

# Nail findings in patients with psoriatic arthritis: A cross-sectional study with special reference to transverse grooves

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**Background:** Patients with psoriatic arthritis (PsA) commonly present with nail manifestations; however, little is known about these manifestations.

**Objective:** This study investigated whether nail findings can be used to discriminate between PsA and psoriasis without arthritis.

**Methods:** We performed a retrospective analysis of 118 patients with PsA and 974 patients with psoriasis without arthritis who visited St. Luke's International Hospital (Tokyo, Japan) between July 2003 and February 2015. Patients with PsA were classified according to the Classification of Psoriatic Arthritis criteria. Skin lesion severity was assessed by using the Psoriasis Area and Severity Index, and 9 types of nail findings were investigated.

**Results:** The incidence of nail involvement in patients with PsA was 67.6%. Female sex, presence of transverse grooves, onycholysis, and splinter hemorrhages were significantly related to PsA, with transverse grooves demonstrating the strongest association (odds ratio, 5.01; 95% confidence interval, 2.31-10.8;  $P < .01$ ). Furthermore, the presence of transverse grooves was strongly related to both distal interphalangeal arthritis and enthesitis.

**Limitations:** The PsA population was relatively small.

**Conclusions:** Nail findings enabled us to distinguish patients with PsA from those without arthritis. The presence of transverse grooves is significantly associated with PsA and may be associated with distal interphalangeal arthritis and enthesitis. (J Am Acad Dermatol <http://dx.doi.org/10.1016/j.jaad.2017.04.001>.)

**Key words:** enthesitis; nail; onycholysis; psoriatic arthritis; splinter hemorrhage; transverse grooves.

Psoriatic arthritis (PsA) is a chronic inflammatory disease that is present in 6.25% to 8% of patients with psoriasis.<sup>1-5</sup> We recently reported that the prevalence of PsA in Japan is similar to that in Western countries.<sup>6</sup> An early diagnosis of PsA is very important for ensuring appropriate treatment and management of arthritis. However, especially in cases with subclinical manifestations,

#### Abbreviations used:

CI:	confidence interval
DIP:	distal interphalangeal
NAPSI:	Nail Psoriasis Severity Index
OR:	odds ratio
PASI:	Psoriasis Area and Severity Index
PsA:	psoriatic arthritis
Pso:	psoriasis without arthritis

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distinguishing patients with PsA from those with only skin manifestations is difficult. Previous studies have reported that more than 85% of patients with PsA have nail alterations.<sup>7-10</sup> Onycholysis, which is a common finding in patients with PsA, has been reported to be related to distal interphalangeal (DIP) arthritis.<sup>11</sup> Regardless, few studies have reported detailed evaluations of the nail manifestations associated with PsA.

We commonly use the Nail Psoriasis Severity Index (NAPSI), which describes 8 manifestations (pitting, red spots, leukonychia, nail-plate crumbling, oil-drop discoloration, onycholysis, splinter hemorrhages, and subungual hyperkeratosis), to evaluate the severity of nail findings in patients with psoriasis. These nail manifestations may develop from inflammation of the nail bed, nail matrix, or both. Nail matrix inflammation is known to cause pitting, red spots in the lunula, leukonychia, and nail-plate crumbling, whereas nail-bed inflammation causes oil-drop discoloration, onycholysis, splinter hemorrhages, and subungual hyperkeratosis.<sup>8,12</sup> In our study, we focused on transverse grooves (also referred to as Beau lines) as an additional nail finding associated with PsA because our clinical experience led us to speculate that many patients with PsA demonstrate this manifestation. Transverse grooves, which are caused by acute nailfold inflammation in the proximal nail matrix, are present in 10.2% to 30.6% of patients with nail psoriasis.<sup>12,13</sup> However, these grooves (Fig 1) have not been reported in patients with PsA and may be commonly overlooked. Here we describe the nail findings observed in patients with psoriasis, with and without arthritis, using NAPSI nail findings with a particular focus on transverse grooves.

## METHODS

### Study population

We conducted a cross-sectional study between July 2003 and February 2015 at the Department of Dermatology, St. Luke's International Hospital, Tokyo, Japan. We included all patients in whom psoriasis had been diagnosed. Those with a diagnosis of pustular psoriasis or acrodermatitis continua of Hallopeau at their first visit were excluded. We also excluded those with skin manifestations or nail findings that could not be assessed with an electronic chart. Patient data,

including demographics, medical history of psoriasis, and physical findings, were obtained at the time of each patient's first clinical visit due to psoriasis. The St. Luke's International Hospital Ethics Committee approved this study.

### Evaluation of PsA

Clinical psoriasis diagnoses were made by board-certified dermatologists and board-certified rheumatologists familiar with use of the Classification Criteria for Psoriatic Arthritis. PsA diagnoses were based on clinical manifestations and individual physicians' judgment. Skin manifestations and nail findings at the first examination were evaluated by dermatologists using electronic medical records,

including photographs. Nail-plate pitting, onycholysis, nail-plate crumbling, leukonychia, red-spotted lunula, subungual hyperkeratosis, oil-drop discoloration, and splinter hemorrhages were assessed. In addition, we speculated that many patients with PsA might clinically demonstrate transverse grooves on their nails; thus, we also assessed patients for the presence of transverse grooves as a clinically important finding. Disease severity was assessed with the Psoriasis Area and Severity Index (PASI) (range, 0-72).

### Statistical analysis

Unpaired *t* tests, chi-square tests, or Fisher's exact tests were applied to compare data from patients with PsA and those with psoriasis without arthritis (Pso). Logistic regression was performed to evaluate associations between nail findings and PsA, with adjustments for age and sex; *P* values of .05 or less were considered statistically significant. All statistical analyses were performed with Statistical Package for Social Sciences software, version 18.0 (SPSS, Chicago, IL).

## RESULTS

### Baseline characteristics

A total of 1092 patients with psoriasis were enrolled in the study, including 118 with PsA (10.8%). The baseline characteristics of the patients are summarized in Tables I and II. Among patients with PsA, 70.3% developed skin lesions followed by arthritis, whereas the opposite sequence occurred in 11.0%. The proportion of female patients was

### CAPSULE SUMMARY

- Onycholysis and distal interphalangeal arthritis are known to occur in patients with psoriatic arthritis.
- Transverse grooves are also significantly associated with distal interphalangeal arthritis and enthesitis.
- Detection of transverse grooves may enable improved early diagnosis and management of psoriatic arthritis.

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