

NON-SURGICAL (PHYSICO-CHEMICAL) NAIL REMOVAL AND ANTIFUNGAL THERAPY OF *TINEA UNGUIUM*

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The effect of chemo-surgical nail removal with urea ointment followed by 2% miconazole nitrate topical application and/or systemic griseofulvin for three months was studied in 77 mycotic nails. The overall clinical cure was observed in 67.5% nails, consisting of 78.4% finger-nails and 46.2% toe-nails. Complete mycological cure was recorded only in 61.0%. The cure rates in the finger-nails were 77.8, 75.0 and 80.9% in groups I (evulsion+griseofulvin), II (evulsion+2% miconazole) and III (evulsion+griseofulvin+2% miconazole) respectively, whereas cure rates in the toe-nails were 42.8, 44.4 and 50% respectively. Best clinical results (80.9%) were obtained in finger-nails treated with a combination of all the three therapeutic modalities. The cure rate was directly proportional to the extent of nail involvement.

Key words : Urea, *Tinea unguium*, Griseofulvin, Miconazole nitrate, Treatment.

With the usual modes of therapy, the treatment of dermatophytosis of nails is often unsatisfactory. While the topical therapy, including the newer synthetic imidazole derivatives, suffers from the drawback of poor therapeutic response,¹ systemic griseofulvin has its limitations and is particularly disappointing in toe-nail infections. Following the latter treatment, 3 out of 41 patients of finger-nail tinea and 34 out of 50 patients with toe-nail infection showed persistence of the fungus after one year.² Russel et al³ demonstrated a cure rate of 80% in the finger-nails and 12% in the toe-nails after ten months treatment. Davies et al⁴ recorded only 3% clinical cure and 20% mycological cure in toe-nails after long term treatment with griseofulvin. Complete ablation is extreme and unwarranted.⁵ Surgical evulsion of nails and topical antifungal therapy is the only procedure meeting success, however surgical evulsion is time-consuming, requires anaesthesia and is very painful.⁶ Ketoconazole is effective but hepatotoxic and not available in India.⁷ Arievidich et al⁸ in 1960 introduced "emplastrum urea" to remove dystrophic nails, which was

later on modified and adapted for onychomycosis by Farber and South in 1978.⁹ We are reporting the results of this novel therapy in dermatophytic nails.

Material and Methods

Thirty patients aged 18-60 years, having dermatophytic infection of 77 nails proved by direct microscopy and culture, were included in the study. All the patients were untreated except three who had received griseofulvin for one to three months. Duration of the disease varied from 2 months to 20 years (mean 8 years). Clinical details of nail changes were recorded and occlusive dressing done with urea ointment by the method of Farber and South.⁹ The urea ointment consisted of urea 40%, anhydrous lanolin 20%, white wax 5% and white petrolatum 35%. The occlusive dressing was kept for 7-10 days for finger-nails and 10-14 days for the toe-nails. Patients were instructed to avoid direct contact with water. Daily bath was possible after putting a wrap around the plastered fingers. The softened nail was scraped off with the surgical knife till the discolored nail material was no longer seen. The procedure was repeated within a week if response was not satisfactory especially in the toe-nails. The patients were divided into three groups on the

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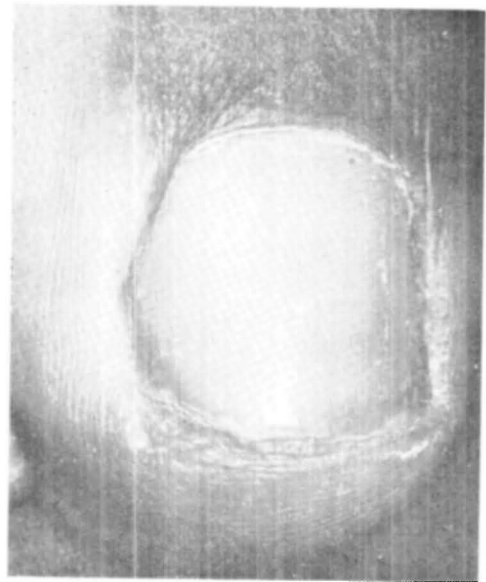
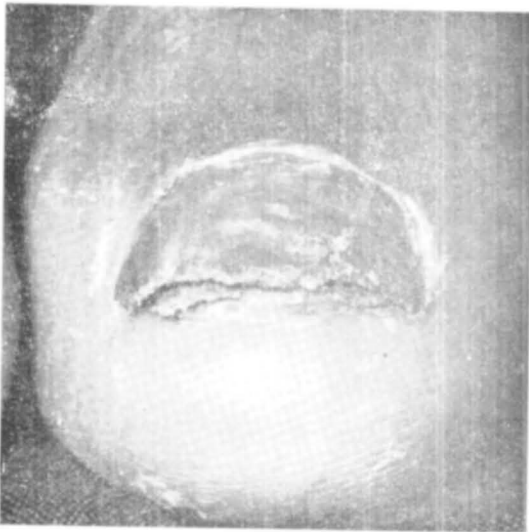
Table I. Comparison of the clinical response to the three treatment regimes.

Treatment used	Clinical cure		50% improvement		No improvement		Mycological cure	
	Finger-nails	Toe-nails	Finger-nails	Toe-nails	Finger-nails	Toe-nails	Finger-nails	Toe-nails
Group I n=11 Evulsion+ griseofulvin	14 (77.8%)	3 (42.8%)	2 (11.1%)	2 (28.6%)	2 (11.1%)	2 (28.6%)	13 (72.2%)	3 (42.9%)
Group II n=9 Evulsion+ 2% miconazole	9 (75.0%)	4 (44.4%)	3 (25.0%)	1 (11.1%)	0	4 (44.4%)	8 (66.7%)	3 (33.3%)
Group III n=10 Evulsion+2% miconazole +griseofulvin	17 (80.9%)	5 (50.0%)	0	1 (10%)	4 (19.0%)	4 (40.0%)	16 (76.2%)	4 (40.0%)
Total	52 (67.5%)		9 (11.7%)		16 (20.8%)		47 (61.0%)	

basis of the adjuvant treatment given in addition to the occlusive dressing. Group I was given three months of 500 mg griseofulvin in two daily divided doses. Group II was treated with twice daily applications of 2% miconazole nitrate cream for three months. Group III received both griseofulvin and topical miconazole. All the patients were followed up for clinical and mycological improvement for a period of 8-12 months.

Results

The results of chemo-surgical evulsion of nails combined with topical 2% miconazole cream and systemic griseofulvin in the three groups of patients is given in table-I. In all, 77 nails were treated, with good clinical results in 67.5% and 50% improvement in 11.7%. However, complete clinico-mycological cure was achieved only in 61.0% (Figs. 1 and 2). In 20.8%, the out-growing nail showed no improvement. Best results were obtained in finger-nails treated with combined modalities of nail evulsion,



Figs. 1 and 2. Onychomycosis of the great toe-nail before (Fig. 1) and after (Fig. 2) treatment with urea occlusive therapy, topical miconazole nitrate lotion and systemic griseofulvin for three months.

topical miconazole and systemic griseofulvin for three months (80.9%) though the differences between the results obtained with the 3 treatment regimes were not statistically significant. Putting all groups together, satisfactory results were noted in 78.4% of finger-nails compared to only 46.2% of toe-nails. The clinical improvement was directly proportional to the extent of nail infection. Nails with upto 75% involvement of nail bed and surface area had better cure rate (87.1%) than those having universal involvement (21.7%). Patient's age, sex, prior treatment, duration of infection or the type of dermatophyte had no bearing on the therapeutic response.

Mechanical removal of the diseased nail was a satisfying experience for the patient and did not interfere much with daily cores of life even with multiple nail occlusion, hence compliance was excellent. All patients completed two-monthly follow-up for 8-12 months. Local side effects included occasional mild irritant dermatitis and haemorrhagic points after evulsion, subsiding within 3 days without any therapy.

Comments

Chemo-surgical evulsion of the afflicted nails has distinct advantages over the conventional modes of therapy. It is painless, does not require anaesthesia, and the treatment period is shorter with better patient acceptance and cure rates. The resultant dermatitis is treated with tap water compresses and lasts for 2-3 days only. It can be used as an adjuvant to the chosen antifungal therapy.

Urea acts as a hydrating, keratolytic and denaturising agent of nail keratin.¹⁰ Under occlusion, the ointment permeates into the potential subungual space created by the fungus, thus facilitating quick and easy removal of the infected and a part of the adjoining normal nail. The naked nail bed becomes more accessible to the anti-fungal agent. In addition, the persistent fungal load in dead keratin, the source of further spread, is shed off permanently.

Though any number of nails even with an extensive degree of dystrophy can be treated, best results are likely in the finger-nails having less than 75% surface area involvement. More extensive lesions would probably require longer therapy. Clinical resistance or contra-indications of oral griseofulvin are important indications of urea therapy. The method can also be useful for those who are not willing or cannot submit to surgical evulsion because of concurrent peripheral vascular disease.

Our results are superior to those of Rollman,¹ who used a similar method of nail evulsion coupled with topical 2% miconazole for six months and obtained clinical cure in 60% and complete clinico-mycological cure in 42%. Buselmeier¹² used urea ointment with salicylic acid and obtained better results, though there was increased incidence of local irritation.

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