Nail Psoriasis

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• 1.5 - 3% of the population have psoriasis
• Up to 50% of psoriatics have nail involvement
• In children, nail psoriasis ranges from 7-39%

Patient with nail psoriasis
• 93% considered as a significant cosmetic handicap
• 58% interfered with their job
• 52% described pain as a symptom

Anatomical involvement and Nail Signs

Nail Matrix
• Proximal matrix
  – Pitting, Beau’s lines,
  – Onychomadesis
  – Trachyonychia
• Intermediate matrix
  – Leuconychia

Nail Bed
• Subungual hyperkeratosis.
• Onycholysis
• Splinter haemorrhages
• Oily spots

Pits
• More commonly affect fingers than toes
• Pattern: disorganized / in rows
• Depth: shallow, large enough to leave a punched out hole (elkonyxis)
• The origin of pits is influenced by disease in the proximal nail matrix.
• Injection of triamcinolone into the PNF can suppress the clinical feature
Crumbling Nail Plate

• Disease involve the entire nail matrix
• Represent prolonged duration of disease

Onycholysis

1. Disease:
   • Focal nail bed parakeratosis
     • "oily spot" or "salmon patch"
     • Extension of this area to the free edge produces onycholysis, which typically has a reddish brown margin

2. Trauma:
   Disruption of the onychocorneal band
   • Minor manicure, wet work and leverage from long nails exacerbate the condition

Discoloration

1. Nail thickening and subungual hyperkeratosis
   Contribute to a yellow appearance, particularly in the toes

2. The coincidence of onychomycosis and psoriasis
   Candida spp. and Pseudomonas can result in green discoloration
   While non-dermatophyte bacteria are common, dermatophytes are rare

Subungual hyperkeratosis

• Represents nail bed disease
• Most marked distally and extends proximally
• The fingertip may become very tender

Splinter haemorrhages

• 42% of fingernails
• 6% of toenails

Due to
• the increased capillary prominence
• fragility in nail bed dermis in psoriasis
• mechanical factors
Acropustulosis

- Destructive pustulation of the nail unit.
- The nail plate may be lifted off by sterile pustules.

May present as part of:
- Pustular psoriasis.
- Palmo-planter pustulosis.
- Acrodermatitis continua of Hallopeau.
- Parakeratosis pustulosa (typically in young girls).

- Associate with erythema and discomfort of the end of the digit.
- May be long-term nail loss, except in parakeratosis pustulosa, which resolves spontaneously.

Differential Diagnosis

<table>
<thead>
<tr>
<th>Onychomycosis</th>
<th>Psoriasis</th>
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<tbody>
<tr>
<td>Toes</td>
<td>Fingernails</td>
</tr>
<tr>
<td>Changes within or beneath the nail plate</td>
<td>Often nail surface changes alone</td>
</tr>
<tr>
<td>Only one or a minority of digits</td>
<td>Usually several digits affected</td>
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</table>

<table>
<thead>
<tr>
<th>Lichen planus</th>
<th>Psoriasis</th>
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<tbody>
<tr>
<td>Very difficult to distinguish</td>
<td>Pits are prominent</td>
</tr>
<tr>
<td>Both may have trachyonychia with subungual hyperkeratosis</td>
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<tr>
<th>Reiter’s disease and PRP</th>
<th>Psoriasis</th>
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<td>Distal subungual hyperkeratosis and splinter haemorrhages are common</td>
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Severity Index for Nail Psoriasis

- Nail Psoriasis Severity Index (NAPSI)
- Baran’s nail psoriasis severity index

NAPSI

Nail Psoriasis Severity Index

- The nail is divided with imaginary horizontal and longitudinal lines into quadrants.
- Each nail is given a score for:
  - nail bed psoriasis (0-4)
  - nail matrix psoriasis (0-4)

depending on the presence of any of the features of nail psoriasis in that quadrant.

Therapeutic Ladder for Nail Psoriasis

- Avoid trauma
- Topical calcipotriene (2)
  - Nail bed lesions
- Intralesional corticosteroid (1)
  - For nail matrix psoriasis
  - E.g. 1 mg/ml triamcinolone acetonide in saline.
- Acitretin (2)
  - 0.3 mg/kg/day to avoid nail fragility and pyogenic granulomas.
- Methotrexate (2)
  - If indicated for additional manifestations
- Cyclosporine (2)
  - If indicated for additional manifestations
- Biologic therapies (2)
  - If indicated for additional manifestations

Evidence-based therapies for nail psoriasis

Topical:
- Corticosteroids: alone or with salicylic acid.
- Tazarotene
- Urea-propylene glycol
- Fluorouracil
- Calcipotriol
- Anthralin

Intralesional:
- Corticosteroids

Systemic:
- Phototherapy
- Retinoids
- Cyclosporine
- Nimesulide

Systemic biologics:
- Infliximab
- Alefacept
**Treatment**

- **Avoid minor trauma** may aggravate the isomorphic (Köbner) response
  - avoiding manicure
  - keeping the nails short
  - wearing gloves for wet work and heavy or greasy manual work
  - avoiding direct exposure to solvents and encouraging emollient usage

- Gel or other forms of sculptured or adherent artificial nails have the potential for aggravating onycholysis and are not usually recommended.

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**Local steroids**

- Clobetasol propionate ointment
  - Duration of treatment is limited by local atrophy
  - Useful for pustular paronychia with secondary nail plate changes
  - For onycholysis, the nail is clipped back to the point of nail plate attachment and the nail bed treated topically. Candida is a frequent colonizer of this space and warrants treatment at the same time.

- Triamcinolone acetonide
  - inject into the nail fold or nail bed
  - Using 0.1- mL injections of 10 mg/mL at matrix and nail bed
  - no more than two or three occasions
  - good response in
    - subungual hyperkeratosis, nail plate thickening and ridging
    - onycholysis and pitting improved in only 50% of nails

**Topical vitamin D analogues**

- Calcipotriol can be useful in:
  - subungual hyperkeratosis and nail thickening
  - maintenance treatment for pustular nail psoriasis
  - Advantage: avoiding the risk of atrophy with long-term use
  - Not good in treating the nail fold inflammation and consequent changes in proximal matrix function, which manifest as ridging and pitting
  - Can be used in combination with topical steroid
    - on an alternating basis (am/pm)
    - as a combined steroid and calcipotriol ointment

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### Table: Clinical improvement and Protocol

<table>
<thead>
<tr>
<th>Treatment</th>
<th>Clinical Improvement</th>
<th>Protocol</th>
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<tr>
<td>Triamcinolone acetonide (10 mg/mL) needle injection</td>
<td>Fingers* 51.7% Toes* 51.9%</td>
<td>BID for 5 months</td>
<td>Tosti et al (1998)</td>
</tr>
<tr>
<td>Clobetasol propionate ointment</td>
<td>Fingers* 72.3% Toes* 69.9%</td>
<td>First 6 month: Clobetasol OD* Mon-Fri Second 6 month: Clobetasol OD*2/week</td>
<td>Rigopoulos et al (2002)</td>
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Photochemotherapy.

PUVA
- General therapy (whole-body PUVA):
  - As part of whole-body PUVA, 18 of 26 patients showed >50% improvement in nail changes, although pitting was unresponsive.


- Local PUVA to the nail unit:
  - four of five patients improved.
  - onycholysis was more responsive than pitting.


Retinoids

Acitretin and Etretinate
- Reduces subungual hyperkeratosis.
- Pustulation may be improved.
- Pitting or onycholysis may be exacerbated.


Topical tazarotene 0.1%
- Helpful for the treatment of onycholysis and pitting when applied under occlusion.


Systemic methotrexate and cyclosporin
- May both help the nail unit.
- Not usually be advocated as therapy for disease affecting this area alone.
- Acrodermatitis continua of Hallopeau and psoriatic onychopachydermo-periostitis are exceptions, and may respond to methotrexate.

Biological agents
- Recently, biologic agents targeted against tumour necrosis factor (TNF), have been employed to treat both cutaneous and nail psoriasis as well as PsA.

Adalimumab
- TNF inhibitor, SC

Alefacept
- T cell activation inhibitor, IM
- Poor to moderate response in nail psoriasis

Etanercept
- TNF inhibitor, SC
- Has shown efficacy in nail psoriasis in patients with moderate to severe psoriasis with nail involvement (CRYSTEL).

Infliximab
- A TNF inhibitor, IV
- Infliximab is the only biologic agent to have demonstrated complete clearance of nail disease in a high proportion of patients in clinical studies.

Ustekinumab (Stelara), SC
- An anti-interleukin 12/23 monoclonal antibody
Nail psoriasis is often refractory to traditional treatments, and patients with nail psoriasis usually demand a therapeutic option.

Several studies have proven the efficacy of pulsed dye laser (PDL) in the treatment of plaque type psoriasis.

Only two studies indicate the effectiveness of PDL on nail psoriasis.

Baseline and after four sessions with PDL
The pitting is decreased

Pulsed Dye Laser vs Photodynamic Therapy in the Treatment of Refractory Nail Psoriasis: A Comparative Pilot Study
Fernandez Guzman M, Harto A, Sanchez-Ramos M, Garcia-Morales I, Jaen P

Pulsed Dye Laser in the Treatment of Nail Psoriasis
Yasemin Oram, Yelda Karincagil, Erkan Koyuncu, Ferayi Kaharaman

METHODS
- Psoriatic nails of 5 patients were treated using PDL (595 nm) once monthly for 3 months.
- Pulse duration 1.5 ms, beam diameter 7 mm, energy 8.0 to 10.0 J/cm².
- Statistically evaluated according to NAPSI differences before and after the treatment.

RESULTS
- Statistical analysis of NAPSI before and after treatment showed significant difference (p < 0.05, paired t-test).
- The nail bed lesions, particularly onycholysis and subungual hyperkeratosis, responded best to the treatment.

CONCLUSION
- PDL might be an alternative treatment for nail psoriasis.

LIMITATIONS
- Lack of blinding and comparison.
- Small number of patients.

Objective
- This study compared the efficacy of
  - short (0.45-millisecond)
  - long (6-millisecond) pulse duration
- To determine the optimal pulse duration in using pulsed dye laser for nail psoriasis treatment.

Materials and Methods:
- Twenty patients with bilateral fingernail psoriasis were recruited and completed a 6-month trial.
- PDL was applied on the proximal and lateral nail folds based on random assignment.
- 40 nails were treated with 6-ms pulse duration, 9 J/cm².
- 39 nails were treated with 0.45-ms pulse duration, 6 J/cm².
• The shorter pulse duration (0.45 milliseconds) was calculated from the thermal relaxation time (TRT) for superficial microvessels of psoriasis.
• Being less than 30 µm, the calculated TRT of these vessels is 0.4 milliseconds (TRT = d²/16X, X = 1.4 x 10⁷, d = diameter in millimeters).
• The longer pulse, 6 milliseconds, based on the pulse duration used in the original study by Fernandez-Guarino et al.

Materials and Methods:
• Nail Psoriasis Severity Index (NAPSI) was used to assess the clinical outcome from pre- and post-treatment photographs.
• The assessment was blindly conducted by dermatologist.
• Patients were monitored for adverse events.
• Pain was evaluated after the procedure using a visual analogue scale (VAS) assessed by the patient.

Results:
• After 6 months of first treatment, there was a significant reduction from baseline in
  – Overall-, nail matrix-, and nail bed NAPSI in both groups.
• No significant difference between the two groups.
• Higher pain levels were observed in the longer pulse group.
• Side effects were transient petechiae and hyperpigmentation.

Long term follow up
• All 20 patients were kept under observation for 15 months after completing the treatment protocol.
• The majority (50%) of them showed good and sustainable improvement and experienced no recurrence of nail psoriasis after the 15-month follow-up period.
• In 35% of the patients, the improvement lasted for 3 to 6 months before a recurrence of nail psoriasis.
• The remaining 15% of patients did not respond to the treatment and showed no improvement at all.
Conclusions:

• PDL was found to be a safe and effective option in the treatment of nail psoriasis.

• No significant difference in terms of efficacy was found between the longer and shorter pulse duration treatment groups.

The Effect of Different Pulse Durations in the Treatment of Nail Psoriasis with 595-nm Pulsed Dye Laser: A Randomized Double-blind Intra-patient Left-to-Right Study

Chanitwan Treewittayapoom, MD; Piyavadee Singvahanont, MD; Kumutnart Chanprapaph, MD; Eckart Haneke, MD, PhD

Our study (2011)

To study the effect of different pulse durations of 595-nm PDL in the treatment of nail psoriasis

Fernandez et al (2009)

To compare the efficacy of PDT and PDL in the treatment of nail psoriasis.

References

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<th>NAPSI score reduction</th>
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<td>0.45-ms, 6 J/cm²</td>
<td>week 12** 46.3% week 24** 49.4%</td>
<td>To study the effect of different pulse durations of 595-nm PDL in the treatment of nail psoriasis</td>
<td>Our study (2011)</td>
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<tr>
<td>6-ms, 9 J/cm²</td>
<td>week 12** 33.3% week 24** 57.5%</td>
<td>To compare the efficacy of PDT and PDL in the treatment of nail psoriasis</td>
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Thank you for your kind attention