Mycosis fungoides palmaris et plantaris (MFPP) refers to a variant of mycosis fungoides (MF) that is localized on the palms and soles (1). In 2013, Nakai et al. (2) proposed a new concept, hand and foot MF (HFMF), to encompass all cases involving the hand and foot, including not only the palmar, but also the dorsal sides. However, there has been no study focusing on HFMF showing apparent predominance of the lesions on the dorsal hands over the palmar side, which we have termed dorsal HFMF (DHFMF).

MATERIALS AND METHODS
A retrospective study was conducted on 6 patients with DHFMF to investigate clinicopathological findings. Inclusion criteria were: (i) diagnosis of MF, based on the diagnostic algorithm for early-stage MF (3) via a combination of clinical, histopathological, and T-cell receptor (TCR) γ gene rearrangement analyses, (ii) MF lesions confined to the hands and feet without involving any other body parts, and (iii) the dorsal side of the hands being the most prominent site of involvement. Patients who did not show monoclonality in TCR γ gene rearrangement analysis were excluded. Clinical data were collected through review of medical charts and clinical images, and a detailed history was taken from 5 available patients to identify possible causative factors. Histopathological findings were evaluated by reviewing the slides for each patient.

RESULTS AND DISCUSSION
Histopathological findings are summarized in Table I. Typical features of MF were seen, along with frequent orthohyperkeratosis, parakeratosis, and acanthosis (Fig. 1). Occasional spongiosis were noted, consistent with the known findings in MFPP (4). Because these features may confound the diagnosis of DHFMF, immunohistochemical and molecular biological studies should be performed in combination. All 6 patients showed a predominance of CD4+ over CD8+ T cells.

Clinical data are shown in Table II. The mean duration from onset to diagnosis was 1.8 years. All lesions presented as localized pruritic patches or plaques that were hyperkeratotic or scaly, corresponding to the typical morphology of MFPP (Fig. 1) (4, 5). The lesions were predominantly located on the metacarpophalangeal or interphalangeal joints of the dorsal hands (Fig. 2). These findings show that DHFMF cannot be clinically differentiated from benign dermatoses, such as psoriasis, hand and foot eczema, and dermatomyositis, without histopathological confirmation.
All 5 patients for whom detailed history taking was available had occupations involving a lot of manual work for quite a long time (mean 14.2 years) until first onset of the disease. The lesions were located mainly on the protruding parts of the hands (knuckles), which are susceptible to external impacts. Therefore, a possible relationship between trauma and DHFMF could be inferred, as Paul et al. (6) suggested that chronic trauma may be a factor in antigenic stimulation responsible for causing MF, and Lebas et al. (7) claimed that MF might exhibit the Koebner phenomenon. Meanwhile, 4 patients had been repeatedly exposed to chemicals, such as motor fuels (patient 2), detergents and byproducts of grilling (patient 4), metals, cutting oils, and solvents (patient 5), and pesticides (patient 6). These might also have served as causative factors, since previous studies have suggested relationships with various chemicals (8–10). These studies have shown that at least several years or sometimes decades of exposure are required to develop malignant transformation following chronic antigenic stimulations, differing from inflammatory dermatoses (e.g., contact dermatitis) that develop via various immunologic mechanisms (e.g., hypersensitivity reaction) within a relatively short time after exposure to causative agents. Further studies are required to clarify the exact nature of the antigens involved and to what extent they play a role in the development of MF.

Similar to MFPP having a relatively indolent course (2), all patients with DHFMF were well-controlled. Four patients achieved complete remission, and 2 showed partial remission. Local recurrence occurred in 1 patient 2 years after achieving complete remission. Patients responded well to ultraviolet A1 irradiation (65 J/cm², 3 times per week), oral methotrexate (15 mg/week), and oral alitretinoin (30 mg/day), previously known to be effective in the treatment of MFPP (4, 11).

The hyperkeratotic morphology, occasional spongiosis on histopathology, and favourable response to treatments indicate overall clinicopathological similarities between DHFMF and MFPP (2, 4, 5). Therefore, it is plausible that they should be encompassed under a single comprehensive concept; HFMF. Since DHFMF may be overlooked due to its overlapping features with benign dermatoses, combined analysis of histopathological, immunohistochemical, and molecular biological studies should be performed, based on a high index of suspicion when faced with long-standing localized hyperkeratotic knuckle-tropic lesions on the hand and foot.

### Table II. Clinical data in 6 cases of dorsal hand and foot mycosis fungoides

| Pat No. | Age, years/sex | Duration (years) | Distribution | Symptom | Stage | Occupation | Exposure duration (years) | Treatment and response | Outcome | Follow-up duration (months) |
|---------|----------------|------------------|--------------|---------|-------|------------|--------------------------|------------------------|---------|---------------------------|
| 1       | 51/M           | 1                | D+P+S        | Pruritus | IA    | Not known  | –                        | MTX (4 mo) → PR        | Responded well but lesions remained | 4       |
| 2       | 53/M           | 2                | D+P          | Pruritus | IA    | Fisherman | 20                       | MTX (3 mo) → CR         | Cleared up | 3       |
| 3       | 39/M           | 2                | D+P+S        | Pruritus | IA    | Store worker (transporting goods) | 10                       | UVA-1 (6 mo) → PR        | Responded well but lesions remained | 6       |
| 4       | 52/F           | 3                | D+P          | Pruritus | IA    | Cook (trimming and grilling) | 18                       | UVA-1 (8 mo) → CR → Recur | Cleared up but recurred 2 years later | 58      |
| 5       | 55/M           | 1                | D+P+S        | Pruritus | IA    | Steel industry worker | 16                       | UVA-1 (1 mo) → CR        | Cleared up | 1       |
| 6       | 63/M           | 2                | D             | Pruritus | IA    | Farmer     | 21                       | Ali (1 mo) → CR         | Cleared up | 6       |

*Clinical staging was performed according to the International Society for Cutaneous Lymphoma and the European Organisation for Research and Treatment of Cancer classification for cutaneous lymphomas (2011).
Ali: oral alitretinoin; M: male; F: female; CR: complete remission (> 95% clinical improvement); mo: months; D: dorsal side of the hands; MTX: oral methotrexate; P: palmar side of the hands; PR: partial remission (50–95% clinical improvement); S: soles; UVA-1: ultraviolet A1.

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The authors have no conflicts of interest to declare.

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