CASE REPORT

Lucio phenomenon of leprosy LL type on pregnancy: A Rare Case

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Summary

Introduction: Lucio phenomenon is a rare type of reaction in untreated, diffusely infiltrative form of lepromatous leprosy type, characterised with ulcerative type of skin lesions.

Case: A 29 year old Indonesian female, 7th months primigravida with a four-month history of painful scarlet spots that darken and ulcerate on both of her hands and legs. The patient was experiencing fever. The patient’s eyebrows were lost and her earlobes were thickened 3 years ago. Slit-skin smear: BI 6+, MI 7%. Histopathology: Lucio phenomenon. PCR detecting M. leprae DNA on skin lesion and amniotic fluid: positive; umbilical cord membrane and umbilical cord: negative. Anti-PGL-1 IgM and IgG: patient: 4,854 U/mL and 1,061 U/mL, respectively; 5 month-old baby: 5 U/mL and 1,724 U/mL, respectively; 1 year-old baby: 0 U/mL and 3 U/mL, respectively.

Conclusion: Placenta is considered a protective barrier toward feto-maternal transmission of M. leprae. The baby had the passive antibody to M. leprae from the mother’s blood transmitted through the umbilical cord as demonstrated by the presence of anti-PGL-1 IgG antibody.

Keywords: Lucio phenomenon, leprosy, pregnancy, transplacental transmission
Introduction

Leprosy is a mycobacterial disease which manifestations, course, and prognosis are strictly associated with the patient’s immune system. Globally, the annual new case detection of leprosy continues to decline. By 2012, Indonesia is the 3rd highest country for a new case of leprosy with East Java as the highest province for new cases of leprosy in Indonesia. Lucio leprosy is manifested by ulcerative type of skin lesions occurring in diffusely infiltrative of lepromatous leprosy (LL) type. This study reports a case of 7th month primigravida with Lucio Leprosy, without prior treatment using WHO-Multi Drug Therapy (MDT).

Case history

A 29 year old Indonesian female, 7th months primigravida presented to our emergency ward with a 4-month history of painful scarlet spots that darken and ulcerate on both of her hands and legs (Figures 1 and 2).

The patient was experiencing fever. The patient’s eyebrows were lost (Figure 3) and her earlobes were thickened (Figure 4) 3 years ago.

No cardinal signs of leprosy such as hypopigmented or erythematous patches/plaques and sensory loss were found.

Slit-skin smear from earlobes revealed bacterial index (BI) 6+ with globi and morphological index (MI) of 7%. A skin biopsy from the leg’s ulcer margin showed atrophic epidermis with Grenz zone, group of foam cells with some of lymphocyte cells, and vasculitis with endothelium occlusion of thrombus on the dermis. The subcutaneous fat showed lymphocyte cell infiltrations followed by proliferation of capillary blood vessels (Figure 5A). Acid-fast bacilli were seen prominently inside the blood vessels (endothelium) and on the subcutaneous fat in Fite-Farraco staining (Figure 5B). These findings concluded a Lucio phenomenon.

![Figure 1. Hyperpigmented macules and infiltrated plaques distributed bilaterally, symmetrical on both hands.](image_url)
Polymerase Chain Reaction (PCR) method was performed to detect *M. leprae* DNA using the pF-LpR primer. Samples taken from the skin lesion and amniotic fluid showed a positive result (Figure 6).

Serological examination result of the patient’s peripheral blood and umbilical cord blood using Enzyme Linked Immunosorbent Assay (ELISA) were taken during caesarean section as shown in Table 1.

WHO-MDT Multi Bacillary (MB) regimen was given along with dexamethasone 0.5 mg three times daily until the symptoms alleviate before it was changed to methylprednisolone 16 mg twice daily, paracetamol 500 mg three times daily, folic acid 1,000 μg once daily, and...
wound care. A caesarian section was performed on 40th week of pregnancy. Follow up serological examinations results using ELISA were collected from the patient after 7 months of WHO-MDT MB and the baby at 5 months and 1 year as shown in Table 1.

Discussion

Leprosy in women indicates that it is not just access to health services that influences under-reporting cases but also the illiteracy, low status, and other cultural factors.\textsuperscript{4} LL may present as a diffuse variant, in which there are no circumscribed elements, i.e., nodules (lepromas), macules, or plaques, but instead characterised by diffuse and massive infiltration of the skin, known as diffuse LL or Lucio-Latapi leprosy\textsuperscript{5} which were found in this patient.

Reports of serodiagnosis using PGL-1 have indicated that it is possible to identify 75–100% of MB patients.\textsuperscript{6} Patients sometimes remain seropositive for many years after

![Figure 4. Earlobes thickening.](image)

![Figure 5.](image)

Figure 4. Earlobes thickening.

Figure 5. (A) On the sub-cutaneous fat, there were lymphocyte cell infiltrations followed by proliferation of capillary blood vessels, Hematoxylin Eosin staining, 400\times. (B) Acid-fast bacilli were seen prominently inside the blood vessels (endothelium) and on the subcutaneous fat, Fite-Farraco staining, 400\times.
treatment, a possible cause of persistency is the continuing presence of dead or dormant bacteria inside the body. In leprosy patients with pregnancy, the large number of women who first presented with leprosy lesions in puerperium could be attributed to the increased visibility of leprosy lesions. The increase load of *M. leprae* is most frequently seen in the 3rd trimester of pregnancy.\textsuperscript{7}

In this case, the anti-PGL-1 IgM and IgG titers of the patient’s taken during caesarian section were highly over the cutoff limit, while the umbilical cord blood anti-PGL-1 IgM and IgG titers were below. Herein, placenta is considered a protective barrier toward feto-maternal transmission of *M. leprae*. The placenta presents multiple innate defenses against pathogens. Few pathogens can circumvent these barriers, and those that can do so at relatively low frequencies.\textsuperscript{8}

*M. leprae* DNA was demonstrated in the amniotic fluid. Five percent of babies born from mothers with active leprosy had self-healing indeterminate leprosy under the age of 2 years, and also anti-*M. leprae* antibodies of class IgA, IgG, and IgM. The presence of IgA and IgM anti-*M. leprae* antibodies in the cord blood from newborns of leprosy mothers probably indicates intrauterine immunologic stimulation due to transplacental transmission of *M. leprae* antibodies. The levels of IgG anti-*M. leprae* antibodies showed a continuing and

**Figure 6.** PCR examination; 1. Skin lesion, 2. Amniotic fluid, 3. Umbilical cord membrane, 4. Umbilical cord, 5. Negative Control, 6. Positive Control *M. leprae Thai53*, 7. DNA ladder.

**Table 1.** Results of serological examination using ELISA

<table>
<thead>
<tr>
<th>Subject</th>
<th>ELISA anti PGL-1</th>
<th>Cut off</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>IgM</td>
<td>IgG</td>
</tr>
<tr>
<td>Patient during the caesarian section</td>
<td>4,854 U/mL</td>
<td>1,061 U/mL</td>
</tr>
<tr>
<td>Umbilical Cord Blood during the caesarian section</td>
<td>0 U/mL</td>
<td>516 U/mL</td>
</tr>
<tr>
<td>Patient (after 7 months of therapy)</td>
<td>1,912 U/mL</td>
<td>1,505 U/mL</td>
</tr>
<tr>
<td>Baby (5 month-old)</td>
<td>5 U/mL</td>
<td>1,724 U/mL</td>
</tr>
<tr>
<td>Baby (1 year-old)</td>
<td>0 U/mL</td>
<td>3 U/mL</td>
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marked decrease at 3–6 months and 6–9 months and even 15–24 months after birth.\(^9,10\)

To support this theory, anti-PGL-1 IgM and IgG titers were reviewed again when the baby was 5 months old and 1 year old and we found that the titers were drastically decreasing, especially the anti-PGL-1 IgG titer. Based on these data, we assumed that the baby had the passive antibody to \(M. leprae\) from the mother’s blood transmitted through the umbilical cord blood as showed by the presence of anti-PGL-1 IgG antibody.

References