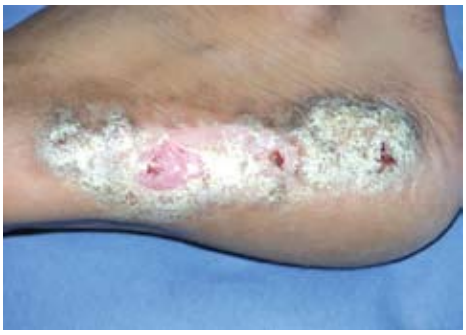

Fig. 1 Large verrucal plaque on the lateral aspect of the left foot with multiple erosions and atrophy of the borders.

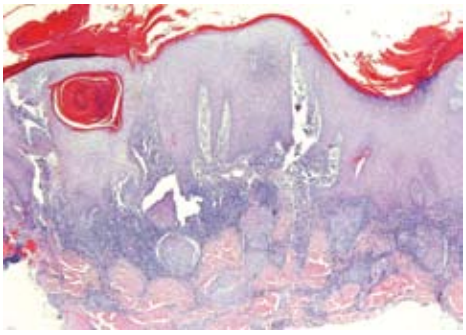

Fig. 2 Skin biopsy shows epidermal hyperplasia with granulomatous tubercles in the upper dermis.

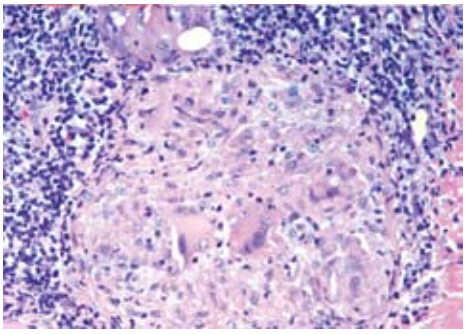

Fig. 3 Non-caseating granuloma with epithelioid histiocytes, giant cells and dense lymphocytic infiltrate.

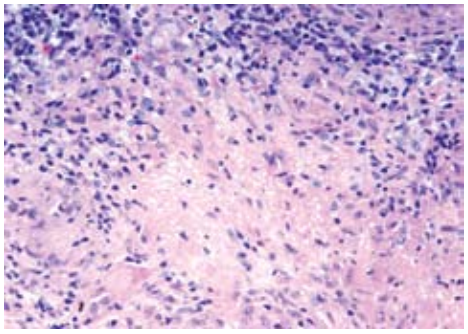

Fig. 4 Caseating granuloma with central caseation surrounded by lympho-histiocytic infiltrate.

DIAGNOSIS

Tuberculosis verrucosa cutis (TBVC)

COMMENTS

TBVC is a verrucous form of skin tuberculosis occurs in previously sensitized individuals due to exogenous re-infection with *M. tuberculosis* or *M. bovis*. It arises in patients with a moderate to high degree of immunity to the tubercle bacillus.[1]

The incidence of TBVC varies in different regions and countries of the world. However, it is one of the least common forms of cutaneous tuberculosis encountered.[2]

Physicians, pathologist and laboratory workers were certain professional groups who had a risk for TBVC, since they might be accidentally infected after contact with tuberculous patients or by autopsy material. In tropical climates, TBVC commonly affects children who contract the bacteria by walking barefoot and sitting on the ground contaminated with tuberculous sputum.[3]

Although the lower limbs and buttocks are the most frequently affected sites in eastern countries, the lesions were also encountered on the hands, especially in Europe. The differential diagnosis must clinically be made by other unusual infections such as blastomycosis, chromomycosis, fixed sporotrichosis, lesions caused by non-bacterial mycobacteria, lupus vulgaris, and tertiary syphilis. Inflammatory dermatoses including pso-

The Clinico-pathological challenges of Tuberculosis verrucosa cutis (TBVC)

Diagnosis	Clinical Features	Histopathology
Mycetoma	• Usually asymptomatic. • Mostly affecting the foot and lower leg. • Draining sinuses on the skin surface are common. • Bone destruction can occur.	• Focal neutrophil abscess with scattered giant cells and fibrosis. • Grains in the form of white, yellow, red or black granules in the centre. • Special stains include PAS and GMS.
Chromoblastomycosis	• Usually found on exposed sites particularly the feet, legs and arms. • Hypertrophic plaque ± central scarring / secondary ulceration. • Secondary infection is associated with itching, satellite lesions and lymphatic obstruction.	• Usually shows foreign-body granulomatous reaction. • Microabscess formation. • Fungal cells easily detected with H&E as golden brown rounded cells. • Pseudoepitheliomatous hyperplasia.
Blastomycosis	• Erythematous indurated area with a chancre. • Associated lymphangitis and lymphadenopathy. • May be some constitutional reaction.	• Epidermal hyperplasia, may be pseudo-epitheliomatous. • Granulomatous infiltrate contains a round or oval organisms with thick refractile walls.
Psoriasis	• Red scaly papules and plaques, sharply demarcated, dry, and usually covered with layers of fine, silvery scales.	• Epidermal acanthosis with club-shaped rete ridges of even length. • Suprabasal mitoses, thin suprapapillary epidermal plates. • Absent granular layer. • Confluent parakeratosis with collections of neutrophils.
Lichen simplex chronicus	• One or more slightly erythematous, scaly, well-demarcated, lichenified, firm, rough plaques. • Severe itching leading to pigmentary changes, erosion, and ulceration.	• Prominent granular layer, more irregular acanthosis, and fibrosis of the papillary dermis with collagen bundles aligned perpendicularly to the skin surface.
Hypertrophic lichen planus	• Most often occur on the lower limbs, especially around the ankles. • Hypertrophic or warty lesions are not common. • Associated with pigmentary changes and may be atrophy.	• Marked irregular acanthosis, hypergranulosis, and compact orthokeratosis. • The vacuolar alteration and the lymphocytic inflammatory infiltrate is accentuated at the base of the rete ridges.

riasis, lichen simplex chronicus and hypertrophic lichen planus may mimic this clinical picture.[4]

The histopathological features are characterized by marked pseudoepitheliomatous hyperplasia of the epidermis with hyperkeratosis and dense inflammatory cell infiltrate consisting of neutrophils, lymphocytes and giant cells. The presence of granulomatous infiltrates is a cardinal sign. Typical tuberculous foci with caseating necrosis are uncommon.[5,6]

The histological criteria of TBVC can differentiate it easily from other inflammatory skin diseases but it may be difficult to differentiate it from other non-bacterial mycobacterium or deep mycotic infections which required culture of the causative organism.[7]

Usually there is no obvious destruction of the underlying tissue associated with TBVC. However in long standing lesions, some deformity may occur.[8]

Monotherapy for TBVC is inadvisable and discouraged by most protocols. Inadequate treatment may allow the condition to recur. It may also facilitate the emergence of drug-resistant strains of M. hominis or M. bovis. Triple therapy with rifampicin, isoniazid and pyrazinamide as a 6-month regimen is the treatment of choice where M hominis is the organism involved.[9]

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