

## Case Report

# A lady with multiple papulonodular lesions: a case of papulonecrotic tuberculid

## 一女性患者患多發性丘疹結節性皮炎：丘疹壞死性結核疹一個案

TS Cheng 鄭天錫, KM Ho 何景文, KK Jong 莊國坤

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This is a case report of a 30-year-old female who had recurrent papulonodular eruption over her limbs and trunk. Biopsy findings were suggestive of papulonecrotic tuberculid. She responded well to standard anti-tuberculous regimen.

病例報告：30歲女患者，四肢及軀幹有復發性丘疹結節。活檢顯示丘疹壞死性結核疹。患者對標準抗結核治療反應良好。

**Keywords:** Cutaneous tuberculosis, papulonecrotic tuberculid

關鍵詞：皮膚結核病，丘疹壞死性結核疹

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### Introduction

Cutaneous tuberculosis (CT) can be classified as true cutaneous tuberculosis and tuberculids which is regarded as a hypersensitivity reaction to

*Mycobacterium tuberculosis* in patients with a high degree of tuberculin sensitivity. Papulonecrotic tuberculid (PNT) is a form of tuberculid. It is an uncommon manifestation even in areas with high prevalence of tuberculosis. The following is a case report of a young female patient with PNT.

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Social Hygiene Service, Department of Health, Hong Kong

TS Cheng, MRCP, MPhil  
KM Ho, FRCP, FHKAM

Histopathology and Cytology Laboratory, Public Health Laboratory Centre, Hong Kong

KK Jong, FHKCPath, FHKAM(Pathology)

Correspondence to: Dr. TS Cheng

Lek Yuen Social Hygiene Clinic, 3/F Lek Yuen Health Centre, 9 Lek Yuen Street, Shatin, New Territories, Hong Kong

### Case report

A 30-year-old female with good past health presented with a three years' history of recurrent erythematous papulonodular eruptions over her limbs and trunks. Some of the lesions were capped with pustules. The lesions were non-itchy and healed with scars. The patient had neither history of pulmonary tuberculosis nor contact with patients

with tuberculosis. She had no constitutional symptom either. A biopsy was performed before her first consultation and suggested perforating granuloma annulare. On examination, multiple red pustulonodular and folliculitis-like lesions were found over upper and lower limbs and trunk (Figures 1 & 2). Both the hands and feet were also involved.

A second skin biopsy over the right calf showed focal ulceration, the underlying dermis revealed necrotic debris with acute inflammatory cell infiltration, focal histiocytic reaction and a partially necrotic hair follicle (Figures 3 & 4). In other

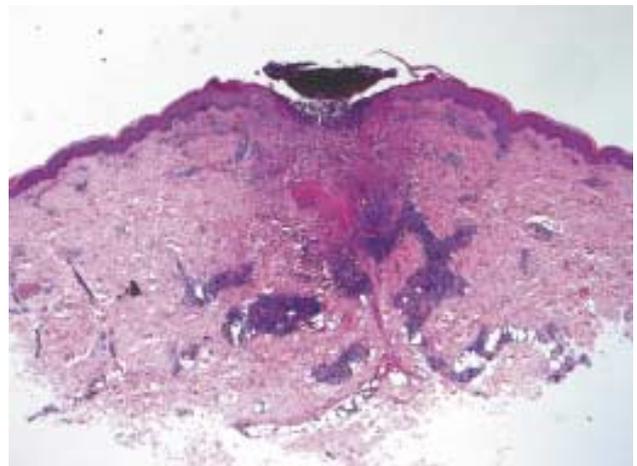
sections, the follicles were filled with keratinous material with aggregate of neutrophils. Some neutrophils were also present with the follicular epithelium. No necrobiosis or palisaded granuloma was found. Additional features from other sections included perivascular and periappendageal mixed infiltrate of lymphocytes, histiocytes and neutrophils; vasculitis and increased stromal mucin. Taken together, the histopathology was compatible with papulonecrotic tuberculid. Special stains showed no bacteria, acid fast bacillus or fungus. Her other



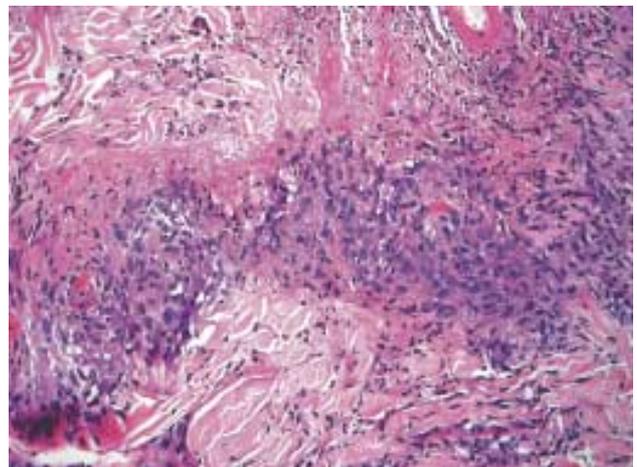
**Figure 1.** Multiple erythematous papulonodular lesions over the lower limbs.



**Figure 2.** Close up view of the lesions over the dorsum of right hand.



**Figure 3.** V-shaped necrosis of the skin and perivascular inflammatory cell infiltrate. (H&E x 5 original magnification)



**Figure 4.** The necrosis is focally surrounded by palisading epithelioid histiocytes. (H&E x 20 original magnification)

investigations included sputum and early morning urine for acid fast bacilli. These were negative. Complete blood picture, liver and renal tests were normal and erythrocyte sedimentation rate were not raised. The chest X-Ray was unremarkable. Tuberculin test was positive (15 mm induration).

The patient was referred to the Chest clinic and was started on anti-TB regimen comprising rifampicin 600 mg, isoniazid 300 mg, ethambutol 800 mg and pyrazinamide 1.5 g. The drugs were given daily for six days in a week. The patient noted fewer new lesions with resolution of old lesions after two weeks of treatment.

## Discussion

In Hong Kong, cutaneous TB represented 0.066% of all new cutaneous disease cases seen during a 10-year period (1983 to 1992) in the government skin clinics.<sup>1</sup> Lupus vulgaris was the most common type of true cutaneous TB (6.3%) while erythema induratum was the most common form of cutaneous TB (79.5%). PNT is rare in Hong Kong, it accounted for only 4% of cutaneous TB cases in the period 1983 to 1992.

PNT occurs preferentially in young adults. In a local study, the age of presentation is 29 years (SD±8, range 18-43 years)<sup>1</sup> and our patient is a 30-year-old lady. In Morrison and Fourie's series of 91 PNT cases, 26% were children.<sup>2</sup> Tuberculin test is positive in most cases, in our patient, the indurated area measured 15 mm.

Papulonecrotic tuberculid is a hypersensitivity reaction to *M. tuberculosis* or other mycobacterial organisms in individuals with a high degree of tuberculin sensitivity. It is the result of mycobacterial products lodging in small superficial vessels leading to an initial type III response and a later type IV response. The tubercle bacilli are not seen on tissue examination and cannot be cultured, but DNA can be detected by polymerase chain reaction (PCR) in some cases.

Clinically, PNT presents with symmetrical, asymptomatic crops of dusky red pea-sized papules, often crusted or ulcerated. Pustules may be present. They occur primarily on the extensor aspects of the arms and legs. In our patient, in addition to all these lesions on the limbs, they were also found on the abdomen. In a local study, 80% of the lesions are found on the lower and upper limbs.<sup>1</sup> Sometimes they can occur in penis appearing as ulceration, scars or nodules without ulceration.<sup>3</sup> The lesions involute spontaneously with pitted scars. In affected children, the distribution and morphology of lesions were similar to those of adults. While ears and conjunctivae were commonly involved, the face, trunk and genitalia were not.<sup>4</sup>

Associated extracutaneous tuberculosis was not uncommon. In one series, 40% of PNT had extracutaneous tuberculosis. Of these, 27% had TB lymph node.<sup>5</sup> Co-existence of other forms of cutaneous tuberculosis had also been reported such as PNT & lupus vulgaris,<sup>6</sup> PNT and scrofuloderma.<sup>7</sup> Simultaneous occurrence of two tuberculides such as PNT & erythema induratum were also noted,<sup>8</sup> and transformation from PNT to lichen scrofulosorum occurred in a 5-year-old girl.<sup>9</sup>

PCR rapidly identifies mycobacterial DNA in clinical specimens. Though a negative PCR test does not rule out cutaneous tuberculosis, a positive result enhances clinicians' confidence in instituting anti-tuberculosis treatment and reinforces patients' compliance. Victor et al. found the presence of the 123-base pair DNA fragment specific for *M. tuberculosis* in 50% of adult patients with PNT.<sup>10</sup> The sensitivity of PCR varies for different types of lesions. For example, it is 73% in paucibacillary cases such as tuberculosis verrucosa cutis and lupus vulgaris.<sup>11</sup> In those cases of PNT with positive PCR, it was proposed that they should be re-classified as papulonecrotic tuberculosis instead of tuberculid.

The differential diagnoses in our case include folliculitis and pityriasis lichenoides et varioliformis

acuta (PLEVA). Considering folliculitis, pustules were found in our patient but the pustule culture was negative for bacterial pathogens and it did not improve on antibiotics. In PLEVA, though papular eruption with variable necrosis and scarring are often found on extremities and trunk. The histology is not granulomatous. Interestingly, in the first biopsy of our patient, the histology showed granulomas associated with increased stromal mucin mimicking granuloma annulare. It is well known that PNT can mimic granuloma annulare histologically, though the clinical features are different.

Treatment for PNT should be a combination anti-tuberculous drug therapy such as that received in our patient. Recurrence of PNT was observed with monotherapy with isoniazid. Significant clinical improvement is usually noted within a short period after commencement of anti-tuberculous therapy.<sup>5</sup> Our patient also improved substantially two weeks after instituting anti-tuberculous therapy.

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