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Diagnosis of New Leprosy Patients through Various Histological Findings according to Biopsy Sites

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Dear Editor:

An 81-year-old male had multiple erythematous to dusky patches on the trunk, arms, and legs for several years (Fig. 1A, B) and two violaceous nodules on the back with unknown onset (Fig. 1C). He had numbness of the hands and feet and edema of the hands and face during the previous six weeks. Punch biopsies were performed on the patch and nodule on the back. The nodule showed dense dermal infiltration by foamy histiocytes and lepra cells containing degenerated microbial components (Fig. 2A, B). The patch showed only superficial dermal perivascular and periappendageal lymphohistiocytic infiltration (Fig. 2C, D). Acid-fast bacillus (AFB) staining revealed that acid-fast bacilli was denser in the nodule than in the patch and some of the bacilli were clustered, forming globi (Fig. 2E, F). The patient was diagnosed as a new lepromatous leprosy patient based on clinical and histological findings. The patient was referred to the Hansen Welfare Association of Korea. Amplication of 154 bp *Mycobacterium leprae*-specific repetitive element (RLEP) was confirmed in PCR results of Hansen Welfare Association of Korea (Fig. 2G). The institution confirmed that the patient was

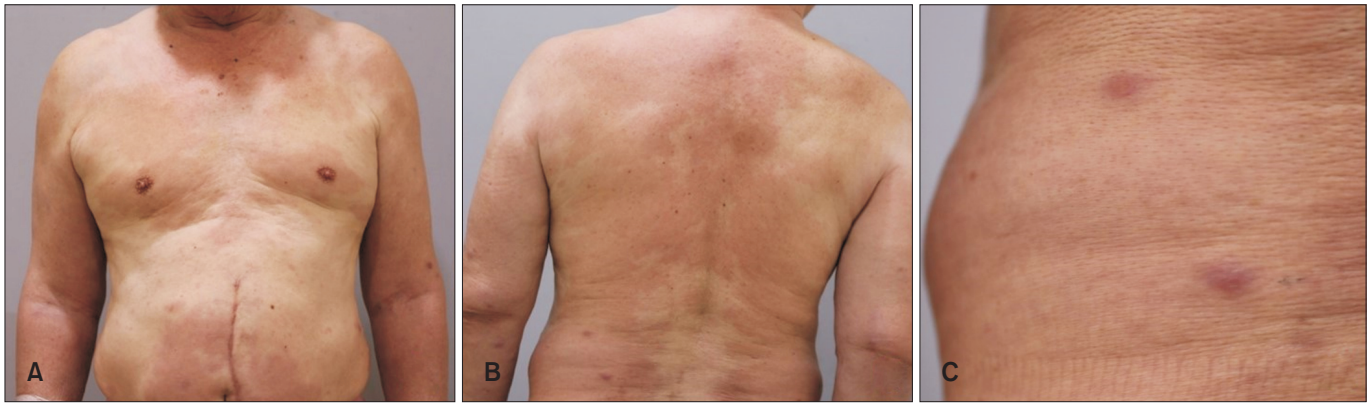

Fig. 1. (A, B) Multiple erythematous to dusky patches on the trunk and on the upper extremities and (C) two violaceous nodules on the back. We received the patient's consent form about publishing all photographic materials.

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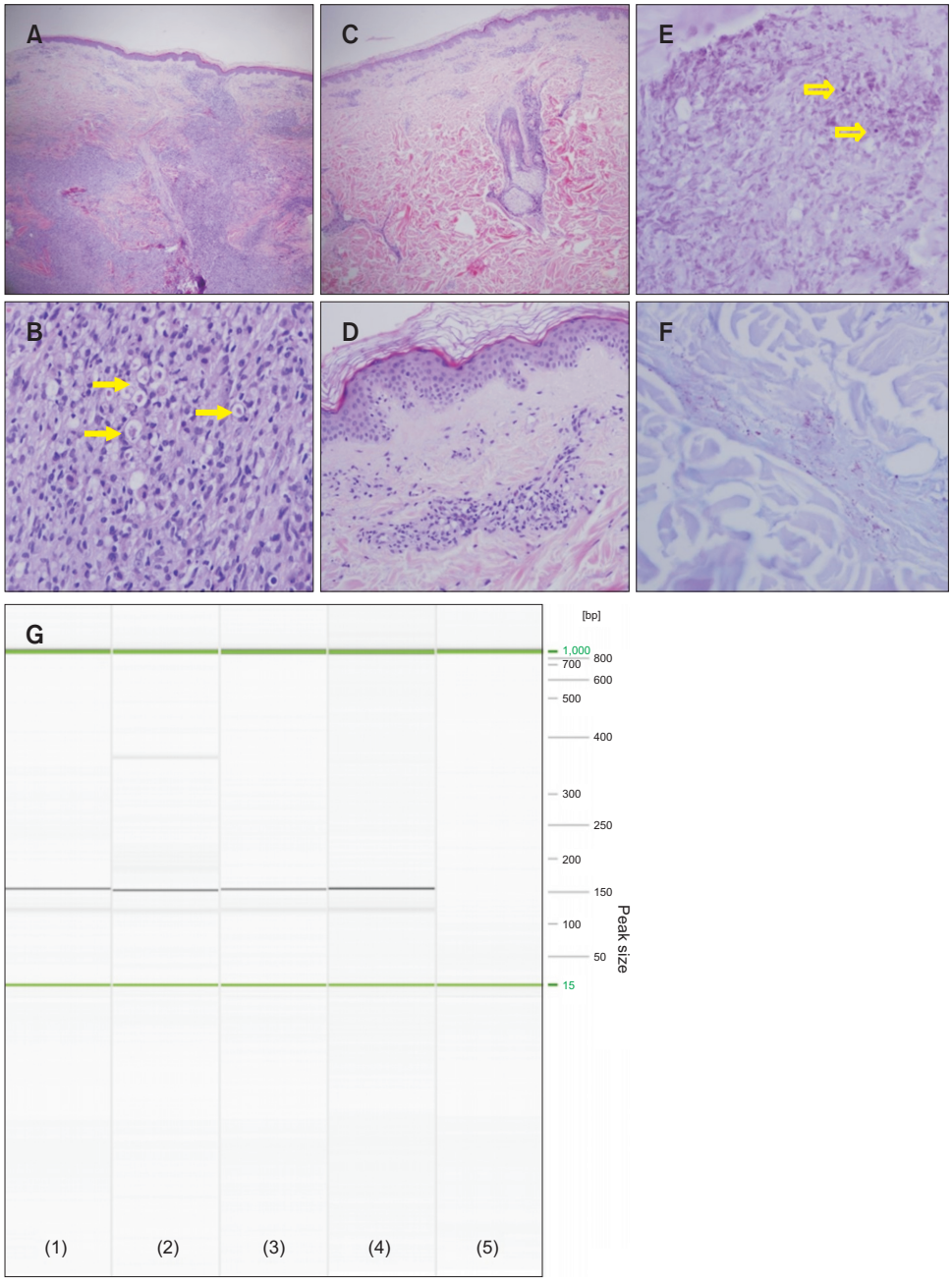

Fig. 2. (A, B) Histopathology of the nodule shows dense dermal infiltration by foamy histiocytes and lepra cells (arrows) (A: H&E, ×40; B: H&E, ×400). (C, D) Histopathology of the patch shows only superficial dermal perivascular and periappendageal lymphohistiocytic infiltration (C: H&E, ×40; D: H&E, ×200). (E) Acid-fast bacillus (AFB) staining of the nodule shows dense infiltration by acid-fast bacilli. Some of the bacilli were clustered, forming globi (empty arrows) (AFB stain, ×200). (F) AFB staining of the patch shows a few acid-fast bacilli (AFB stain, ×200). (G) Amplication of 154 bp RLEP sequence of *Mycobacterium leprae* (Lanes 1~3: patient, Lane 4: positive control, Lane 5: negative control).

diagnosed with lepromatous leprosy, but methods and effects of treatment could not be confirmed as personal information.

Leprosy affects the skin and the peripheral nerves infected by *M. leprae*. Histological examination is important for diagnosing and classifying leprosy according to the Ridley and Jopling classification including indeterminate (I), tuberculoid (TT), borderline tuberculoid (BT), mid-borderline (BB), borderline lepromatous (BL), and lepromatous (LL) leprosy. Bhatia et al.[1] reported that the overall clinico-histopathological correlation of 1,272 cases of leprosy was 69%. Correlation of LL cases (91%) was the highest, followed by BT (77%), TT (50%), BL (43%), I (36%), and BB cases (26%)[1]. Similar results were observed in another study that reported a 100% correlation of LL cases and an 85.7% correlation of TT cases (85.7%), reflecting stable and fixed histopathology of the polar types of leprosy[2]. Clinically, lepromatous leprosy manifests as diffuse infiltration of skin and several organs due to proliferation of *M. leprae*, resulting in multibacillary form of leprosy due

to impaired T-cell immunity. The clinical manifestations of multiple and various morphological skin lesions including patches and nodules, symmetrical neural symptoms of limbs and facial edema were corresponded to LL. Since low immunity in LL results in a high bacterial index, lepra cells as well as foamy histiocytes can be easily observed. Histologically, the nodule corresponded better to LL than the patch in the present case. Thus, it appears that the biopsy site could affect the clinico-histopathological correlation in leprosy. Manandhar et al.[3] reported that macules, nodules, and plaques were most frequently biopsied to diagnose leprosy and the most common lesions manifesting leprosy were plaques followed by macules. Biopsy should be performed on lesions with a greater degree of inflammation and in more than one site if the patient has several morphological lesions[4]. Repeat biopsy should be considered when histological findings are ambiguous despite strong clinical suspicion of leprosy. We have emphasized the importance of selecting an appropriate site for biopsy in leprosy.

CONFLICTS OF INTEREST

The authors have nothing to disclose.

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