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INTRALESIONAL TRIAMCINOLONE ACETONIDE IN THE MANAGEMENT OF ACNE KELOIDALIS NUCHAE: A CLINICAL REVIEW AND CASE EXPERIENCE

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ABSTRACT

Background: Acne keloidalis nuchae (AKN) is a chronic, scarring folliculitis that predominantly affects the occipital scalp and posterior neck, leading to significant cosmetic and psychological morbidity. Current treatment remains challenging, and recurrence is common.

Objective: This article reviews the efficacy and safety of intralesional triamcinolone acetonide (ILTA) in AKN and presents clinical insights into its application as a practical, cost-effective therapy.

Methods: A comprehensive review of the literature was undertaken using PubMed, Google Scholar, and regional databases. In addition, case experiences from patients treated with ILTA injections at a dermatology practice in Pakistan are highlighted.

Results: ILTA demonstrates significant efficacy in reducing inflammation, pruritus, and lesion size, with high patient satisfaction. Side effects such as atrophy and hypopigmentation are rare when administered at appropriate concentrations. Combination approaches (ILTA with antibiotics, laser, or surgery) further improve long-term outcomes.

Conclusion: ILTA is a cornerstone therapy for AKN, offering a safe and effective treatment option when delivered using proper technique and dosage.

Key Words: Keloid, Infection, Dermatology, Treatment, Medication.

INTRODUCTION

Acne keloidalis nuchae (AKN) is a chronic inflammatory condition characterized by follicular papules, pustules, and keloid-like plaques, primarily located on the nape of the neck and occipital scalp. It disproportionately affects men of African, Hispanic, and South Asian descent, typically between the ages of 15 and 40 (Ogunbiyi, 2016). The disease has significant psychosocial impact due to its disfiguring appearance and chronic course.

Although the precise pathogenesis remains unclear, mechanical trauma, follicular occlusion, androgen influence, and aberrant wound-healing responses are implicated. The management of AKN is challenging, requiring a multimodal approach including topical and systemic

antibiotics, retinoids, corticosteroids, surgery, and light-based therapies (Taylor, 2021).

Among these, intralesional triamcinolone acetonide (ILTA) remains a key therapeutic modality due to its potent anti-inflammatory and antifibrotic effects. This article reviews the evidence for ILTA in AKN, describes its practical application, and shares clinical experience from real-world practice.

PATHOPHYSIOLOGY OF ACNE KELOIDALIS NUCHAE

AKN is not a true keloid but rather a chronic folliculitis leading to scarring. The proposed mechanisms include:

1. Chronic mechanical irritation (tight collars, helmets, frequent shaving) causing repeated follicular injury.
2. Follicular hyperkeratinization leading to follicle plugging and rupture.
3. Aberrant wound healing characterized by fibroblast hyperactivity and excessive collagen deposition, resembling keloid pathophysiology.
4. Genetic and hormonal factors, with a higher prevalence in men and familial clustering.

The resultant lesions progress from papules and pustules to firm nodules and large, confluent fibrotic plaques with alopecia.

MECHANISM OF ACTION OF INTRALESIONAL TRIAMCINOLONE

Triamcinolone acetonide is a synthetic glucocorticoid with strong anti-inflammatory and antiproliferative properties. When injected intralesionally, it:

- Inhibits fibroblast proliferation.
- Suppresses collagen and glycosaminoglycan synthesis.
- Reduces inflammatory cytokine production.
- Induces vasoconstriction, decreasing erythema and edema.
- Promotes regression of hypertrophic lesions.

These actions make ILTA particularly effective in reducing papulonodular and plaque-like lesions of AKN.

METHODS OF ADMINISTRATION

Preparation:

- Concentrations: 2.5–40 mg/mL, depending on lesion size.
- Dilution: Triamcinolone acetonide (Kenalog®) diluted with sterile normal saline or 1% lidocaine.

Dosage & Technique:

- Small papules: 2.5–5 mg/mL.
- Moderate plaques: 5–10 mg/mL.

- Thick fibrotic lesions/keloid-like masses: 20–40 mg/mL.
- Injection volume: 0.1–0.2 mL per site.
- Needle: 27–30 gauge, intradermal injection at multiple points, spaced 0.5–1 cm apart.
- Frequency: Every 3–4 weeks, typically 3–6 sessions until flattening is achieved.

Practical Tips:
- Inject slowly to minimize pain.
- Avoid injecting too superficially (risk of atrophy) or too deeply (ineffective).
- Combine with topical antiseptics/antibiotics to reduce risk of secondary infection.

CLINICAL EVIDENCE

Several studies support the use of ILTA in AKN:
- Khodaeiani et al. (2012): Demonstrated significant reduction in lesion size and patient-reported symptoms with ILTA in hypertrophic scars and keloids, findings extrapolated to AKN.
- Taylor (2021): Reviewed management of AKN and emphasized ILTA as first-line therapy for papulonodular lesions, either alone or in combination with antibiotics.
- Ogunbiyi (2016): Reported ILTA as highly effective in controlling inflammation in early lesions, though maintenance therapy is often required to prevent recurrence.

Adjunctive therapies enhance outcomes:
- ILTA + surgical excision reduces recurrence rates compared to surgery alone.
- ILTA + laser hair removal addresses the underlying follicular pathology, providing long-term control.

CASE EXPERIENCE (BELLMEDEX DERMATOLOGY CLINIC, RAWALPINDI)

Between January and July 2025, 8 male patients aged 18–35 years presented with AKN. All were treated with ILTA injections as follows:

- Dose: 5–10 mg/mL for papulonodular lesions; 20 mg/mL for thick plaques.
- Sessions: 3–5 sessions at 4-week intervals.
- Adjuncts: Oral doxycycline (100 mg OD for 4 weeks) in 3 cases with superimposed folliculitis.

Outcomes:
- 6/8 patients demonstrated ≥70% reduction in lesion size and pruritus.
- 2 patients showed partial improvement (40–50%) and required referral for laser hair removal.
- No major side effects were noted; mild hypopigmentation occurred in 1 patient.

This real-world experience highlights ILTA as an effective, well-tolerated therapy in the Pakistani population.

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ADVERSE EFFECT

While generally safe, ILTA may cause:
- Skin atrophy and telangiectasia (especially at high doses).
- Hypo- or hyperpigmentation (more noticeable in darker skin types).
- Pain or ulceration at injection site (rare).
- Systemic absorption is negligible at standard doses.

Adverse effects are minimized by using the lowest effective concentration, intradermal technique, and spacing treatments appropriately.

DISCUSSION

The management of AKN is complex, requiring multimodal therapy. ILTA offers several advantages:
- Rapid symptom relief (reduces inflammation and pruritus).
- Cost-effective and accessible in outpatient settings.
- Non-invasive compared to surgery or laser.

However, limitations include:
- Recurrence if underlying mechanical factors (shaving, trauma) are not addressed.
- Reduced efficacy in advanced fibrotic plaques compared to early lesions.

Optimal outcomes are achieved with combination approaches:
- ILTA + antibiotics for active inflammation.
- ILTA + laser for long-term follicular destruction.
- ILTA post-surgical excision to prevent recurrence.

CLINICAL IMAGE

Representative clinical images of acne keloidalis nuchae lesions in patients treated with intralesional triamcinolone acetonide injections.

Figure : Large fibrotic plaque on the nape of the neck with surrounding papulonodular lesions.

CONCLUSION

Intralesional triamcinolone acetonide remains a cornerstone in the management of acne keloidalis nuchae. It offers safe, effective, and affordable treatment for early to moderate lesions, with minimal side effects when administered correctly. Although recurrence is possible, especially in advanced disease, combining ILTA with other modalities significantly enhances long-term control.

Given its accessibility and efficacy, ILTA should be considered a first-line therapy for AKN, particularly in resource-limited settings. Further randomized controlled trials are needed to establish standardized dosing protocols and long-term outcomes.

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