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Borderline Lepromatous Leprosy with Mild Reversal Reaction in Child

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Abstract

Background: Childhood leprosy is an important marker of the status of the ongoing leprosy control program, as it is an indicator of active disease transmission in the community. Children are believed to be the most vulnerable group to infection with M. leprae due to their immature or nascent immunity and exposure to intrafamilial contacts.
Case report: A 8 years ole male patient presented with hypopigmented patch and erythematous patch with not itchy, not pain, and loss of sensation which increasing more since 1 week ago. Initially 2 months ago, white patch that felt numbness appeared on the back, then white patches wider and spread to the chest, both arms and thighs. Dermatologic finding showed erythematous plaques, hypopigmentation macule with infiltration on cheek, back, both of arms, xerosis cutis. Decreased sensory function was found in the median, ulnar and posteriol tibial nerves. Acid-fast bacilli (AFB) staining revealed bacterial index (BI) +5 and morphological index (MI) 80%. Histopathological examination showed atrophic stratified squamous epithelium, grenz zone, many groups of foamy macrophages reached the fat layer. The patient was diagnosed Morbus Hansen borderline lepromatous leprosy type with mild reversal reaction and treated with MDT-MB drug package, vitamin B complex tablet, zinc tablet, paracetamol tablet, and 10% urea cream on dry skin 2 times a day on dry skin after bath during 2 month and the lesion was reduced.
Conclusion: The rate of childhood leprosy continues to be a significant problem. There is a clear need to strengthen early detection, treatment, and regular follow up of these cases in both high and low endemic setting is essential in the prevention of deformities.

Keywords: Borderline lepromatous, Childhood, Leprosy, Reversal reaction

Introduction

One of the three principal targets of the global leprosy strategy 2016–2020 proposed by the World Health Organization (WHO), is zero incidence of new cases of childhood leprosy with Grade 2 disability.[1] WHO, at the end of the 2018, 184.238 morbus hansen patients globally were recorded as “on treatment” and prevalence rate was 0.24 per 10.000 population. The global level, India contributes ~58% of the total child leprosy burden followed by Indonesia and Brazil.[2,3]

In Indonesia, the prevalence of morbus hansen in 2017 was 0.70 cases/10.000 population. Gunawan et al reported in Indonesian children with leprosy, highest proportion of cases were found in the age group of 13–14 years old (47.73%), followed by 10–12 years old (28.79%), and 7–9 years old (18.18%).[3,4] In dr. M. Djamil hospital Padang from 2018-2021, there were 7 cases (9,2%) leprosy childhood. Sakral A, dkk. In retrospective analysis of clinical and epidemiological trends in childhood leprosys reported are 55 (3.55%) cases of childhood leprosy were diagnosed. Thirteen (23.6%) children reported contact with a diagnosed case of leprosy, mainly in close contacts. Fifty-three (96.4%) children presented with cutaneous lesions while 2 (3.6%) had pure neural involvement.[4]

Leprosy with reaction in children must be handled seriously because of its potential to cause physical deformity and psychosocial damage on the child and family. Disabilities are recognized as major contributing

factors of the stigma associated with leprosy, and they may impact psychological development in children. The four principles of management reactions are control acute neuritis to prevent anasthesia, paralysis and contracture, halt eye damage and prevent blindness, control pain, and kill the bacilli, and prevent extension of disease.[4,5] Oral and intralesional corticosteroids typically are highly effective for the clinical treatment of type 1 and 2 leprosy reactions given their antiinflammatory properties.[5]

This case report is made to discuss further treatment and monitoring is importance of early detection and recognition of sign and symptoms of leprosy with reactions.

Case Report

A 8 year old man presented to the hospital with hypopigmented patches and erythematous patches that felt numbness that size like a coin did felt itchy on her face, arms, and legs for 2 month. The patient was complaint with symptoms like fever, itchy, or joint pain. She had been treated by several doctors taking the disease as an pytiriasis versicolor but his condition never improved. The patient who lived in leprosy endemic area, but his mother denied his family suffering of leprosy. The patient's family had been examined and declared not suffering from leprosy.

On physical examination there were normal vital signs, body weight 30 kg, height 115 cm, and there was enlargement of auricular magnus and posterior tibial nerves but didn't felt pain. On sensibility test that hypoesthesia on stomach, back, digiti 1- 5 manus sinistra dan dextra, digiti 1-5 plantar pedis dextra and sinistra, stocking glove pattern of sensory impairment (+). On dermatological state there were erythematous macule (on cheek, chest, right arm, both of thigh), hypopigmentation macule chest, abdomen, back, both of arms and legs, infiltrate on cheek, right arm, back, xerosis (both of arm and legs), and blackish crust both of hands (Figure 1). On slit skin smear examination from the lesions of the arm and thigh, acid-fast bacilli were found with bacteriological index (BI) +5 (figure 2) and morphological index (IM) 80%. Histological examination showed with a partially atropic epitelium squamousum cell and grenz zone area on subepidermal, there were cluster of lymphocytes, histiocytes and epithelioids, foamy macrophage between hair follicles and sudorifera (Figure 3)

Figure 1. Erythematous plaques, infiltrates on both of cheeks, ears lobe erythematous on left arms,

on chest, on both thigh, xerosis and blackish crust both hands and oedem on the feet.

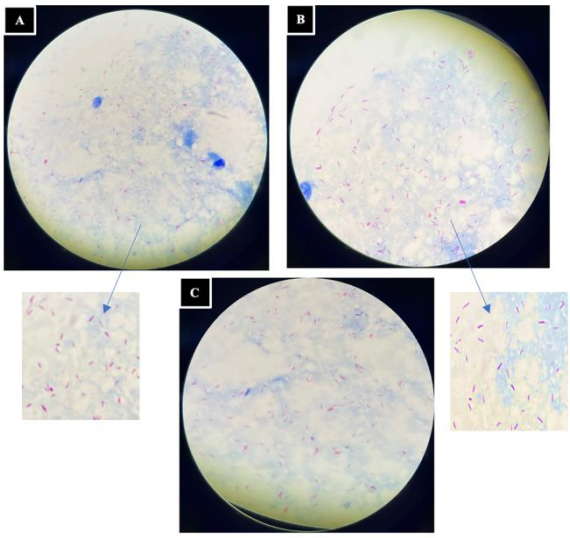

Figure 2. Slit-skin smear result from A. right ear, B. left ear, C. lesion

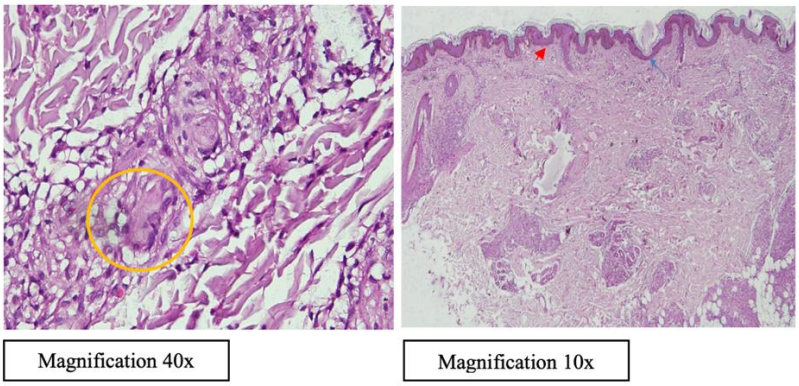

Figure 3. Atrophic stratified squamous epithelium (blue arrow), Grenz zone (red arrow), Many groups of foamy macrophages reached the fat layer (yellow circle)

The patient was diagnosed with MB leprosy with mild reversal reaction and treated with multidrug therapy (MDT) regimen from World Health Organization (WHO) for children. This regimen consists of 50 mg dapsone daily, 450 mg rifampicin monthly, and 150 clofazimine monthly, followed by 50 mg clofazimine every other day for 12 months, paracetamol tablet 3x250 mg, zinc tablet 1x10 mg, urea 10% cream applied 2 times a day on dry skin after bath. After 2 months of treatment, the patient complained the lesion improved (Figure 4). On physical examination, the sensory nerves on the lesions and peripheral nerves improved. The patient was diagnosed with MB leprosy with mild reversal reaction.

Figure 4. After 2 month of treatment with MDT MB the lesion was reduce

Discussions

Leprosy in children and adolescents is a sensitive indicator of the magnitude of the disease in the community, demonstrates the limited efficacy of health programs, and allows the identification of risk factors in this population.[6] Childhood leprosy reflects disease transmission in the community as well as the efficiency of ongoing disease control programmes.[7] The diagnosis of leprosy is based on WHO criteria. The diagnosis of leprosy in current practice is based on the presence of at least one of the three cardinal signs : (i) definite loss of sensation in a pale (hypopigmented) or reddish skin patch; (ii) thickened or enlarged peripheral nerve with loss of sensation and/or weakness of the muscles supplied by that nerve; or (iii) presence of acid-fast bacilli in a slit-skin smear.[1] The slit-skin smear requires technical expertise in taking the smear, fixation and staining, and reading the results. Slit-skin smears are positive only in MB leprosy (i.e. any positive slit skin smear is classified as MB irrespective of the number of patches and/or nerve involvement).[8] In this case, the patient were presence of three cardinal sign which of slit skin smears revealed bacterial indext of +5.

The histopathology features of BL type, the granuloma consists predominantly of macrophages with isolated clumps of epithelioid cells. The macrophages are young with uniform size, brightly stained eosinophilic cytoplasm and prominent nucleolus. Initially granuloma is perivascular and then expands around the neurovascular units. Subepidermal zone is free.[9,10] The Indonesian government urges that efforts to prevent disability and increase disability can be carried out using the 3M principles that checking the eyes, feet regularly, protecting the eyes, hands and feet from physical trauma, and taking care of himself.[10,11]

One of the education that the doctor had to do to the patient is to explain to the patient who have close contact with patient to check themselves so that the spread of leprosy can be prevented. Contacts of leprosy cases are more likely to be infected and develop leprosy. But not everyone infected with M. Leprae develops clinical leprosy into clinical disease. There is no point of care diagnostic test for infection with M. Leprae or for leprosy, although ELISA anti PGL-1 has been considered and sometimes used as a means to identify infection. PGL-1 positive contacts were 3 times more likely to develop leprosy; a variable proportion, but less than 30% of the cases were attributed to PGL-1 and less than 45% of the PGL-1 contacts developed leprosy.[7,12]

Chemoprophylaxis is carried out in the form of giving a single rifampicin dose drug to contacts with leprosy who meet the criteria and requirements.[1,5] A study Narang T and Kumar B et al suggested chemoprophylaxis in high-risk contacts, that is, contacts with MB disease and seropositive to anti-PGL-I cases, using single-dose rifampicin (SDR), 600 mg for adults above 35 kg of body weight, 450 mg for children above 9 years of age, and adults 20–35 kg, and 300 mg for children weighing <20 kg. So, to family patient was educated to using single dose rifampisin who lives with patient.[2]

Early diagnosis and prompt treatment with full course of MDT continue to be the key strategy to prevent the disease because it breaks the chain of transmission. Promoting active case-finding and continuous contact tracing are essential.[2] In this way, geographical information systems (GIS) and spatial analysis have contributed to identify priority areas with higher risk for leprosy, increasing the efficiency of active strategies. School children surveys, performed by well-trained health professionals, is imperative in highly endemic areas in order to increase the early detection of new cases, actually this is one of the pillars of the WHO current recommendation.[2,9] The principles of therapy for reversal reaction are local immobilization, analgetic/antipyretic treatment, MDT is still given without dosage changed, avoid precipitating factors, and given antireaction drugs. Characterized of mild reversal reaction were inflammation of some old lesions and can be treated with aspirin or paracetamol for several weeks [11].

Conclusions

- We reported a case of Borderline Lepromatous type Morbus Hansen with reversal reaction in a 9 years old man.
- Early detection of cases, regular and complete treatment with MDT, and contact tracing are important in reducing the burden of leprosy and deformity in childhood leprosy.

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