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Nail Psoriasis: A Review Article

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ABSTRACT

Background: Nails are considered epidermal appendages, and as such, are commonly affected in patients with psoriasis, 80% of whom are likely to develop nail psoriasis as a result of their condition. Nail involvement is highly prevalent in the psoriasis population, can serve as a poor prognostic factor of disease, and greatly affects the QoL of patients with psoriasis. Multiple topical and systemic medications have been studied for this condition.

Aim: This study aimed to discuss the various therapies, including topicals, injectables, systemic, lasers, and complementary therapies that have been explored for the treatment of nail psoriasis.

Methods: A literature search was conducted in PubMed and Embase in October 2022 using a combination of the terms 'nail' AND 'psoriasis.' Our initial search was filtered using the "clinical trial" filter in the PubMed and Embase search options. Only studies written in the English language were reviewed. All original prospective, retrospective studies and non-experimental descriptive studies were chosen for the purpose of this review.

Conclusion: We concluded that triamcinolone acetonide & botulinium toxin type A are effective in treating nail psoriasis symptoms like pitting, leukonychia, onychorrhexis, subungual hyperkeratosis, & onycholysis. As a result, both may be better options for nail psoriasis patients who have both nail matrix & nail bed involvement.

Keywords: Nails, Nail psoriasis, Special site, Biologic, Systemic, Topical, Injectable, Laser.

INTRODUCTION

Nail psoriasis manifests differently clinically depending on structure involved within nail unit. Onycholysis, oil stains, & splinter haemorrhage can result from involvement of nail plate, whereas involvement of nail matrix frequently manifests as pitting, leukonychia, crumbling, & transverse grooves [(1)]. Nail Psoriasis Severity Index score is used to evaluate severity of nail involvement & therapy efficacy [(2)].

Botulinum toxin is neurotoxin obtained by Clostridium botulinum that effects flaccid muscle paralysis. It is presently used for cosmetic processes as well as treatment of focal hyperhidrosis. Botulinum toxin has been used in variety of dermatological situations, with encouraging outcome [(3)].

Botulinum toxin type A was used in therapy of dynamic rhytides in facial aesthetics. In order to achieve complete muscle paralysis, two-four units of Botox are injected into muscles. Botox injection has aesthetic benefit by providing facial skin smooth, lustrous appearance because of reduced sweat & sebaceous gland secretion caused by injection of multiple microdroplets of diluted Botulinum toxin A into upper dermis. It had been used effectively to enhance skin tone & texture, in addition to reduce flushing, enlarged pores, & seborrhea [(4)].

This study aims to detect more effective drug for therapy of nail psoriasis and detect effectiveness of BOTOX in therapy of nail psoriasis.

Treatment of Nail Psoriasis:

A. General Measures

Before beginning treatment for nail psoriasis, the patients must be informed about essential for long-term therapy, & significance of good compliance. Besides, to prevent exacerbating onycholysis & accumulating

exogenous material underneath nail, studied cases must be advised to maintain their nails short. Manual removal of exogenous material must be prevented because it may aggravate onycholysis & allow pathogens to enter. Wearing gloves & applying emollient creams to psoriatic skin of hands & nail folds protects nails from injury [(5)].

After nail psoriasis is diagnosed, there are numerous therapy options available. Therapies aimed at improving functional & psychosocial aspects of psoriatic nail disease. Topical calcipotriol, topical anthralin, topical tazarotene, topical cyclosporine, avulsion treatment, & systemic treatment for serious cases are all therapy options for nail psoriasis. Antifungal treatment is required to treat onychomycosis (if existent). Laser & light treatments have appeared as potentially cost-effective in-office therapies; even so, large-scale trials are required, especially with regard to impacts when combined with other present treatments [(6)].

B. Topical Corticosteroids:

Therapy with great corticosteroid solution & ointment below occlusion with cellophane wrap at bedtime can help with nail psoriasis. To prevent tachyphylaxis, prevent long-term, continuous corticosteroid treatment. Additionally, avoid prolonged occlusion. Several studied cases may benefit from topical preparation containing great-potency corticosteroid & calcipotriol [(7)].

Combination treatment with corticosteroids, especially topical betamethasone with calcipotriol, has been

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studied extensively & is now used as 1st-line therapy for nail psoriasis and bed involvements. According to current study conducted by **Rigopoulos *et al.*** [8] 25 psoriatic studied cases with nail & mild skin involvement were taught to put on everyday calcipotriol-betamethasone ointment to impacted nails for twelve weeks [9].

Vitamin D Analogues: Vitamin D analogues e.g., Calcipotriol (fifty µg/g) two times a day application for three-six months was found to influence in therapy of nail psoriasis [8]**. Kokelj *et al.*** [10] described that topical application of calcipotriol two times a day for six months was as influence as topical steroids in nail psoriasis. Combining calcipotriol with clobetasol propionate could be more effective than agent alone for therapy of nail psoriasis [5].

Calcineurin Inhibitors

Calcineurin inhibitors inhibit T-cell functions that are involved in pathogenesis of psoriasis. Topical tacrolimus 0.1 percent ointment penetrates well into the skin & nail. It showed good results on nail bed & matrix psoriasis after twelve weeks [11]**.**

Iontophoresis: Iontophoresis is a method using small electric current to deliver treatments or other chemicals across skin. **Van Le and Howard,** [12] have reported improvement in 81% of their studied patients using dexamethasone iontophoresis for therapy of nail psoriasis. A plastic container containing 100 ml of distilled water and three ml of dexamethasone solution was used to dip fingernails in. For twenty minutes, electrodes are attached to dorsum of hands & current of fourm A was carried across solution. Therapy was given once a week for three months.

Tazarotene: Tazarotene is synthetic retinoid resulting from vitamin A that modulates and decreases keratinocyte differentiation, hyperproliferation, & inflammation, which are included in pathogenesis of nail psoriasis. It has limited side impacts, such as proximal nail fold desquamation [13]**.**

Fluorouracil: One percent five-fluorouracil solution & five percent cream applied two times a day to matrix area without occlusion for six months enhances pitting & subungual hyperkeratosis [7]**.**

C. Systemic Therapies:

Phototherapy

The psoralene Ultraviolet A is useful in treating cutaneous psoriasis & can help with nail psoriasis. In three-six months, both oral & topical PUVA treatments enhanced nail psoriasis. Nail discoloration is potential side effect of PUVA [7]**.**

Narrowband ultraviolet B phototherapy:

Adults with plaque psoriasis should receive NB-UVB phototherapy as monotherapy. Suggested NB-UVB phototherapy starting dose for adults with generalised plaque psoriasis must be built on minimal erythema dose & defined based on fixed-dose & skin-phototype protocol. For adults with generalised plaque psoriasis, therapy stage of three times a week dosing of NB-UVB phototherapy is suggested [7]**.**

Pregnant studied cases with guttate psoriasis & generalised plaque psoriasis should receive NB-UVB phototherapy. NB-UVB phototherapy can be supplemented with concomitant topical treatment containing retinoids, & corticosteroids to potentially enhance effectiveness [14]**.**

Broad band Ultraviolet B phototherapy:

If NB-UVB phototherapy is not accessible, BB-UVB phototherapy is suggested as monotherapy in adults with generalised plaque psoriasis. Adults with guttate psoriasis may benefit from BB-UVB monotherapy. To decrease risk of genital skin cancer, all studied cases getting BB-UVB phototherapy must have genital shielding [15]**.**

Targeted Ultraviolet B phototherapy:

For adults with localised plaque psoriasis, personal plaque psoriasis lesions, & studied cases with extensive disease, excimer 308-nm light, & targeted NB-UVB 311- to 313-nm light are suggested. Prescribed medication frequency for adults with localised plaque psoriasis is two-three times a week, instead of 1 every one-two weeks, for maximum productivity. Initial dose of aimed UVB phototherapy in adults with localised plaque psoriasis is based on minimal erythema dose & skin-phototype protocol [14]**.**

Photodynamic therapy: Adults with localised psoriasis, such as palmoplantar & nail psoriasis should not receive photodynamic treatment with aminolevulinic acid & methyl aminolevulinate. There is enough evidence to suggest climatotherapy for therapy of psoriasis [7]**.**

D. Biological therapy

Several studied cases with psoriatic nail disease may benefit significantly from treatment for psoriasis & psoriatic arthritis. Based on findings of phase three, multicenter, randomised, double-blind, placebo-controlled clinical trial, US Food & Drug Administration accepted addition of moderate-to-severe fingernail psoriasis data to adalimumab prescribing information in 2017. American Academy of Dermatology & National Psoriasis Foundation have issued guidelines on management & therapy of psoriasis with biologics [15].

TNF-alpha Inhibitors: As Etanercept, **Infliximab, Adalimumab** and **Certolizumab** have been accepted by FDA for therapy of plaque psoriasis, psoriatic

arthritis [14], **Interleukin-12/23 Inhibitors (Ustekinumab) [7], Interleukin-17 Inhibitors like Secukinumab & Ixekizumab [7, 14].**

E. Avulsion Therapy

Avulsion treatment, either chemical & surgical, can be used to treat psoriatic nail disease. Chemical avulsion treatment involves applying urea ointment in special compound to impacted nail below occlusion for seven days before removing nail traumatically. Chemical avulsion treatment is less painful, causes no blood loss, & is lower costly than surgical avulsion treatment [14].

F. Intralesional :

One of the common reasons for nail dystrophy is psoriasis. In many Indian researches, nail involvement in psoriasis ranges from thirty two percent to seventy four percent of cases. Psoriasis of fingernails is social issue [16]**.** Furthermore, the injectable administration of the drug can bypass essential for systemic administration, therefore minimizing potential systemic side effects. It provides the deposition of drug depot at inaccessible sites, confirming prolonged action at these sites [17]**.**

Preparation for the Procedure:

There are no absolute contraindications to this form of treatment. Intralesional injection is better to be avoided in the presence of any visible focus of infection at injection location. Marks & indications of peripheral ischaemia & peripheral vascular compromise must be ruled out [17]**.**

Intralesional Methotrexate Injection: Methotrexate can be better choice for nail psoriasis with marks of nail matrix involvement & TA for marks of both nail matrix & nail bed involvements [9]**.**

Intramatricial cyclosporine: Mittal and Mahajan [18] reported >75% improvement in 33% of the nails that were treated with intramatricial injection of cyclosporine (50 mg/ml) at 6-week intervals. Despite ring block anesthesia, there was severe pain associated with the injection of the drug. Other side effects were reported, such as proximal onycholysis, splitting, and distortion of nail plate.

Intralesional Corticosteroid Injection: intralesional agent used is triamcinolone acetonide at a dose of 2.5-10 mg/ml. The injection can be done with a needle or with the dermojet. The interval of injection is greatly variable, ranging from biweekly to bimonthly for up to 5–6 month. Triamcinolone acetonide is injected at 0.05–0.1 ml two-four depending on the site of lesions. Injection can be performed at proximal nail fold for nail matrix features treatment. Further injection of nail bed & hyponychium can be done for nail-bed features treatment [19].

Botulinium toxin type A in therapy of nail psoriasis

Botulinum toxin is neurotoxin superfamily that can inhibit release of acetylcholine & several neurotransmitters from presynaptic vesicles by cleaving SNARE target proteins. BoNT [20]**.**

Indications in dermatology:

BTX in Hypertrophic Scar Therapy:

Scars are described as signs that stay after wound has healed. They are major cosmetic concern, particularly when they are situated in prominent areas like head & neck. Hypertrophic scars & keloids are abnormal response to wound healing procedure, with dysregulated growth & excessive collagen formation [21]**.**

BTX in Scar Prevention: Numerous people recognise significance of active scar prevention in post-operative scar management. Tension that behaves on wound edges throughout curing phase is important factor in determining final cosmetic presence of surgical scar [22]**.**

Mechanism of action in nail psoriasis (as suspected): Inverse psoriasis was 1st type of psoriasis to be successfully treated with BoNT-A. Advantageous result was primarily clarified by decrease in hyperhidrosis component; however, effectiveness of BoNT-A has been noted in chronic plaque psoriasis. Substance P, calcitonin gene-related peptide, & nerve growth factor were identified as potent regulators of neurogenic inflammation that induces psoriasis flares via stress-mediated mechanism.

Current research looked at how Ona-BTX affected chronic plaque psoriasis. As well as expression of SP & CGRP, were investigated using immunohistochemistry. Regardless fact that altered expressions of SP & CGRP on psoriatic skin decreased after Ona-BTX injection, variation was not statistically significant [23]**.**

Method of injection: Lidocaine was used for ring-block anaesthesia. 4 injection points were decided, every one cm apart, with two points aiming proximal nail fold & two points affecting nail bed, with entry points on fingertip adjacent to distal portion of nail. Every point was awarded 7.5 U Abo-BTX. Anti-psoriatic agents, both topical & systemic, were prevented [24]**.**

Side effects of BTX injection:

Botox side effects may contain bleeding, swelling, erythema, & pain at injection locations [25]**.** Headaches may happen after Botox injections, although they will subside in two-four weeks.

Complications of BTX injection: Cosmetic Botox injection problems are uncommon. Common problems are ecchymosis & purpura, which can be

avoided by applying ice to injection locations before & after Botox injection [(26)]. Botox must be injected in low concentrations, at appropriate dose, & minimum one cm from superior, inferior, & lateral orbital bone margins. Studied cases must not manipulate injected locations for two-three hours after therapy & should sit & stand upright for three-four hours [(27)].

CONCLUSION

We deduced that triamcinolone acetonide & botulinium toxin type A are effective in treating nail psoriasis symptoms like pitting, leukonychia, onychorrhexis, subungual hyperkeratosis, & onycholysis. As a result, both may be better options for nail psoriasis patients who have both nail matrix & nail bed involvement. Significant therapy limitation of intralesional application is pain, which is noticeable throughout distal nail fold injection. As a result, it is primarily recommended for studied cases with mild to moderate nail psoriasis & cases involving few nails.

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