Nail Psoriasis Severity Index: A useful tool for evaluation of nail psoriasis

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The Nail Psoriasis Severity Index (NAPSI) is a numeric, reproducible, objective, simple tool for evaluation of nail psoriasis. The scale is used to evaluate the severity of nail bed psoriasis and nail matrix psoriasis by area of involvement in the nail unit. The NAPSI will be useful during clinical trials for evaluating response to treatment of psoriatic nails. The scale is reproducible, and because there are few data points, statistical analysis is simplified. (J Am Acad Dermatol 2003;49:206-12.)

Psoriasis is a common cutaneous disorder that affects skin and nails. Nail psoriasis occurs in as many as 50% of psoriatic patients. Psoriasis on highly visible areas of the skin, such as the face, hands, and nails, can be psychologically devastating.1-4 Many new medications are currently undergoing clinical trials for psoriasis treatment. Are these drugs helpful for nail psoriasis? Is one drug more helpful in nail pitting and another more effective in psoriatic onycholysis? These questions can be answered with an objective, sensitive, grading scale for nail psoriasis. Evaluation of cutaneous psoriasis usually is conducted with the Psoriasis Area Severity Index, a score used to evaluate the extent and severity of cutaneous psoriasis but that does not specifically address nail manifestations. We present an objective, numeric, reproducible, yet simple grading system for nail psoriasis that includes extent of involvement and location in the nail unit of the psoriatic pathologic changes. Simply put, each quadrant of the nail is evaluated for the presence or absence of nail matrix disease (pitting, leukonychia, red spots in lunula, nail plate crumbling) and for nail bed disease (oil drop [salmon patch] discoloration, onycholysis, nail bed hyperkeratosis, and splinter hemorrhage). The sum of the scores for all of the nails is the nail psoriasis severity score for that patient at that time (Fig 1). As an alternative, a target nail can be assessed and graded by means of evaluation for the presence of all 8 criteria in each quadrant of the nail (score 0-32).

The clinical features of nail psoriasis are related to the portion of the nail unit affected by the disease. Most visible manifestations of psoriasis in the nail are caused by psoriatic pathologic changes in the nail matrix. The clinical features vary depending on the location of the disease. The NAPSI is a useful tool for evaluation of nail psoriasis. This scale is used to evaluate the severity of nail bed and nail matrix psoriasis by area of involvement in the nail unit. The NAPSI will be useful during clinical trials for evaluating response to treatment of psoriatic nails. The scale is reproducible, and because there are few data points, statistical analysis is simplified. (J Am Acad Dermatol 2003;49:206-12.)

Table I. Instructions for grading psoriatic nails using NAPSI

1. Evaluation 1: Nail matrix. In each quadrant of the nail, nail matrix psoriasis is evaluated by presence of any of the nail matrix features (pitting, leukonychia, red spots in lunula, crumbling, oil drop, hemorrhage). The total of the scores for all of the nails is the nail matrix score. The sum of the scores from all nails is 0-80; or 0-160 if toenails are included. At any time the matrix or nail bed score can be assessed independently if desired. If a target nail scale is desired, the same technique can be used to evaluate all parameters (pitting, leukonychia, red spots in lunula, crumbling, oil drop, hemorrhage) in each quadrant of the nail, giving that 1 nail a score of 0-32.

2. Evaluation 2: Nail bed. Nail bed psoriasis is evaluated by the presence of any of the nail bed features (onycholysis, splinter hemorrhages, subungual hyperkeratosis, oil drop, salmon patch, discoloration). The total of which is the score for that nail (0-4). Each nail gets a matrix score and nail bed score depending on the presence of any of the features of nail psoriasis in that quadrant. 3. Each nail gets a matrix score and a nail bed score (0-4 depending on the presence of any of the features of nail psoriasis in that quadrant. Nail in each quadrant of the nail matrix is evaluated for presence of any of the nail matrix features (pitting, leukonychia, red spots in lunula, crumbling) (0 for none, 1 for present in 1 quadrant of the nail, 2 for present in 2 quadrants of the nail, 3 for present in 3 quadrants of the nail, 4 for present in 4 quadrants of the nail). 4. For each nail, the matrix score is added to the nail bed score to give a total NAPSI score for that nail. To sum the scores for all nails, the total NAPSI score is added for all nails. The sum of the scores from all nails is 0-80; or 0-160 if toenails are included. At any time the matrix or nail bed score can be assessed independently if desired. If a target nail scale is desired, the same technique can be used to evaluate all parameters (pitting, leukonychia, red spots in lunula, crumbling, oil drop, hemorrhage) in each quadrant of the nail, giving that 1 nail a score of 0-32.
Fig 1. A, Photograph shows psoriatic nail for grading. B, The nail is divided into quadrants, and each quadrant is evaluated for nail matrix and nail bed psoriasis. C, Instruction and grading form for grading psoriatic nails with the Nail Psoriasis Severity Index (NAPSI) (NAPSI scoring for A and B).
nail bed or nail matrix. Nail matrix psoriasis is characterized by nail plate changes of pitting, leukonychia, red spots in the lunula, and occasionally nail plate crumbling. Nail bed psoriasis shows onycholysis, oil drop (salmon patch) dyschromia, splinter hemorrhages, and nail bed hyperkeratosis. This scale is not used to assess psoriasis of the proximal nailfold or joints (psoriatic arthritis). Psoriasis of the proximal nailfold is similar to psoriasis of the dorsum of the fingers and is evaluated with cutaneous psoriasis in that region. Psoriatic arthritis and pustular psoriasis of the nails are not included in the grading system. Toenails are not graded in this paradigm but would fit the same grading system. In an effort to minimize statistical complexity by keeping the number of data points to a minimum, each of the 8 individual features of nail psoriasis is not given a separate score. One can grade all features in a target nail or even all nails, but such a system involves lengthy and laborious evaluation and extensive statistical analysis and becomes excessively time consuming and expensive. A separate target nail assess-

Fig 2. A, Example of scoring mild nail psoriasis using the NAPSI grading scale. B, Graph shows grading of A. Nail bed score, 2 (onycholysis present in 2/4 of the nail); nail matrix score, 1 (leukonychia present in 1/4 of the nail, arrow in A); total NAPSI score, 3.
The Nail Psoriasis Severity Index (NAPSI) is used to assign a score to each nail for nail bed and nail matrix psoriasis. The total is the score for the patient (Table I). The nail plate is divided into quadrants by imaginary longitudinal and horizontal lines. The nail plate is assessed for nail matrix psoriasis by the presence of any feature of nail matrix psoriasis, including nail pitting, leukonychia, red spots in the lunula, and crumbling in each quadrant of the nail. Nail bed psoriasis is assessed by the presence of any features of nail bed psoriasis, including onycholysis, oil drop (salmon patch) dyschromia, splinter hemorrhages, and nail bed hyperkeratosis in each quadrant of the nail. The score is 0 if the findings are not present, 1 if they are present in 1 quadrant of the nail, 2 if present in 2 quadrants of a nail, 3 if present in 3 quadrants of a nail, and 4 if present in 4 quadrants of a nail. Thus each nail has a matrix score (0-4) and a nail bed score (0-4), and the total nail score is the sum of those 2 (0-8). The sum of the total score of all involved fingernails is the total NAPSI score for that patient at that time.
scale is needed, the nail can be given a separate score for all 8 features in each quadrant. The resulting is a 0 to 32 scale for the nail.

**METHODS**

In an attempt at informal assessment of the reproducibility of the NAPSI score, 37 dermatologists were asked to evaluate 8 psoriatic nails using the NAPSI. All of the nails in Figs 1 through 5 were among the 8 nails graded. The physicians were briefly instructed in the use of the NAPSI score and used a standard NAPSI grading sheet (Fig 1, C) to evaluate the same 8 psoriatic nails projected on a screen. The physicians graded the psoriatic nails for nail bed and nail matrix psoriasis and calculated the total score as instructed on the grading sheet. These data were tabulated with the mean and standard deviation. Advanced statistical methods were not used, and the NAPSI scale was not validated. Validation will require additional studies of many psoriatic nails.

**RESULTS**

The graphs in Figs 2, B, through 5, B, show the number of dermatologists who assigned a particular score to that nail. Again, it is not our intention to imply statistical validation but to suggest that there is
a trend toward reasonable reproducibility among physicians grading the same nails. Additional studies are needed to ascribe statistical significance and validation to the NAPSI scale.

**DISCUSSION**

Many studies in the literature have evaluated the effectiveness of various therapies for nail psoriasis. Most of these studies assessed clinical improvement in a global manner, and some evaluated clinical psoriatic features in a target nail. Many clinical features of nail psoriasis were used in the grading of nails in these studies. For example, the study by Tosti et al of calcipotriol in nail psoriasis used precise measurements of nail thickness. Pierard et al presented a novel evaluation method that involved optical profilometry in measuring the depth and area of pits on the surface of the nail plate. DeJong et al evaluated the use of topical 1% 5-fluorouracil in nail psoriasis using a nail area severity score in which 4 parameters were graded on a 5-point scale in a target nail. Many studies used a somewhat subjective impression of investigator assessment of “mild, moderate, severe” for analysis of nail psoriasis.

**CONCLUSION**

Objective measurement of clinical improvement or worsening of nail psoriasis is of value in guiding medical therapy and standardizing clinical trials.
Good agreement of scoring with the NAPSI was found among 37 dermatologists. Knowing which features of nail psoriasis respond to a particular therapy helps individualize nail psoriasis treatment. The NAPSI is a scale that was simple to calculate, sensitive to changes (improvement and worsening), and reproducible among 37 dermatologists in our informal survey. Nail assessment can be performed quickly, and the index is simple enough that nurses and study coordinators can systematically assess the extent and location of nail psoriasis. The NAPSI scoring system would be helpful in following patient progress during clinical trials and would allow comparison between different medications and modalities. A standardized nail psoriasis assessment system will facilitate consistent numeric measurement of response to therapy in clinical trials in the same way that the Psoriasis Area and Severity Index score does for psoriasis of the skin.

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REFERENCES


