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Case Report

Papulonecrotic tuberculid with new lesion at the site of tuberculin test: An unusual manifestation

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Abstract Papulonecrotic tuberculid (PNT) is a form of cutaneous tuberculosis caused by hypersensitivity reaction towards M. tuberculosis. It presents in the form of erythematous papules that can progress into pustules or necrosis before turning into ulcus that heals after several weeks. Tuberculin test is one of the methods for PNT diagnosis. In rare occasions, a PNT lesion can manifest in the location of tuberculin test. A 42-year-old woman present with inflamed dots on both upper and lower extremities for 3 months before. Pruritus, pain, fever, cough, weight loss, night sweat, and myalgia are denied. Two years ago, the patient has a history of taking care of a family with lung tuberculosis. Tuberculin test was done on the patient, and it developed into a new lesion, an unusual occasion. Clinicopathology results of the patient concludes the diagnosis for PNT, for which the patient was given a regiment of antituberculosis drug for 6 months. Two months after the therapy no new lesions were formed, followed by resolution of the lesions in extremities. A follow up check did not find any recurrence of the disease. This case shows a good response towards tuberculosis drug for a case of PNT within months of starting the regiment.

Key words
Papulonecrotic tuberculid; Cutaneous tuberculosis; Tuberculin test.

Introduction

Papulonecrotic tuberculid (PNT) is one of the forms of cutaneous TB that is caused by hypersensitivity reaction towards M. tuberculosis and their antigen which spreads through the blood from a focal TB infection.[1,2] PNT classically emerge in the form of inflamed red papules, that are asymptomatic, that can develop into pustule or necrosis and turn into ulcus that can heal within several weeks to form varioliform scarring.[1-3]

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Manifestation of PNT lesion in the location of tuberculin test are rare, although in theory, the location of tuberculin test could develop tuberculid or necrotic reaction due to changes in pro-inflammatory cytokine as a T cell reaction to mycobacterium.[3,4]

PNT treatment follows lung TB guideline or extra TB, considering systemic involvement, patient's immunity status and the possibility to form multi drug resistant TB (MDR TB).

Following is report of a PNT case in a female aged 42 years old, with an unusual manifestation of new lesion at the site of tuberculin test.

Case report

A female aged 42 years old, with complaints of

Figure 1 Physical examination result.

red to purplish raised lesions like dots on both upper and lower arms until the back of hands, both lower extremities to the back of foot for 3 months ago. The red dots occurred without pain nor pruritus, after which a lesion appeared on the center, which disappears leaving a depressed scar. A history of fever, cough, weight loss, night sweat, myalgia, or pain is denied. The patient has a contact history of taking care of family members with lung tuberculosis 2 years ago. There is no history of previous disease.

On physical examination, there is no lymph node enlargement. Dermatology status on extremities found erythemathous papules et violaceus with clear border and lenticular size **(Figure 1)**.

Diascopy examination show positive result. Test using VDRL, TPHA, anti-HIV are non-reactive. Complete blood test found an increase in erythrocyte sedimentation rate (ESR) to 120 mm. Ziehl Nielsen staining on the lesion, and gene expert with sputum sample is negative for *M. tuberculosis.*

The result of 48 hours tuberculin test it was found strong positive with 24 mm induration. On the 4th day after tuberculin test, a blister was found on the test location, then ruptures and confluence on the 11th day and accompanied by the development of new erythematous papules that surrounds the tuberculin test. Histopathology result from biopsy specimen found necrosis and infiltration of lymphocytes-histiocyte in superficial dermis, datia langhans cells, and damage to blood vessel walls or fibrinoid necrosis as well as infiltration of inflammatory cells around it.

Based on the clinicopathology of the patient, it was concluded that the patient is diagnosed with PNT and is given a therapy regiment of one antituberculosis drug for 6 months. On 2 months follow up after therapy, there is no complaints of new lesion forming, there is a resolution of lesion in extremities as well as tuberculin test location and left a black and whitish stain. There is a reduction of ESR to 17 mm. On a follow up after antituberculosis drug therapy there were not found any recurrence.

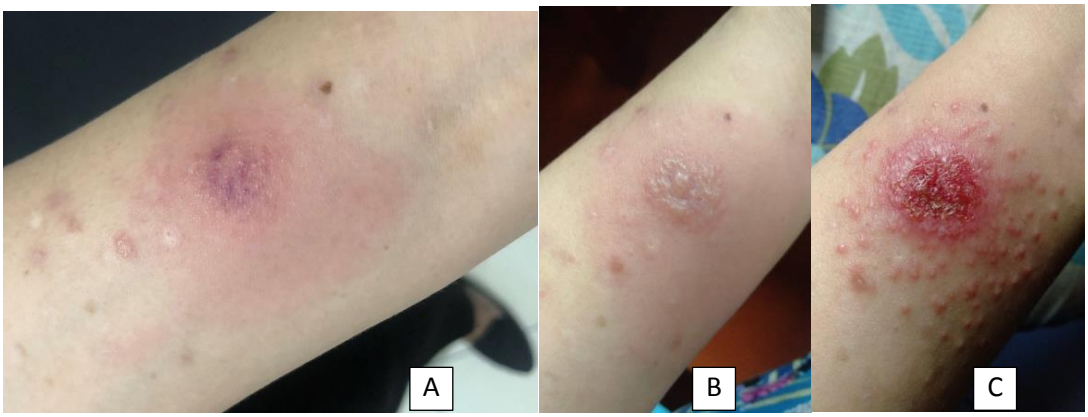

Figure 2 Tuberculin test results. A) Tuberculin test on 2nd day: Positive (+) 24 mm induration; B) Tuberculin test on 4th day: blisters forming; C) Tuberculin test on 10th day: blister ruptured and confluence accompanied by erythematous papules that surrounds test site.

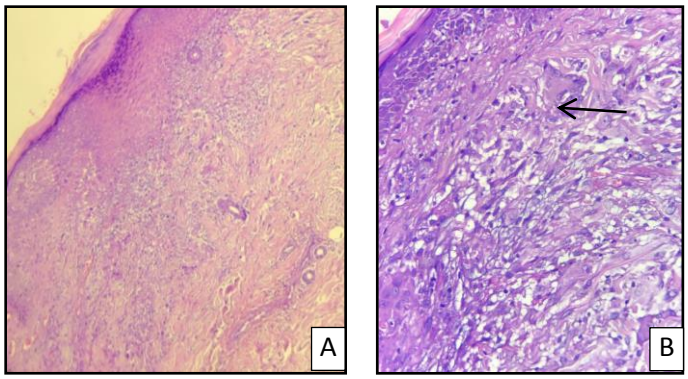

Figure 3 Histopathology test, Histopathology, microscopic apperances: There are infiltrates of lymphocyte-histiocyte, necrosis and datia langhans cell (black arrow) in superficial dermis, and fibrinoid necrosis in vascular wall with mononuclear inflammatory infiltrates around it.

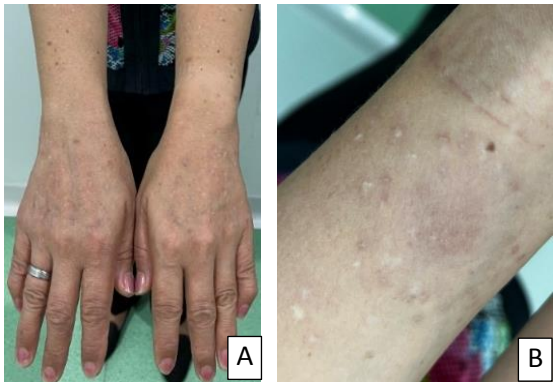

Figure 4 Tuberculin test 2 months after tuberculosis drug treatment.

Discussion

Papulonecrotic tuberculid (PNT) is often found in children and young adult.[3,5,6] PNT classically manifests as inflamed red papules and are most often found on the extensor extremities and buttocks, turning into healed ulcer within several weeks by forming varioliform scarring.[1] In the case, the patient is a 42 years old patient. The clinical signs that are found in the patient include erythematous papule found bilaterally on two extremities especially on the extensor, multiple, asymptomatic, as well as leaving scar.

Almost all cases of PNT show a strong positive tuberculin test, and can also cause a necrotic reaction.[7] Dongre *et al*. reported a case in with papulonecrotic tuberculid lesion on the site of tuberculin test, in which this are rarely found.[5] Other reports by Chabra *et al.*, found that 2 weeks after tuberculin test were found multiple necrotic papule on the periphery of test location that resolves after PNT case. This is found to have occur after changes to pro-inflammatory cytokine.[8] PNT cases are also reported after the administration of *Bacillus Calmetter Guerin* (BCG) vaccine.[9] The findings of this case report and findings of other report on the occurrence of PNT on tuberculin test supports the idea that tuberculid is a cutaneous hypersensitivity reaction towards *M. tuberculosis* or their antigen.

According to the report by Tirumalae *et al*., the histopathology finding in PNT case showed epiteloid granuloma with lymphocyte and Langhans giant cells and variable necrosis amount.[6,10] According to the literatures, involvement of blood vessels that is found on histopathology is a cardinal feature on PNT.[1] The clinicopathology of patient suggest papulonecrotic tuberculid diagnosis and patient were given antituberculosis drug. Antituberculosis drug regiment is a combination of rifampicin, isoniazid, pirazinamid, and ethambutol for 2 months, followed by rifampicin and isoniazid for 4 months.[6]

ESR often found an increase and can be used to monitor therapeutic response. In which were found a decline 4-6 weeks after treatment. Thoracic X-ray is needed to find active lung TB or history of previous lung TB.[6] On this case, there is an increase in ESR to 120 mm and negative result on *gene expert* test. Screening tests are needed to find the focus of TB that causes PNT, although in most cases they are not found.[4]

The relationship between tuberculid pathogenesis and tuberculosis are still debatable,[3,6] although a positive tuberculin test on skin, lesion resolution after antituberculosis drug, and the appearance of new lesion in the location of tuberculin test suggests strongly on the relationship.[6] The patient is diagnosed with papulonecrotic tuberculid and the therapy using antituberculosis drug is continued up to 6 months.

On the follow up at 6 months after antituberculosis drug, there is no new lesion, old lesion shows improvement into whitish flecks, and most have resolved. The result of ESR evaluation shows of a significant reduction and shows normal result at examination after 2 months and 6 months after consuming antituberculosis drugs. PNT patients that have undergone therapy rarely reports of recurrency, although scar tissue developed.[3,6]

Conclusion

Papulonecrotic tuberculid is caused by hypersensitivity reaction to *M. tuberculosis* and findings of this case report strongly support that. Tuberculin test is highly recommended to be performed in cases of suspected PNT. Histopathological features of necrosis, signs of inflammation, vascular involvement and significant response to anti-tuberculosis drugs support the diagnosis of PNT.

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