

New Effective Method Of Treatment Of Fungal Nail Infections

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Abstract: *The main purposes of study are practical experience and observations received by the author in various regions of the world with different climatic conditions and among the population of different socio-economic levels and different color of skin.*

The percentage of onychomycosis affections in the developed countries is rather lower than in the developing countries. First of all it is due to tropical and subtropical climate with humidity and heat which are contributory medium for the development of fungal infections.[1-6].

258 patients of different age suffering from onychomycosis and living mainly in the countries with tropical and subtropical climate (Mozambique, Rwanda, Angola, Cabo-Verde, SA, Nigeria, Libya, Zimbabwe, Namibia, Senegal, Kongo as well as in the territory of Russia) were treated.

The author elaborated his own technique of combined treatment with wide-known medicines and came to the conclusion: it is only possible to treat fungal nail infection locally creating humid and hermetic medium artificially in the area of infected part of the nail saturated with medicines having keratolytic and fungal effect. Such medicines are Ketoconazole, Intraconazole, Terbinaphyn in combination with acetylsalicylic acid.[7-16].

Keywords: *Onychomycosis, fungi, ketoconazole, aspirin.*

I. INTRODUCTION

High percentage of patients suffering from onychomycosis is noted in the countries with unstable political situation (war countries) where the civil population does not use foot wear because of poverty and the military wears rough poor ventilated shoes. According to the data of American authors during the war with Japan (1944-1945) different forms of fungal diseases were encountered in 75% of all outpatient visits, 20% of them were hospitalized, 15% were evacuated. During the years of 1998-1999 the incidence rate was 193 per 10,000 person-years in the US Armed Forces. The most

common anatomic areas affected were the feet (19.1%) nails (18.3%) and body (12.2%).

The great number of tropical diseases, frequent application of antibiotics, immunity reduction in immunodeficiency such as in AID's, tripanosomosis, malaria, leishmaniasis, hemorrhagic fever and other affections leads to the affections of the feet and hands which are caused by different fungi. As a rule the fungal nail lesions are caused by dermatophytes. Dermatophytes are the term used for specific group of fungi affecting the hair, skin and nails. The organism usually affects stratum corneum and does not penetrate deeper. About 10

groups of dermatophytes may cause human infection. Three branches of these fungi were studied best of all.

Trichophyton: There are 13 types of human infection. It looks like cigar macrogonidium.

✓ Microsporum: There are nine types of human infections. It looks like wick.

✓ Epidermophyton: There is one type of human infection. . It has a form of cudgel macrogonidium.

The fungi destroy the protein fraction leading to keratin disintegration and in 80-90 percent of cases they are Trichophyton rubrum, Trichophyton mentagrophytes, E.floccosum. Candida fungi may also be the causative agent of onychomycosis. They can be differentiated from dermatophyte affections in the clinical trials. The nail has white-yellow slightly green color with black impregnations. It is painful on palpation and affection often involves the surrounding tissues. In most cases they are Candida albicans. In the countries with humid climate the mould fungi affections of the nails such as Aspergillus spp, Scopulariopsis brevicaulis, Fusarium Paecilomyces lilacinus and others are the most common.

It is necessary to take into account anatomy-physiologic characteristics of the nail, namely:

✓ The space between hiponichium and free marginal part of the nail plate which is the main cluster of fungi and other bacteria.

✓ The origin of the dorsal and intermediate parts of the nail plate from the nail matrix.

✓ Fast keratin multiplication in the matrix and stable nail growth from proximal to distal margin.

According to International Classification onychomycoses are divided into five groups depending on the place and the type of the nail affection. According to these criteria method of management of the affected area is chosen.

There are three ways of etiotropic therapy:

✓ Topical – application of antifungal drugs on the affected nail.

✓ Systemic – administration of antifungal drug per os.

✓ Combined – application of antifungal drug topically and orally.

The process of the treatment is delayed for a long period to 6-12 weeks and even to 46 months which is not convenient for a patient and mainly the protracted administration of the drugs may cause many complications such as nausea, vomiting, changes of hepatic values and different allergic reactions. These preparations are contraindicated for children and pregnant women. According to the data of two companies “Janssen” and “Novartis”, producing Intraconazole and Terbinaphyl / Lamisil / there are legible contraindications for the administration of these drugs to the patients with different forms of impaired cardiac function , disfunctions of the ventricles of the heart /Intraconazole/ and to the patients suffering from different hepatic diseases /Lamisil/. The course of Terbinaphyne treatment orally for 12 week period only costs 458.4 US dollars.

Such factors as the cost of medicinal preparations, contraindications to their application, prolonged administration of drugs, rather painful preparation of the affected nails and non-effectiveness of therapy all these make researchers to seek the most perspective ways of onychomycosis treatment.[16-19].

II. MATERIALS AND METHODS

Indications for administration:

- ✓ All clinical forms of nail infections not depending on the area of involvement.
 - ✓ Nail lesions in children.
 - ✓ Nail lesions in patients with chronic liver and kidney diseases and other disorders.
 - ✓ Nail lesions in pregnant women.
- Contraindications:
- ✓ Hypersensitivity to the drugs.
- Material and technical equipment of method
- The treatment of nail infections requires:
- ✓ Nizorale /Ketoconazole/ tablets 200mg
 - ✓ Acetylcalicylic acid tablets 500mg
 - ✓ Table salt
 - ✓ Adhesive plaster
 - ✓ Gauze drape
 - ✓ Bath for preparation of the nail bed
 - ✓ Scissors, scalpel, forceps
 - ✓ Mortar for preparing of powder.

III. DESCRIPTION OF METHOD

The novelty of method lies in application of the powder consisting of the combination of the drugs having both fungal and keratolytic action that is two in one. In this case the rate of keratolytic and fungal effect is higher than the time of mycelium growth and spread of infection into the deeper tissues of affected surface. Aspirin besides keratolytic effect relieves topical inflammation and permits to perform painless curettage of the affected nail bed. The average time of treatment is 5-20 days.

It is necessary before application to mix two powders in equal proportions, i.e. one tablet of Aspirin 500mg and one antifungal tablet of Ketoconazole 200mg.

At the first reception:

- ✓ Steam the affected nails by immersing them into warm water bath with table salt solution in ratio 1:10 during 20-30 minutes.
 - ✓ Remove carefully with scissors affected surface up to the beginning of the first unpleasant sensations.
 - ✓ Apply the powder on the affected surface , cover it with a wet drape equal to the size of the nail bed and dress it with adhesive plaster hermetically grasping healthy tissues 0.5-1cm above eponychium /the nail base/
- At the second reception 4-5 days later:
- ✓ Take off the dressing and steam the affected surface in the same manner as described above.
 - ✓ Remove the rejected parts of the nail up to the first unpleasant sensations, wash and dry.
 - ✓ Apply the powder and put adhesive plaster hermetically.

Repeat the procedure till the clean, free from lesion the nail bed and healthy nail appears. The rate of the nail growth is not similar and the healthy nail and complete replacement of the fingernails occurs approximately in 2-3 months and the toenails in 6-12 months. It is the most difficult to treat the toenail lesions in senile age and the rate of growth of the new nail is higher than that in young patients. In five days after the

first application the nail in elderly persons becomes soft and what is very important it falls off without pain.

Orungal and Lamisil may be also used for preparing of the powder. It is recommended to keep powders separately, tightly corked, in ambient temperature, in dark and dry place and to mix only before using.

RESULTS

The treatment of 258 patients of different age suffering from onychomycosis was carried out by the described technique mostly in the territory of the states with tropical and subtropical climate: Mozambique, Rwanda, Angola, Cabo-Verde, SA, Nigeria as well in Russia.

IV. DISCUSSION

It is difficult to give statistic data on the amount of patients suffering from onychomycosis all over the world. Using the techniques recommended officially by health committees of different countries of the US, Canada, France, SA and observing side effects of treatment sometimes the patients refuse from therapy and as a result they become chronic carriers spreading fungal infection.

The suggested technique has no match concerning effectiveness, cost, speed of therapy of the affected nails and has such advantages as:

- ✓ Treatment of all forms of affected nails independently on the duration of illness, the depth of affected area and type.
- ✓ Treatment may be carried out without laboratory analyses.
- ✓ Method is available for out-patient treatment of patients at any age.
- ✓ Simplicity of preparing of medicine by crumbling and mixing one tablet of Ketoconazole /Nizoral/- 200mg and one tablet of Aspirin – 500mg.
- ✓ Period of treatment is not longer than 5-20 days.
- ✓ Average cost of therapy is about 300 roubles /10 US dollars/ depending on the area of affection.
- ✓ 100 percent recovery of affected area.

ACKNOWLEDGEMENTS

The author thanks Prof. John Freaan, the head of Department of Tropical Medicine and Hygiene, Wits University as well as Dr. Spensor David - senior lecturer of Wits University and University colleagues having taken an active part in forming of the author's new views in diagnostics, therapy and prevention of tropical diseases.

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