Recommendations for the definition, evaluation, and treatment of nail psoriasis in adult patients with no or mild skin psoriasis: A dermatologist and nail expert group consensus

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Nail involvement in psoriasis is common, and the severity of it does not always parallel the intensity of cutaneous disease. We created a consensus group, of which the aim was to provide practical recommendations for the treatment of nail psoriasis in patients without skin psoriasis or with mild skin lesions with no indication for a systemic treatment. This collaborative process was conducted by an international panel of dermatologists with special expertise in nail disorders, using formal consensus methods. During this process, the panel strived to establish an agreement regarding the definition of nail psoriasis, the severity of nail psoriasis, and treatment response. Treatment recommendations are provided

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regarding nail psoriasis severity and matrix or bed involvement. Few-nail disease was considered as nail psoriasis affecting ≤3 nails. In the case of matrix involvement only, intralesional steroid injections were considered the treatment of choice. Topical steroids alone or in combination with topical vitamin D analogues were suggested for nail psoriasis limited to the nail bed. For the systemic treatment of nail psoriasis acitretin, methotrexate, cyclosporine, small molecules, and biologics may be employed. (J Am Acad Dermatol 2019;81:228-40.)

Key words: consensus; guidelines; intralesional steroid injection; nail psoriasis; nail psoriasis recommendation; nail psoriasis treatment.

CAPSULE SUMMARY

- The management of nail psoriasis is often challenging. Topical treatment can be regarded as time-consuming and provides moderate efficacy, whereas systemic treatment is frequently less favored.
- The aim of this consensus was to provide practical recommendations for the management of nail psoriasis in patients without or with mild skin psoriasis.

Nail involvement in psoriasis is common, with an estimated lifetime incidence of 80%-90% and a varying prevalence of 10%-82%.[1-8] Nail psoriasis without cutaneous involvement is present in 5%-10% of patients.[1,9] Nail psoriasis is also considered an independent prognostic factor for the development of psoriatic arthritis (PsA).[10-12] Nail involvement is associated with greater impairment of patients' quality of life (QoL), as well as higher risk of moderate-to-severe skin disease.[10]

The clinical manifestations of nail psoriasis include nail matrix inflammation signs, such as pitting, leukonychia, Beau lines, onychomadesis, red spots in the lunula, and crumbling, and nail bed inflammation signs, such as onycholysis, subungual hyperkeratosis, salmon patches, and splinter hemorrhages.[13-16]

Recommendations to evaluate disease severity and develop therapeutic algorithms for nail psoriasis are scarce in the scientific literature. Topical treatment has been considered less effective because of its considerable duration of use, limited drug penetration through the psoriatic nail plate, and difficulty in maintaining patient adherence. The use of systemic treatment for nail psoriasis without cutaneous involvement has not been considered a practical option by many dermatologists.

The aim of this consensus was to provide practical recommendations for the treatment of nail psoriasis in patients without or with mild skin psoriasis, with no indication for systemic treatment because of little skin disease. In the case of concurrent PsA, a systemic treatment approach should be considered independently of the nail psoriasis severity. This collaborative process was conducted by using a formal consensus method and was based on a literature search and personal experience of an international panel of dermatologists with experience in nail psoriasis management.

MATERIALS AND METHODS

A steering committee consisting of 4 dermatologists with experience in nail psoriasis searched the literature via PubMed, Medscape, and Medline using search terms "nail psoriasis," "nail psoriasis treatment," "nail biologic," and "nail+(name of systemic or topical agent)." Only publications with a case series of ≥10 patients were eligible for further analysis. On the basis of this literature review, 2 survey questionnaires regarding recommendations concerning the severity grade and treatment of nail psoriasis were created and forwarded to an expert panel.

The expert panel, consisting of 18 dermatologists from Europe, Asia, Africa, and the United States, were invited to participate in the survey under the supervision of the steering committee. Participants had extensive experience in diagnosing and/or managing nail and skin psoriasis in clinical practice, clinical trials, or both and were willing to develop additional questions and attend a live consensus meeting.

During the first round of this survey, each participant completed electronically an initial questionnaire developed by the steering committee with open-ended questions concerning the evaluation of the severity grade and treatment success in nail psoriasis. With the initial questionnaire responses and the literature search results, a more extensive questionnaire on recommendations concerning disease severity and treatment options was provided electronically to the expert panel. This questionnaire was then discussed thoroughly during the second round of the survey in a live meeting. All statements were discussed and decided on by using a formal consensus method.

Abbreviations used:

AE:	adverse event
IL:	interleukin
NAPSI:	Nail Psoriasis Severity Index
N-NAIL:	Nijmegen Nail psoriasis Activity Index tooL
NPQ10:	Nail Psoriasis Quality of life 10
PsA:	psoriatic arthritis
QoL:	quality of life

For each statement, the strength of the recommendation is indicated. In the case of a strong recommendation for the use of an intervention, the wording "is recommended…" is used, weak recommendation for the use of an intervention "is suggested" is used, no recommendation for the use of an intervention "a recommendation with respect to…cannot be made" is used, weak recommendations against the use of an intervention "is not suggested…" is used, and strong recommendations against the use of an intervention "is not recommended …" is used. Consensus in terms of percentage of agreement (ie, strong consensus [≥90%], consensus [75%-89%], weak consensus [50%-74%], and no consensus [<50%]), among panel members was measured and documented.

RESULTS

The recommendations for the evaluation of nail psoriasis severity and response to treatment are summarized in Table I.

Recommendations for the treatment of nail psoriasis

All expert panel participants agreed that not all products that were discussed are approved by the regulatory authorities of all countries for the treatment of nail psoriasis. Clinical trials have not been conducted on the label use of topical agents in many of the panel member's countries of origin. Patient education should also be part of the treatment. General prophylactic measures to avoid Koebner phenomenon are recommended.

Nail psoriasis patients should avoid biting, tearing, and traumatizing the nails; tangential filing; frequently applying and removing nail cosmetics; frequent water contact; artificial or gel nails; pulling, biting, and cutting cuticles; wearing high heels or narrow toed shoes; and cutting toenails round at the edges. Patients should wear heavy duty cotton gloves for dry work and light cotton gloves underneath vinyl gloves for wet work. Patients should keep nails short, frequently use hydrating topical products on hands and nails. An orthopedist or podiatrist should be consulted for the fitting of proper shoes and shoe inserts if anatomical problems, such as bunions, improper foot strike, pronators, or supinators, are present.

Along with the use of topical or systemic drugs (Fig 1), the prevention of mechanical or other trauma is an equally important element in nail psoriasis management, not only because of its association with the development or worsening of nail psoriasis but also because of its role as a negative factor in nail treatment effectiveness. Last, in the case of coexisting PsA, the treatment of choice for nail psoriasis should be a systemic agent indicated for the treatment of PsA, even in cases of a few-nail disease. Under the principles of these statements, the following recommendations should be taken into account (Tables II-IV).[19-28]

DISCUSSION

Nail psoriasis publications have become numerous over the past decade. Significant novel data has been published on multiple topics, including the possible common pathway of inflammation in both nail unit and enthesis that could highlight an association between nail psoriasis and dactylitis.[29] Epidemiologic data suggest that nail disease has a higher prevalence in patients with PsA[30]; more severe nail disease is associated with a significantly higher prevalence of PsA.[31] Nail disease is often more resistant to treatment than cutaneous psoriasis, even in the era of biologic therapy.[2] There are now new available indexes for nail psoriasis severity that incorporate the impact on QoL of patients.[32]

However, most of the available intervention studies were not designed to specifically address nail psoriasis. Study results often refer to subpopulations with nail disease, among larger populations with cutaneous psoriasis, arthritis, or both. This expert panel considered that there are unmet needs both in the definition and treatment option guidelines for nail psoriasis that might have an impact on the design of studies. Therefore, an objective of this consensus was to illuminate controversial issues, while keeping nail disease in the foreground, regardless of cutaneous or joint involvement.

During the evaluation of nail psoriasis severity, we attempted to incorporate multiple definitions to accommodate different design approaches in interventional studies (Table I). There was strong consensus that few-nail disease should include patients with up to 3 nails involved. Because only fingernail psoriasis was evaluated in many studies, the agreement to define mild fingernail psoriasis as having a Nail Psoriasis Severity Index (NAPSI)[33] <20

Table I. Recommendations for the evaluation of nail psoriasis severity grade, nail psoriasis severity scale, treatment success in nail psoriasis and nail psoriasis severity scores

Recommendation	Strength of consensus		Comment
Evaluation of nail psoriasis severity grade			
When evaluating nail psoriasis, few-nail disease should be defined as nail psoriasis affecting ≤3 nails	↑↑	Strong consensus	Expert opinion
When evaluating fingernail psoriasis, mild nail disease should be defined as nail psoriasis with NAPSI score of <20	↑↑	Strong consensus	Expert opinion
Evaluation of nail psoriasis severity scale			
Minimal nail disease should be defined as nail psoriasis with a severity index score of <10% of the maximum used score	↑↑	Strong consensus	Expert opinion
Mild nail disease should be defined as nail psoriasis with a severity index score of 10%-25% of the maximum used score	↑↑	Strong consensus	Expert opinion
Moderate nail disease should be defined as nail psoriasis with a severity index score of 26%-50% of the maximum used score	↑↑	Strong consensus	Expert opinion
Severe nail disease should be defined as nail psoriasis with a severity index score of >50% of the maximum used score	↑↑	Strong consensus	Expert opinion
Evaluation of treatment success in nail psoriasis			
Response to treatment is defined on the basis of index variation during and after treatment as follows:			
No improvement or worsening is defined as an index reduction of 0%	↑↑	Strong consensus	Expert opinion
Minimal improvement is defined as an index reduction of ≤25%	↑↑	Strong consensus	Expert opinion
Mild improvement is defined as an index reduction of 26%-50%	↑↑	Strong consensus	Expert opinion
Moderate improvement is defined as an index reduction of 51%-75%	↑↑	Strong consensus	Expert opinion
Great improvement is defined as an index reduction of 76%-99%	↑↑	Strong consensus	Expert opinion
Complete improvement is defined as an index reduction of 100%	↑↑	Strong consensus	Expert opinion
Evaluation of nail psoriasis severity scores			
The nail expert panel understands that at this point in time evaluation indexes or systems are evolving and their opinion or guidelines might change in the future. A new index is urgently needed.	↑↑	Strong consensus	Expert opinion
At this point, we suggest that the nail psoriasis severity index, which should be used to assess nail psoriasis and treatment success in clinical trials is NAPSI and in case of psoriatic arthritis NAPPA.*	↑	Weak consensus	Expert opinion, evidence, and consensus-based
The nail psoriasis severity index, which should be used to assess nail psoriasis and treatment success in everyday clinical practice is mNAPSI†	↑	Weak consensus	Expert opinion, evidence, and consensus-based

Arrows indicate the direction and strength of the concensus.

NAPPA, Nail Assessment in Psoriasis and Psoriatic Arthritis; *NAPSI*, Nail Psoriasis Severity Index; *NPQ10*, Nail Psoriasis Quality of life 10; *mNAPSI*, modified Nail Psoriasis Severity Index.

*Concerning clinical trials, a 90% consensus could not be reached for the following statement: 'At this point, we suggest that the nail psoriasis severity index, which should be used to assess nail psoriasis and treatment success in clinical trials is NAPSI and in case of psoriatic arthritis NAPPA' (13/18 agreed, meaning a 72% consensus was reached, and 5/18 suggested alternative nail psoriasis severity scores, such as N-NAIL, NPQ10, mNAPSI or target nail NAPSI)

†Concerning everyday clinical practice, a 90% consensus could not be reached for the following statement: 'The nail psoriasis severity index, which should be used to assess nail psoriasis and treatment success in everyday clinical practice, is mNAPSI' (72% consensus reached; 13/18 agreed, 2/18 disagreed and 3/18 were neutral. N-NAIL, NPQ10, NAPSI and target nail NAPSI were also suggested as competent nail psoriasis severity scores)

was supported with a strong consensus. Studies that require a 4-point severity scale in the design could benefit from a definition of minimal, mild, moderate, and severe nail disease. These have been defined as nail psoriasis with a severity index score of <10%, 10%-25%, 26%-50%, and >50% of the maximum used index score, respectively. When assessing treatment success, a 6-point scale (the 6 points being no improvement, minimal, mild, moderate, great, and complete improvement) was agreed to with a strong consensus, with no improvement defined as 0% reduction of the index used, minimal as ≤25%, mild as 26%-50%, moderate as 51%-75%, great as 76%-99%, and complete improvement as 100%.

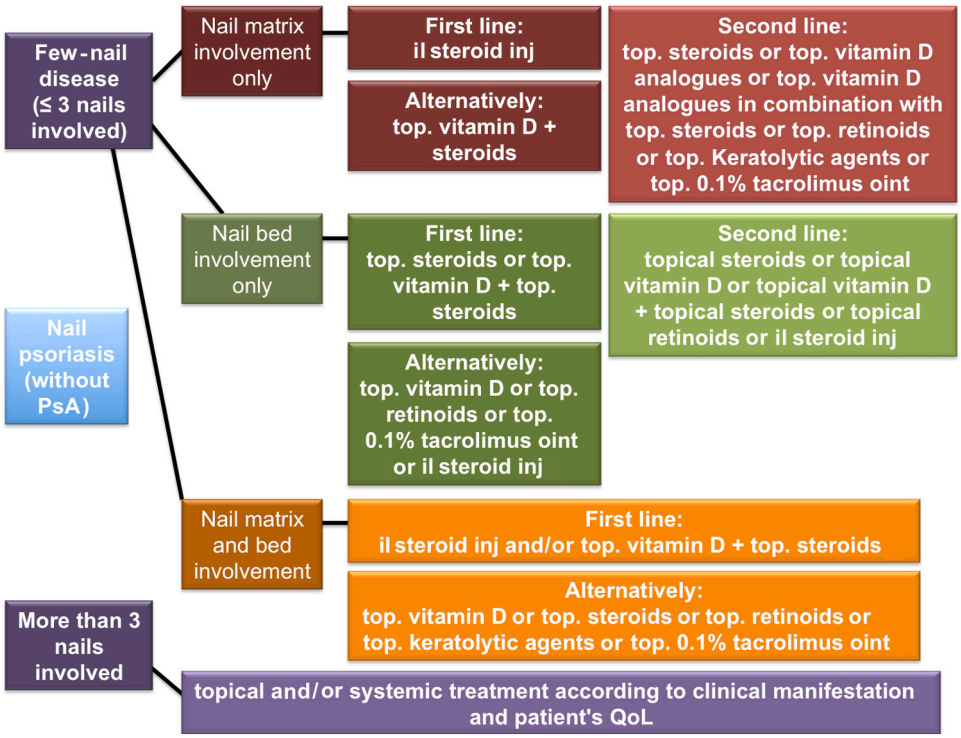

Fig 1. Clinical treatment algorithm for nail psoriasis according to the number of nails involved and the location of the psoriatic lesion. *il*, Intralesional; *inj*, injection; *oint*, ointment; *PsA*, psoriatic arthritis; *QoL*, quality of life; *top.*, topical.

Concerning the ideal nail psoriasis scoring system, there was strong consensus that, at this time, an ideal index for study evaluation and everyday clinical practice has not been created and that there is an urgent need to design a new index. There was a weak consensus for the use of NAPSI in studies of patients with nail psoriasis or both nail and cutaneous psoriasis and Nail Assessment in Psoriasis and Psoriatic Arthritis[34] for patients with nail and joint involvement. NAPSI is considered objective because it assesses all 20 nails. However, the test is cumbersome and time-consuming, and because NAPSI cannot discern between the number of pits in each quadrant, the extension of an oil spot, or the thickness of subungual hyperkeratosis, the tool often fails at evaluating improvement after treatment. NAPSI also does not incorporate a QoL assessment. The Nail Psoriasis Quality of life 10 (NPQ10)[32] questionnaire could be used in addition to assess QoL, but the use of 2 indexes is even more time-consuming. Using NPQ10 as a standalone tool might compromise the assessment of the severity of the disorder; only 1 question assesses pain, and the tool does not include evaluation of psoriatic nail signs. There was weak consensus that modified NAPSI[35] might be easier to adopt in everyday clinical practice, although the panel recognized the unlikely use of any index in any setting other than specialized clinics. The use of Nijmegen Nail psoriasis Activity Index tooL (N-NAIL)[36] was proposed as a possible improvement over the use of NAPSI, but this option failed to achieve a consensus.

There was strong consensus that general prophylactic measures should complement all treatments for nail psoriasis. Disease-oriented education yields higher patient satisfaction, and satisfied patients are more likely to comply with the dermatologist's instructions.[37] Avoidance of activities that might exacerbate nail psoriasis should be prioritized in patients' daily lives. In nail bed psoriasis, cutting the onycholytic part of the nail plate should be promoted as therapy, as this activity has been shown to be helpful in several cases.[19,38] Onychomycosis, especially of the toenails, has been demonstrated to be more common in patients with psoriasis[39] and could koebnerize psoriatic nail disease. When suspected, onychomycosis should be diagnosed by direct microscopy, culture, or biopsy, and antifungal treatment should be prescribed along with nail psoriasis treatment.

When treating adult patients with nail psoriasis exclusively and few-nail disease with involvement of

Table II. Recommendations for the treatment of nail psoriasis according to the number of nails involved

Recommendation	Strength of consensus		Comments
Treating patients with few-nail disease			
In adult patients with nail psoriasis exclusively and few-nail disease with involvement of the nail matrix only, the first-line treatment should be intralesional steroid injections.	↑↑	Strong consensus	Expert opinion
Alternatively, in adult patients with nail psoriasis exclusively and few-nail disease with involvement of the nail matrix only, the first-line treatment may be topical vitamin D analogues in combination with topical steroids.	↑↑	Strong consensus	Evidence and consensus-based
In adult patients with nail psoriasis exclusively and few-nail disease with involvement of nail matrix only, the second-line treatment should be topical steroids,[17,18] topical vitamin D analogues,[18] topical vitamin D analogues in combination with topical steroids, topical retinoids,[17] topical keratolytic agents (eg, urea nail lacquer, salicyclic acid), or topical 0.1% tacrolimus ointment.	↑↑	Strong consensus	Expert opinion
In adult patients with nail bed psoriasis, the onycholytic part of the nail should be clipped off.[19]	↑↑	Strong consensus	Expert opinion
In adult patients with nail psoriasis exclusively and few-nail disease with involvement of nail bed only, the first-line treatment should be topical steroids or topical vitamin D analogues in combination with topical steroids.	↑↑	Strong consensus	Expert opinion
Alternatively, topical vitamin D analogues alone, topical retinoids, topical 0.1% tacrolimus ointment, or intralesional steroid injections can be used as first-line treatment in adult patients with nail psoriasis exclusively and few-nail disease with involvement of the nail bed only.	↑↑	Strong consensus	Evidence and consensus-based
In adult patients with nail psoriasis exclusively and few-nail disease with involvement of nail bed only, the second-line treatment may be topical steroids, topical vitamin D analogues, or topical vitamin D analogues in combination with topical steroids, topical retinoids, or intralesional steroid injections.	↑↑	Strong consensus	Expert opinion
In adult patients with nail psoriasis exclusively and few-nail disease with involvement of both the nail matrix and bed, the first-line treatment should be intralesional steroid injections and/or vitamin D analogues in combination with topical steroids.	↑↑	Strong consensus	Expert opinion
Alternatively, topical vitamin D analogues alone, topical steroids alone, topical retinoids, topical keratolytic agents (eg, urea nail lacquer, salicyclic acid), or topical 0.1% tacrolimus ointment may be used as first-line treatment in adult patients with nail psoriasis exclusively and few-nail disease with involvement of both the nail matrix and bed.	↑↑	Strong consensus	Evidence and consensus-based
Treatment of nail psoriasis when >3 nails are involved			
Patients with >3 nails affected are more likely to have both nail matrix and nail bed signs. Even if they do have only matrix or only bed signs, the number of nails affected is a more important factor for the choice of therapy, so a therapeutic distinction between matrix and bed signs is clinically less significant.	↑↑	Strong consensus	Expert opinion
In adult patients with mild nail psoriasis only, with >3 nails affected, the treatment may be chosen according to the patient's needs and preferences.	↑↑	Strong consensus	Expert opinion

Arrows indicate the direction and strength of the concensus.

the nail matrix only, the first-line treatment should be intralesional steroid injections.[20,21,40-45] Even though the scientific literature reports the possibility of adverse events (AEs) when using intralesional steroids, there was a strong consensus that AEs are minimal or even nonexistent when this technique is used by physicians with appropriate training and at least moderate experience. There is not enough evidence in the literature regarding the optimal dose, dilution, number, or frequency of injections

Table III. Recommendations for the topical treatment of nail psoriasis

Recommendations for treatment of nail psoriasis	Strength of consensus		Comments
Topical treatment			
Superpotent topical steroids should be the topical steroid treatment of choice for nail psoriasis, if topical steroids are going to be used.	↑↑	Strong consensus	Expert opinion
For the topical treatment of nail psoriasis, when indicated, the optimal pharmaceutical form is that of an ointment or solution.	↑↑	Strong consensus	Evidence and consensus-based
For the topical treatment of nail psoriasis, when indicated, topical steroids may be used under occlusion for a limited period of time. The exact period of time could not be defined according to previous studies. Care should be taken not to exceed 1 month.	↑↑	Strong consensus	Expert opinion
For superpotent steroids, intermittent treatment should be used	↑↑	Strong consensus	Expert opinion
When continuous daily treatment with superpotent topical steroids is used, treatment duration is limited to the strict re-evaluation of the treatment benefit and adverse event risk.	↑↑	Strong consensus	Expert opinion
For the treatment of nail psoriasis with superpotent topical steroids, the agent should be applied no more than once daily.	↑↑	Strong consensus	Expert opinion
For the treatment of nail psoriasis, when indicated, the optimal steroid for steroid injections is triamcinolone acetonide.	↑↑	Strong consensus	Evidence and consensus-based
Intralesional steroid injections			
Intralesional steroid injection of the nail bed should be performed under local block anesthesia,* especially if multiple injections are required.	↑↑	Strong consensus	Expert opinion
Intralesional steroid injection of the nail matrix and single intramatricial steroid injection can be performed under local block anesthesia but also without local block in certain patients.	↑	Weak consensus	Expert opinion
For intralesional injection triamcinolone acetonide should be used in a concentration of 5-10 mg/mL.	↑↑	Strong consensus	Expert opinion
A maximum of 0.1-0.5 mL of triamcinolone acetonide in the above-mentioned dosage should be injected in each quadrant of the nail unit per session when treating nail bed psoriasis. The volume injected should produce an area of blanch in the bed.	↑↑	Strong consensus	Expert opinion
A maximum of 0.1-0.5 mL of triamcinolone acetonide in the above-mentioned dosage should be injected in the matrix of the nail unit per session when treating nail matrix psoriasis. The volume injected should produce an area of blanch in the matrix.	↑↑	Strong consensus	Expert opinion
Depending on the site of pathology (nail matrix or bed) various approaches can be used for intralesional steroid injections. 1) de Berker technique[20] or injection under the plate starting from the lateral fold. The curvature of the plate might sometimes interfere with the progression of the needle. 2) Richert technique† or fan injection under the plate from the hyponychium to reach each quadrant. 3) Gerstein technique (single injection)[21] or modified by Grover,[22] injection from the proximal nail fold to treat the matrix area[22] or nail bed area,[23] depending on where the pathology lies.	↑	Weak consensus	Expert opinion
Intralesional steroid injections should be repeated every 4-8 weeks.	↑↑	Strong consensus	Expert opinion
If no clinical response after 3-6 sessions (injections) is achieved, change of treatment should be considered.	↑↑	Strong consensus	Expert opinion
If clinical response is achieved, extending time period between injections should be considered.	↑↑	Strong consensus	Expert opinion
A recommendation with respect to the maximum number of intralesional steroid injections per nail quadrant could not be made.	o	No consensus	Expert opinion
Intralesional steroid injections should be stopped if signs of steroid side effects occur.	↑↑	Strong consensus	Expert opinion

Continued

Table III. Cont'd

Recommendations for treatment of nail psoriasis	Strength of consensus		Comments
Some of the potential side effects to consider when intralesional steroid injections are performed are 1) hematoma, which is self-limited, 2) atrophy of the nail unit or proximal nail-fold hypopigmentation (might be observed if intralesional steroid injections are performed with too high dosages, too superficial, too frequent, too close, or for too long), and 3) numbing of the distal digit that might last for 2 days.	↑↑	Strong consensus	Evidence and consensus based
Clinical improvement varies according to the various nail psoriasis signs, with subungual hyperkeratosis responding better with the de Berker or Richert technique and pitting responding better to Gerstein or Gerstein modified by Grover technique.	↑↑	Strong consensus	Evidence and consensus based
Intralesional steroid injection can be performed by clinicians after proper training.	↑	Weak consensus	Expert opinion
In rare cases of extended nail psoriasis disease, when systemic treatment is contraindicated, intralesional steroid injection can be performed in all fingernails and toenails.	↑	Weak consensus	Expert opinion

Arrows indicate the direction and strength of the consensus, and o indicates no consensus.
*Local block anesthesia can be performed as infiltrative or nerve block anesthesia.[24-28]
†Personal communication.

and the maximum duration of treatment with intralesional steroid injections. The panel considered that providing guidelines on the aforementioned technique might be useful (recommendations summarized in Table III).[20-28] The formulated combination of topical steroids and vitamin D analogues,[46-49] such as betamethasone and calcipotriol, could also be considered as first-line treatment for patients with few-nail disease and isolated nail matrix involvement.

The second-line treatment for few-nail disease limited to the nail matrix could be any one of many topical steroids,[17,40,50] topical vitamin D analogues,[51] other combinations of topical vitamin D analogues with topical steroids, topical retinoids,[17,52-54] topical keratolytic agents (ie, urea nail lacquer, salicylic acid), or topical 0.1% tacrolimus ointment.[55]

In patients with nail psoriasis exclusively and few-nail disease with involvement of nail bed only, the first-line treatment should include any of the following: intralesional steroid injections[20,44,45,56]; topical steroids[17,50,57]; topical vitamin D analogues[18,51,57,58] in combination with steroids[46-49]; topical retinoids[17,52-54]; and topical 0.1% tacrolimus,[55] as the scientific literature evidence suggests that they all have good efficacy in the treatment of nail bed disease. In cases with unsatisfactory results with any of these agents, any of the other agents could be considered as an alternative treatment approach.

When available, superpotent topical steroids, such as clobetasol propionate, should be the topical steroid treatment of choice (Table III).[20-28] The treatment schedule should be intermittent[46,49,59] to minimize the well-documented AEs associated with long-term use of superpotent steroids, including disappearing digits, and the application should be restricted to once daily.[17,50] If used as a continuous daily application, treatment duration should be determined according to strict re-evaluation of the treatment benefit and AE risks. If superpotent steroids are used under occlusion, treatment is recommended not to exceed 1 month.[60] The optimal pharmaceutical formulation should be any ointment or solution.

Systemic treatment is usually considered for patients having >3 nails involved or those for which the disease has had a significant impact on their QoL. In cases with coexisting PsA, the severity of joint involvement should also influence the systemic treatment choosen. Acitretin should be initiated at 0.2-0.4 mg/kg for >6 months or until at least a moderate improvement is documented.[38,56,61-64] Cyclosporine is only recommended for short-term treatment under monitoring (until moderate improvement has been documented) in doses of 3-5 mg/kg.[63,65-70] Methotrexate can be employed in doses up to 15 mg/week, with proper monitoring, and with or without folic acid (according to the country's regulations) for the treatment of nail psoriasis until at least moderate improvement has been documented.[38,56,62,63,70,71] After individualized assessment of cost-benefit, higher doses could be used. Methotrexate could be used as maintenance treatment with a reduced dose, depending on the dose needed to achieve the moderate improvement.

Table IV. Recommendations for the systemic treatment of nail psoriasis

Systemic treatment	Strength of consensus		Comments
Acitretin			
The optimal initial dosage of acitretin for the systemic treatment of nail psoriasis, when indicated, should be 0.2-0.4 mg/kg.	↑↑	Strong consensus	Evidence and consensus-based
When acitretin for the systemic treatment of nail psoriasis is indicated, the treatment duration should be >6 months and until at least moderate improvement is achieved.	↑↑	Strong consensus	Evidence and consensus-based
Cyclosporine			
The optimal initial dosage of cyclosporine for the systemic treatment of nail psoriasis, when indicated, should be 3-5 mg/kg.	↑↑	Strong consensus	Evidence and consensus-based
When cyclosporine for the systemic treatment of nail psoriasis is indicated, the treatment duration should be until at least moderate improvement is achieved and with proper monitoring.	↑↑	Strong consensus	Evidence and consensus-based
Cyclosporine is not recommended as a long-term treatment for nail psoriasis.	↓↓	Strong consensus	Evidence and consensus-based
Methotrexate			
When methotrexate as a systemic nail psoriasis treatment is indicated, the optimal initial dose should be up to 15 mg/week with proper monitoring and with or without folic acid according to national regulations.	↑↑	Strong consensus	Evidence and consensus-based
When methotrexate as a systemic nail psoriasis treatment is indicated, the duration of treatment with the full dosage should be maintained until at least moderate improvement is achieved.	↑↑	Strong consensus	Evidence and consensus-based
Maintenance with reduced methotrexate dosage may be considered.	↑↑	Strong consensus	Evidence and consensus-based
Biologic agents and small molecules			
Anti–TNF-α inhibitors infliximab, etanercept, adalimumab, golimumab; IL-12/23 inhibitor ustekinumab; and IL-17 inhibitors secukinumab and ixekizumab should be considered for systemic treatment of nail psoriasis.	↑↑	Strong consensus	Evidence and consensus-based
PDE-4 inhibitor apremilast should be considered for systemic treatment of nail psoriasis.	↑↑	Strong consensus	Evidence and consensus-based
Tofacitinib should be considered for systemic treatment of nail psoriasis.	↑↑	Strong consensus	Evidence and consensus-based

Arrows indicate the direction and strength of the concensus.
IL, Interleukin; *PDE-4*, phosphodiesterase 4; *TNF-α*, tumor necrosis factor α.

In cases of coexisting PsA, the methotrexate dosage should be adjusted accordingly. Schedules for appropriate monitoring with these systemic agents have been provided in several published guidelines for the treatment of cutaneous psoriasis.[72,73]

Systemic biologics for psoriasis generally improve both skin and nail psoriasis. Anti–tumor necrosis factor α inhibitors infliximab,[74-78] etanercept,[79-82] adalimumab[74,80,83-88] and golimumab[89]; IL-12/23 inhibitor ustekinumab[74,90-94]; IL-17 inhibitors secukinumab[95] and ixekizumab[96-98]; phosphodiesterase 4 inhibitor apremilast[99]; and Janus kinase 1/3 inhibitor tofacitinib[100,101] should be considered for systemic treatment of nail psoriasis; scientific evidence suggests treatment with these agents results in rapid and significant improvement of nail psoriasis when used in patients with nail psoriasis and cutaneous disease, arthritis, or both. Moreover, the new pegylated anti–tumor necrosis factor α inhibitor certolizumab pegol[102] and the IL-23 inhibitor guselkumab[103,104] appear to have a positive effect on nail psoriasis in patients treated for PsA or psoriasis, respectively. In addition, the data available for infliximab, etanercept, adalimumab, and ustekinumab document long-term maintenance of improvement of nail psoriatic signs without noteworthy AEs.[74,80,88,91] Up to

week 32 in the TRANSFIGURE study, secukinumab demonstrated significant efficacy in nail psoriasis improvement.[105]

This expert panel did not endorse a definite threshold for the initiation of systemic treatment for nail psoriasis. When nail psoriasis is presented within the context of extensive cutaneous psoriasis, arthritis, or both, the choice of topical or systemic treatment is usually determined by the severity of psoriasis and the impact on the patient's QoL. The same holds true for psoriasis limited to the nails. A definition of few-nail disease was discussed, and first-line and second-line treatments were suggested for nail disease limited to a few nails, taking into account the presence of nail matrix and/or nail bed disease. For nail psoriasis involving more than a few nails, the patients' needs and the impact the disease has on their QoL should be considered when determing treatments. Economic and health insurance reimbursement factors, along with the availability of treatments in the future, are also expected to affect treatment choices.

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