Papulonecrotic tuberculid; A significant association with systemic tuberculosis

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ABSTRACT:

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Papulonecrotic tuberculid (PNT) is a cutaneous hypersensitivity reaction to *Mycobacterium tuberculosis.* It is a rare tuberculid with very few case reports. It is a condition that occurs primarily in children and young adults. The patients usually present with crops of dusky red papules or papulopustules in symmetric pattern, with predilection for extensor aspect of extremities and buttocks. Some lesions may have central necrosis and are usually asymptomatic. The lesions can spontaneous heal with atrophic varioliform scar formation. The rash is likely to recur for many years if left untreated, but rapidly resolutes with antituberculosis treatment.

We present a case of a 23-year-old male with recurrent dusky red papules on both elbows and central necrotic ulcers on both legs for two years. One year later, he developed non-productive cough with significant weight loss. In our case, chest symptoms, bilateral cervical lymphadenopathy and typical PNT skin lesions prompt us to start antituberculosis medications despite the lack of microorganism detection from his clinical specimens. After two months into the treatment, his skin findings, chest symptoms and lymphadenopathy remarkably improved and disappeared.

Key words: Papulonecrotic tuberculid, hypersensitivity reaction, systemic tuberculosis

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Introduction

Papulonecrotic tuberculid (PNT) is a cutaneous hypersensitivity reaction to *Mycobacterium tuberculosis*. In addition, some reports also show an associated with *Mycobacterium bovis, Mycobacterium kansasii*, and after bacillus Calmette-Guerin (BCG) vaccination.[1,2] It is a rare condition that occurs primarily in children and young adults. The patients usually present with crops of dusky red papules or papulopustules in symmetric pattern, with predilection for extensor aspect of extremities and buttocks. Some lesions may have central necrosis and are usually no symptoms. The lesions can spontaneous heal with atrophic varioliform scar formation. Due to PNT has a significant association with systemic tuberculosis, awareness thorough investigations for systemic tuberculosis is mandatory.[1,6] Prompt response to antituberculosis treatment is its hallmark. [1,3,4,5]

Case report

A 23-year-old male presented with recurrent crops of dusky red papules with central necrotic ulcers on both elbows and both knees for two years. The lesions were asymptomatic, and some lesions spontaneously healed with residual depressed scar. One year later, he developed non-productive cough with significant weight loss. He denied history of fever, drug intake prior to the onset of lesions. He was previously healthy and none of family members has similar skin abnormalities were reported.

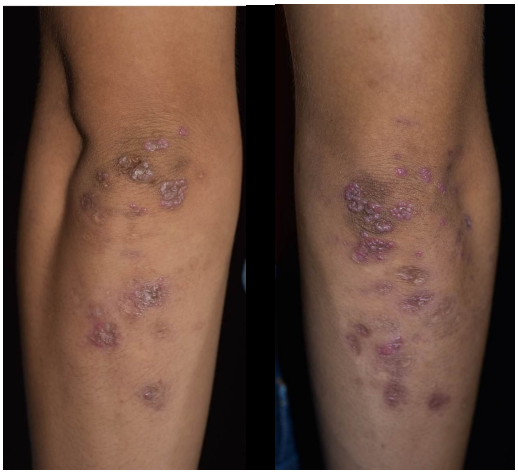

Figure 1

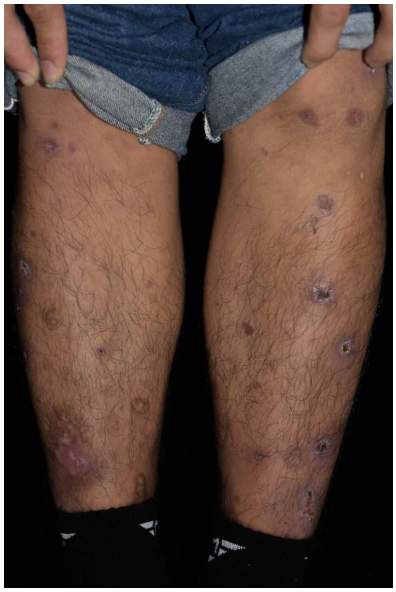

Figure 2

On physical examination, multiple sub centimeter posterior cervical lymphadenopathy on both sides were noted. Liver was impalpable. Other organ systems were unremarkable. Multiple crops of dusky red papules with central red depression on both elbows and multiple central necrotic ulcers, some with serum oozing on both legs were also noted (Figures 1,2). Neither oral nor genital ulcers were seen.

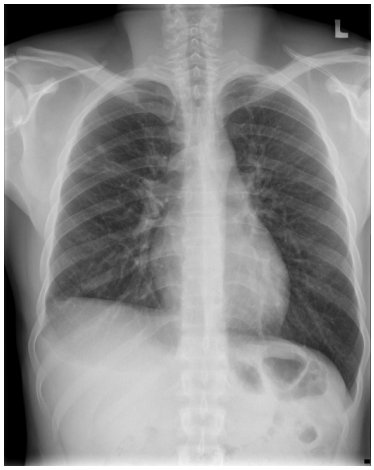

Figure 3

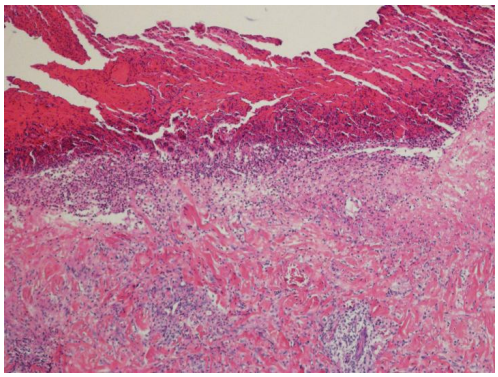

Figure 4 (100x)

Further laboratory investigations including complete blood count, liver and renal function tests and serum electrolytes were all within normal limits. Chest radiograph showed new nodularity in right upper lung zone (typical for pulmonary tuberculosis) (Figure 3). Ziehl-Neelsen stain of sputum was negative for acid-fast bacilli for three days and anti-HIV was negative. Skin biopsy from the right elbow showed an ulcer with crust and debris collection (Figure 4), caseous necrosis and fibrinoid necrotic of blood vessels' walls were noted in the underlying dermis (Figure 5). Granulomas, predominantly composed of lymphohistiocytes, were also found in the deep dermis (Figure 6). Acid-fast stain, modified acid-fast stain and periodic acid-Schiff stain did not reveal any organisms. His final diagnosis was papulonecrotic tuberculid with pulmonary tuberculosis.

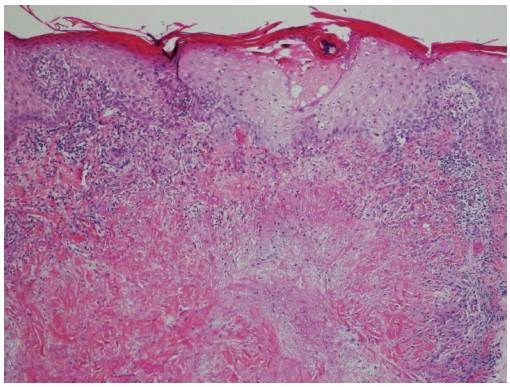

Figure 5 (100x)

After two months into the standard antituberculosis treatment (isoniazid 300mg per day, rifampicin 600mg per day, pyrazinamide 1,250mg per day and ethambutol 1,000mg per day), his skin findings, chest symptoms and lymphadenopathy remarkably improved and disappeared.

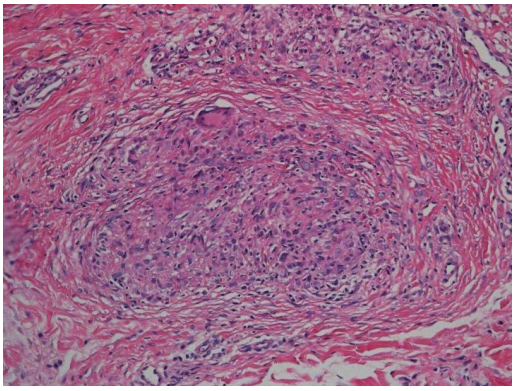

Figure 6 (200x)

Discussion

Papulonecrotic tuberculid (PNT) is a rare manifestation even in endemic areas for tuberculosis, characterized by crops of dusky red papules or papulopustules in symmetrical pattern and can spontaneous heal with atrophic varioliform scar formation.[1,2,6]

Significant percentages (40-75%) of PNT patients have preceding or concurrent systemic tuberculosis particularly tuberculosis of the lymph nodes. Therefore, thorough investigations for systemic tuberculosis is mandatory.[1,6]

Clinical features of PNT should be differential from pityriasis lichenoides et varioliformis acuta (PLEVA), papulopustular syphilid, perforating collagenosis and perforating granuloma annulare.[3,5] Histopathology plays an important role in confirming the diagnosis. While cutaneous non-tuberculous mycobacterial infections are usually non-specific.[7]

Histopathological findings from the condition typically reveal wedge-shape necrosis in upper dermis enclosed with non-specific inflammation, also with tuberculoid granulomas.[4] Prominent vascular involvement, ranging from mild degree of lymphocytic vasculitis, fibrinoid necrosis, thrombosis and destruction within dermal vessels may also be detected.[3] Acid-fast bacilli are rarely seen in PNT. This can be explained by the fact that the condition is a cutaneous reaction, not a direct tissue infection.[1]

PNT is diagnosed based on typical cutaneous manifestations, characteristic histopathologic findings and dramatic response to standard antituberculous treatment.[3,4,5] In our case, chest symptoms, bilateral cervical lymphadenopathy and typical PNT skin lesions prompt us to start antituberculosis medications despite the lack of microorganism detection from his clinical specimens. After two months into the treatment, his skin findings, chest symptoms and lymphadenopathy remarkably improved and disappeared.

In summary, we presented a typical case of PNT. An association of the condition with tuberculosis was emphasized. Therapeutic diagnosis could be tried, however, close follow-ups are warranted.

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