

# Chronic polyarthritis mimicking rheumatoid arthritis in a patient with leprosy

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Currently leprosy is now still a global threat in the world even after the introduction of multidrug therapy (MDT), including in Indonesia.<sup>1</sup> World Health Organization (WHO) data revealed that in 2002 there were 597,000 cases worldwide and the prevalence is only less than 1 every 10,000 populations.<sup>2</sup> Nevertheless, the latest data showed that 83% of leprosy cases concentrated in only 6 countries: Indonesia, India, Brazil, Madagascar, Myanmar, and Nepal.<sup>3</sup>

The most common manifestations of leprosy are cutaneous and neuritic manifestation. Rheumatologic manifestation is another common manifestation of leprosy.<sup>4-7</sup> Prevalence of rheumatologic manifestation of leprosy is range from 1% to 77% of all leprosy patients.<sup>4-11</sup> Study conducted by Mandal et al in India revealed that the prevalence of rheumatologic manifestation was 5.9%, in Brazil,<sup>6</sup> another study by Pereira revealed the prevalence of 9.1%.<sup>5</sup> Hadi, in Indonesia, showed the prevalence of arthritic manifestation was 7.5%.<sup>8</sup> Rheumatologic manifestations that can be found in leprosy are polyarthritis or oligoarthritis, soft tissue rheumatism, non-inflammatory arthritis, and also enthesitis.<sup>4-7</sup> We report a patient presenting with polyarthritis as the primary manifestation of leprosy.

## CASE REPORT

A 28 years old male patient came to our hospital with chief complaint of joints pain. Patient had suffered joints pain at both knees, shoulders, elbows, wrists, and fingers of both hands since 8 months intermittently. Joints pain usually accompanied by swelling and morning stiffness last for about an hour. In the last 2 weeks prior to admission, joints pain was more severe so the patient had difficulty to walk. The patient also had on and off low grade fever in the last 8 months. He used to take non steroid anti inflammation drugs (NSAIDs) and the pain as well as inflammation was relieved. He also had stiffness of his ring fingers and little fingers on both sides so it was difficult to move those fingers. His father and mother had history of leprosy and already completed the medications about 20 years ago.

On admission, the patient was fully alert, blood pressure 110/70 mmHg, pulse rate 102 times/minute, respiratory rate 18 times/minute,

temperature 37.8°C. There were anemic conjunctiva, madarosis of his eyebrows, and also saddle nose. Another positive findings includes evidence of arthritis on both knees, elbows, shoulders, ankles, wrists, and also proximal interphalangeals I-V of both hands. There were clawed hands, dropped feet, and enlargement of ulnar and posterior tibial nerves of both sides, maculopapular plaques with erythema at the back, hands, and legs, and also dry skin at both palms and soles. There were also pitting edema on both feet. Abdominal examination showed mild splenomegaly (S1). Due to the clinical manifestations (symmetrical polyarthritis, hand arthritis, and morning stiffness more than 6 month) the patient was suspected suffering from rheumatoid arthritis.



**Figure 1** A. The patient with madarosis of eyebrows and saddle nose; B. Clawed hand (see ring finger and little finger); C. Arthritis at proximal interphalangeal joints; D. Arthritis of right knee.

Laboratory examinations revealed Hb 8.8 g/dL normochromic normocytic, leucocyte 4,100/uL, thrombocyte count 130,000/uL, ESR 60 mm/h, CRP 1.69 mg/dL, random blood sugar 115 mg/dL, BUN 51.9 mg/dL, serum creatinine 1.26 mg/dL, AST 29 IU/L, ALT 16 IU/L, ANA 7.7 U (negative), negative RA factor, and anti CCP 8 IU/ml. Chest X-Ray was normal. Anteroposterior hands x-ray revealed soft tissue swelling and juxtaarticular osteoporosis. Abdominal ultra sonogram showed splenomegaly.



**Figure 2** Anteroposterior view of both hands x-ray revealed soft tissue swelling and juxtaarticular osteoporosis

Because of our highly suspicion of leprosy, we examined patient's ear lobe plasma for the presence of acid-fast bacilli. It revealed positive result and confirmed diagnosis of multibacillary (MB) type of leprosy with type 2 leprosy reaction and we took care the patient together with dermatology department.

The patient was diagnosed with MB type of leprosy with type 2 severe leprosy reaction with chronic polyarthritis manifestation and anemia of chronic disease. He was treated with PRC transfusion, sodium diclofenac 50 mg b.i.d., methylprednisolone 24 mg once daily (with tapering off 4 mg every 2 weeks), omeprazole 20 mg b.i.d., folic acid 500 mcg/day, B1 100 mg bid, B6 200 mg b.i.d., and B12 200 mcg b.i.d. The patient was also treated with MDT consists of rifampicin 600 mg monthly, clofazimin 300 mg monthly, and dapsone 100 mg daily for 12 months. The joint pain and swelling subsided within 3 days after the treatment started, then he was discharged on the following day, with the instruction to continue the MDT treatment. The patient was followed up at outpatient department and showed remarkable improvement. There was no arthritis.

## DISCUSSION

Leprosy is still a global health problem especially in Indonesia. World Health Organization classifies leprosy as paucibacillary (PB) and multibacillary (MB). Paucibacillary leprosy has less than 5 anaesthetic plaques, only 1 nerve involvement, and negative acid fast bacilli, while MB leprosy has more than 5 anaesthetic plaques, with more than 1 nerves involvement, and also positive acid fast bacilli. One of leprosy complication is leprosy reaction. The reaction can occur before, during, or after leprosy treatment. There are two types of leprosy reactions: type 1 and type 2. Pathogenesis of type 1 leprosy reaction involves the amelioration of cellular immunity in leprosy patient, while type 2 involves the amelioration of humoral immunity. Type 1 leprosy reaction is characterized by mild fever, worsen skin and neurologic manifestation with rare other organ involvement, and it can be happened both in PB and MB type. Type 2 leprosy reaction is characterized by

fever, generalized weakness, worsen skin manifestation which is sometimes accompanied by erythema nodosum leprosum (ENL). Common other organs involvement are joint, eye, testicle, renal, lymph node, and it can only occur in MB type leprosy.<sup>2,3,12</sup> Our patient's diagnosis of MB leprosy was based on our findings of long-term contact with leprosy patients (his parents), fever, madarosis, saddle nose, enlargement of more than 2 nerves (ulnar and posterior tibial), clawed hands, and dropped foot that was confirmed by positive findings of acid fast bacilli on ear lobe serum examination. Diagnosis of type 2 leprosy reaction are also established by the presence of fever, weakness, arthritis (extradermal and neural manifestation) and the diagnosis of MB type leprosy.

Rheumatologic manifestation is the most prevalent manifestation of leprosy after dermatologic and neurologic manifestation.<sup>4,7,10-12</sup> There were some cases reported leprosy without any dermatologic manifestation and preceded with pure rheumatologic or neuritic leprosy.<sup>9,13-18</sup> Polyarthritis, oligoarthritis, soft tissue rheumatism, non-inflammatory arthritis and enthesitis can be the manifestation of leprosy in earlier stage.<sup>4,6,7,10,11,19</sup> The common mechanisms of leprosy arthritis is the presence of leprosy reaction in which intra-articular immune-complex depositions and complement activations cause arthritis and also concomitant with activation of cellular immune response by recruitment of inflammatory cells to the joints structure. Several studies also revealed that the most frequent leprosy rheumatologic manifestation is oligo-/polyarthritis with remarkably resemblance with rheumatoid arthritis.<sup>5,9</sup> Several researches have been conducted to know the association between leprosy and rheumatoid arthritis. It is likely that the resemblance between leprosy arthritis manifestation especially in leprosy reaction and rheumatoid arthritis is caused by the similarity in their pathogenesis, which is immune-complex deposition and complement activation due to the activation of humoral immune response and also activation T-cell (cellular immune response) leading to inflammation process in the joints.<sup>20,21</sup>

The goal of leprosy reaction treatment is to suppress immune reaction that happened so we can prevent complications and disability and we still continue the leprosy medication.<sup>1</sup> The MDT regiments recommended by WHO can be seen on table 1.

**Table 1** WHO-recommended multidrug therapy regiments for leprosy<sup>2,3,12</sup>

Type of leprosy	Drug treatment		Duration of treatment (months)
	Monthly supervised	Daily, self-administered	
Paucibacillary	Rifampicin 600 mg	Dapsone 100 mg	6
Multibacillary	Rifampicin 600 mg, Clofazimine 300 mg	Clofazimine 50 mg, Dapsone 100 mg	12

Leprosy reaction can be treated with steroids, prednisone or prednisolone 40 mg per day with tapering off 5 mg every 2-4 weeks after demonstration of improvement.<sup>2,3,12</sup> One randomized controlled trial study concluded that prednisolone

30 mg tapered slowly to zero over 20 weeks was superior to prednisolone 60 mg tapered over 12 weeks.<sup>12</sup> Thalidomide 300–400 mg daily has a dramatic effect in controlling ENL and preventing recurrences. Its use is limited because of teratogenicity (phocomelia) and possible neurotoxicity (although this does not appear to be a problem in leprosy patients).<sup>3,12</sup> Clofazimine and pentoxifylline have both been used in ENL, but they are less effective than prednisolone or thalidomide.<sup>12</sup> Colchicine and chloroquine have also been used with limited effect.<sup>12</sup> Management of arthritis includes giving of NSAIDs to decrease the inflammation and pain immediately, but the main principle is to overcome the underlying process which is leprosy reaction by giving MDT and steroids.<sup>2,3,12</sup> Although clinically the patient showed

the manifestation of rheumatoid arthritis, the serology was negative. After treatment with NSAIDs (sodium diclofenac), methylprednisolone, and MDT for leprosy, the arthritis subsided within 3 days and it remained as such for more than a year of follow ups. Based on the result, we concluded that the chronic symmetrical polyarthritis (mimicking rheumatoid arthritis) in the patient was related to leprosy.

### SUMMARY

We have reported a 28 years old male patient with leprosy with main manifestation of polyarthritis due to type 2 leprosy reaction. After establishing the diagnosis, with proper treatment consists of steroids, NSAIDs, and MDT according to WHO recommendation, the arthritis manifestation and leprosy reaction was subsided.

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