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Biomedicine and Nursing

MARSLAND PRESS
Multidisciplinary Academic Journal Publisher

Widespread Dermatophytosis Mimicking Other Dermatoses

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Abstract: A 63-year-old farmer had presented with extensive, widespread tinea corporis and fingernail and toenail onychomycosis for 7 years. Erythematous patches were present all over the body including scalp, palms, and soles while sparing only few small areas on the trunk. All nails were also involved and showed varying degrees of onycholysis, subungual hyperkeratosis and pigmentation. The case had been misdiagnosed as eczema or psoriasis by some and was treated unsuccessfully with various topical and systemic medications for several years. Direct microscopy showed septate and branched hyphae and fungal cultures from skin and nails identified *Trichophyton rubrum*. The patient was treated for 10 weeks with oral ultramicronized griseofulvin 12.5 mg/kg/day, topical miconazole 2% cream and povidone iodine 7.5% shampoo with complete clinical and mycological cure of all skin lesions. A possibility of fungal infection in any generalized scaly erythematous lesions, especially when not responding to anti-eczematous treatment, should be considered.
[Hamed Mohamed Abdo. **Widespread Dermatophytosis Mimicking Other Dermatoses.** *Biomedicine and Nursing* 2021;7(1): 34-40]. ISSN 2379-8211 (print); ISSN 2379-8203 (online). http://www.nbmedicine.org. 6. doi:10.7537/marsbnj070121.06.

Keywords: widespread dermatophytosis, tinea corporis, *T. rubrum*.

Introduction

Dermatophytes usually involve only a single anatomical area, presenting as localized lesions [1]. Disseminated cutaneous dermatophytosis is commonly seen in patients with impaired acquired cellular immunity or in patients with immunosuppression [2]. The anthropophilic *Trichophyton (T.) rubrum* was recorded as a causative agent in few reports of widespread infection in immunocompetent individuals [3]. There are also some reports of patients presenting with recurrent or chronic widespread dermatophytosis of the skin which is difficult to manage [4]. The fungus/host interaction, which includes fungus species, host species, immune response capacity and response modulation by the organism, will exert influence on the degree of inflammatory reaction, which will define the clinical presentation and duration of the lesion [5].

Case report

A 63-year-old male farmer living in Egypt had presented with skin lesions for 7 years. Dermatological examination showed extensive, generalized, erythematous coalescent patches all over the body including scalp, face, palms, and soles, while sparing only few small areas on the trunk (Figure 1). The lesions were marked on the head and neck with infiltrated patches and plaques (Figure 2) and upper and lower extremities with some flexural accentuation (Figure 3) making the condition look like atopic eczema.

The disease started 7 years ago as few itchy well-defined patches of insidious onset and slowly progressive course. Along with skin lesions, almost all nails were also affected. They showed varying degrees of onycholysis, subungual hyperkeratosis and pigmentation. The co-existence of nail disease and erythematous scaly patches has led some physicians to diagnose the case as psoriasis or atopic eczema. There was no history of fungal infections in his family. No history of diseases of medical significance and no other dermatological problems. There was neither lymphadenopathy nor systemic symptoms. Routine laboratory tests were within normal.

The patient had been treated intermittently with many topical and systemic steroids and antifungals sometimes in combination. With treatment, the condition showed short periods of remission followed rapidly by exacerbation and lesion extension. The lesions showed atypical configuration due to steroid application (tinea incognito) especially over the head and neck (Figure 2) which has led some to assume the diagnosis of mycosis fungoides. With time the lesions spread to cover about 90% of body surface area (fungal erythroderma).

Before planning a skin biopsy, a mycological workup was decided as tinea incognito was highly suspected. Direct examination of samples from skin and nail lesions mounted in 20% potassium hydroxide solution showed septate and branched hyphae with and without arthrospores. Cultures from skin and nail samples on Sabouraud's dextrose agar with chloramphenicol and cycloheximide revealed slightly raised, white cottony, suede-like to downy colonies with a red-brown reverse (Figure 4). Post-culture microscopy showed numerous slender, clavate microconidia resting directly on septate hyphae with abundance of macroconidia which were typically smooth, thin-walled, cigar-shaped, and septate (Figure 5). These features are consistent with *T. rubrum*.

The patient was treated with oral ultramicronized griseofulvin 12.5 mg/kg/day, topical miconazole 2% cream as well as povidone iodine 7.5% shampoo for 10 weeks with complete clinical (Figure 6) and mycological cure of all skin lesions. Although the nail lesion persists, a 1-year follow-up did not show any recurrence of skin infection.

Discussion

Chronic and widespread infections on account of *T. rubrum* occur in immunocompromised patients, such as those with AIDS or following bone marrow transplantation [6]. *T. rubrum* species are frequently carried asymptomatically and may cause infection after autoinoculation [7]. Majority of studies on widespread dermatophytosis world-wide revealed that *T. rubrum* was the main dermatophyte isolated which come to an agreement with this report. This may be attributed to the fact that *T. rubrum* lesions are more apt to become chronic and, being anthropophilic, non-inflammatory; a reason that may delay in seeking medical help and increases the chances of fungal transmission. Imbalance of the immune response, via Th2-type, has been proposed as an underlying factor for widespread and chronic dermatomycoses.

Tinea incognito is a steroid-modified dermatophytosis with atypical presentation due to the absence of classic features of ringworm. Topical corticosteroid therapy may lead to different clinical forms including lichenoid, rosacea-like, psoriasiform and eczema-like tinea incognito [8]. In steroid-modified tinea corporis, a large number of lesions do not show central clearing as in the case presented herein. However, in most cases, it is still possible to recognize the fungal infection clinically and mycologically. In this patient, classical ringworm appearance was markedly masked by application of topical corticosteroids which also might accelerate the spread of infection. Other factors that could accelerate fungal dissemination include poverty, densely packed populations, hot and humid climate, and poor hygienic practices. These make a fertile medium for the acquisition and spread of fungal diseases.

Only few reports on widespread and chronic tinea infection without concomitant hand, foot or nail involvement had been published [9]. Contrary, in addition to trunk and extremities, this patient had lesions on scalp, hands, feet, and nails which make the clinical diagnosis not an easy task. As a rule, scalp is the least common site to be involved by tinea infection in healthy adults; however, it can be frequently affected in children and elderly.

Although chronic dermatophytoses are usually therapy-resistant, this patient showed a very good response to griseofulvin in a due time without recurrence in a 1-year follow up. This effect contradicts a study investigating in vitro activity of four antifungal drugs, namely ketoconazole, itraconazole, griseofulvin and terbinafine against isolates of *T. rubrum* which revealed that terbinafine was the most potent drug followed in order by itraconazole, ketoconazole and griseofulvin [10].

Beside widespread dermatophytosis, the differential diagnosis of such case comprises variety of conditions most, or all of them should be considered in any erythrodermic or near-erythrodermic patient. These include, but not limited to, psoriasis, pityriasis rubra pilaris, atopic dermatitis, seborrheic dermatitis, crusted scabies, mycosis fungoides, the rare Sezary syndrome and drug eruption. In all circumstances the itching is variable. The drug rash can easily be ruled out by careful history and shorter duration. In case of dermatophytosis, one should look for the active raised and scaly border which may be annular or polycyclic and the relative healing centre. In case of tinea incognito, as in this case, the lesions are usually atypical, ill-defined and less scaly with absent typical ringworm appearance (Figures 1, 2, 3). Other sites including hair and nails should be inspected for possible fungal affection.

Psoriatic lesions are well-demarcated erythematous scaly plaques commonly on the extensor surfaces and scalp. In erythrodermic psoriasis, presence of typical psoriatic lesions, a past history of psoriasis, nail pitting, or an arthropathy may be helpful. Eliciting a prior history of psoriasis is important. Auspitz sign is pathognomonic.

Pityriasis rubra pilaris is a psoriasiform disorder initially may present with perifollicular erythema. Later it is characterized by confluent scaly elevated orange-red papules over large areas. There are often areas of uninvolved skin "islands of sparing". It may cover the entire body or parts such as elbows, knees, palms, and soles. In some cases, there may be scalp involvement [11].

In atopic dermatitis, the presence of erythema, excoriation, lichenification, usually in a flexural

distribution, with a tendency to flare periodically and evidence of other atopic criteria elsewhere in the body is usually sufficient for clinical diagnosis. Generalized seborrheic erythroderma in adults is rare. It occurs more often in patients frequently suffer from underlying immunocompromised states such as AIDS [12]. Seborrheic dermatitis lesions manifest as branny or greasy scaling over inflamed skin. The correct diagnosis can usually be made clinically by the characteristic distribution of lesions and varying course of the disease [13].

Crusted scabies can present with erythematous hyperkeratotic lesions on the palms and soles, face, neck, interdigital spaces, and genital area. It predominantly affects immunosuppressed patients or those with sensory or motor neuropathy or dementia but can sometimes occur in persons without clear risk factors [14]. The condition is readily diagnosed clinically and confirmed by identification of mites or eggs on microscopic examination of burrows. Itching in crusted scabies may be minimal or absent.

Mycosis fungoides typically presents as erythematous scaly patches or plaques that may progress to generalized erythroderma or cutaneous tumors [15]. In patch stage, lesions are flat, oval or annular which slowly enlarge. These may or may not itch. In plaque stage, the patches become thickened and indurated and there may be lymphadenopathy. The patch and plaque stages of mycosis fungoides can be indistinguishable from psoriasis, chronic eczema, or chronic dermatophytosis. The hallmark of Sezary syndrome is the development of diffusely red, thickened and scaly skin which become lichenified and indurated with time. Pruritus is often severe and can be difficult to manage. Other features may include nail thickening, diffuse or patchy alopecia, ectropion, lymphadenopathy and splenomegaly [16].

In this report, a rare form of chronic and widespread dermatophytosis caused by *T. rubrum* in an immunocompetent patient with concomitant tinea pedis, tinea manus, onychomycosis and tinea capitis has been described. One should keep in mind that *T. rubrum* may present atypical features in immunocompetent patients. Although most cases are difficult to manage, systemic ultramicronized griseofulvin gave marvelous response in this patient. It is important to do the basic mycology workup specially the very simple and rapid non-invasive and inexpensive office "KOH test" in any erythematous scaly lesions not responding to anti-eczematous treatment.

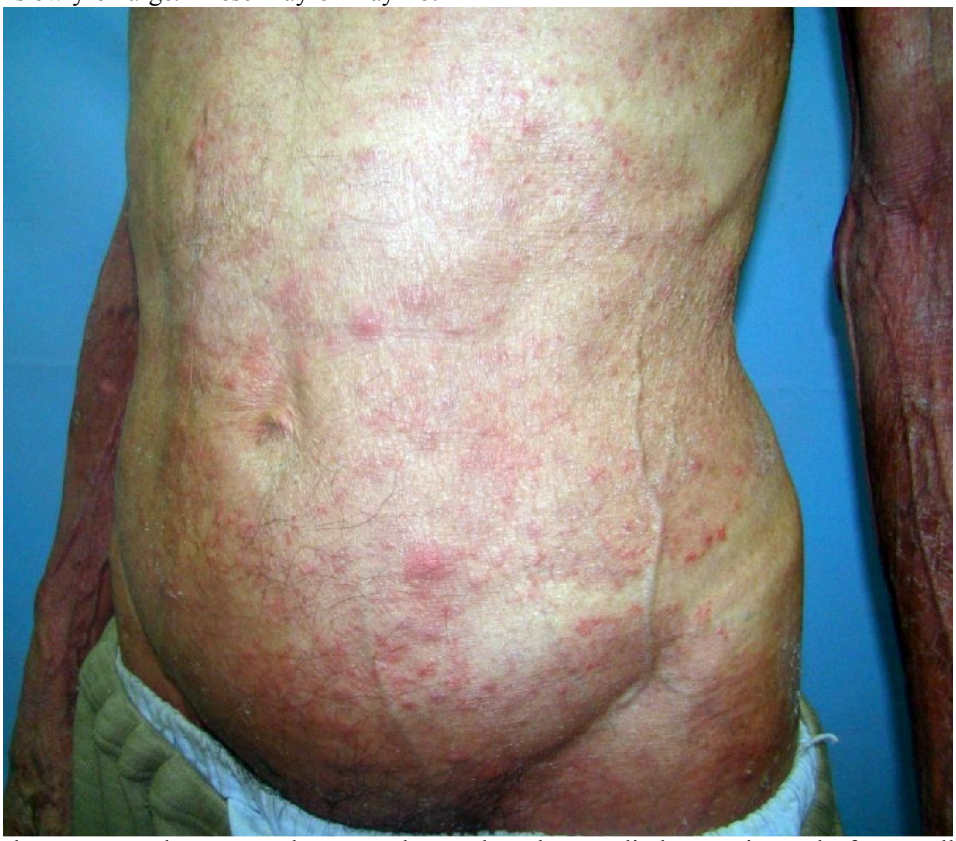

Figure 1. Erythematous coalescent patches over the trunk and upper limbs, sparing only few small areas on the trunk.

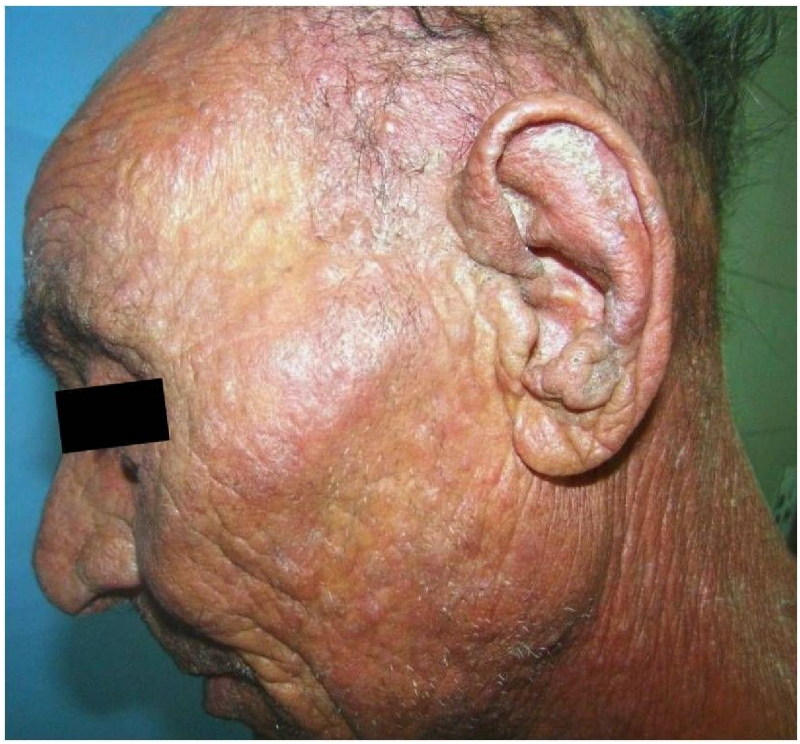

Figure 2. Extensive, erythematous coalescent infiltrated patches and plaques over the scalp, face, ear and neck.

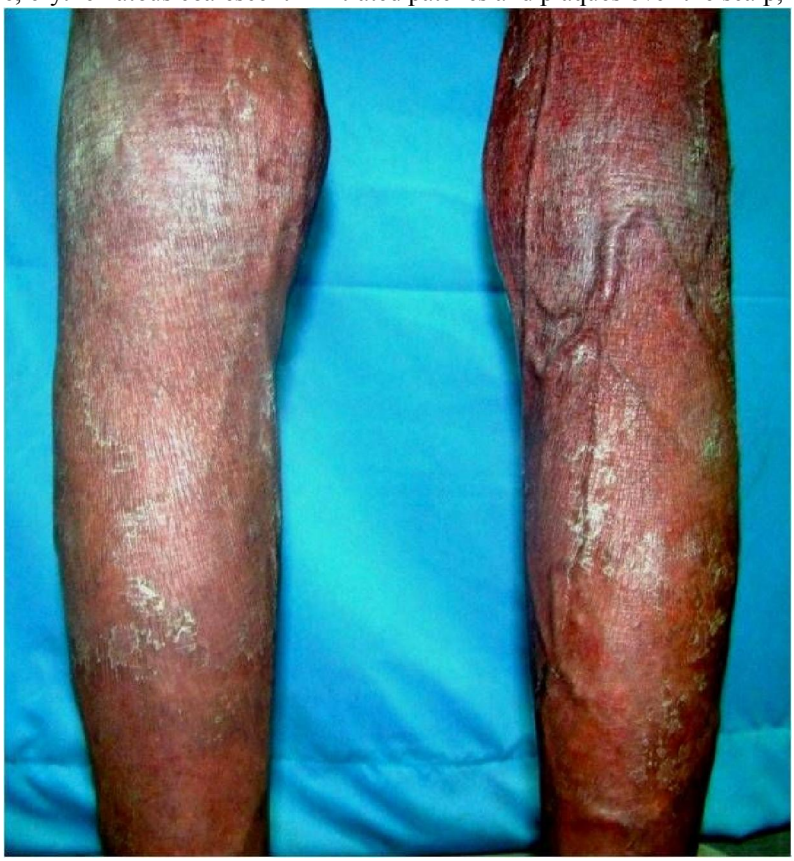

Figure 3. Extensive, diffuse, erythematous scaly patches over the lower extremities with some flexural accentuation. Note skin atrophy and prominent veins from repeated topical corticosteroids.

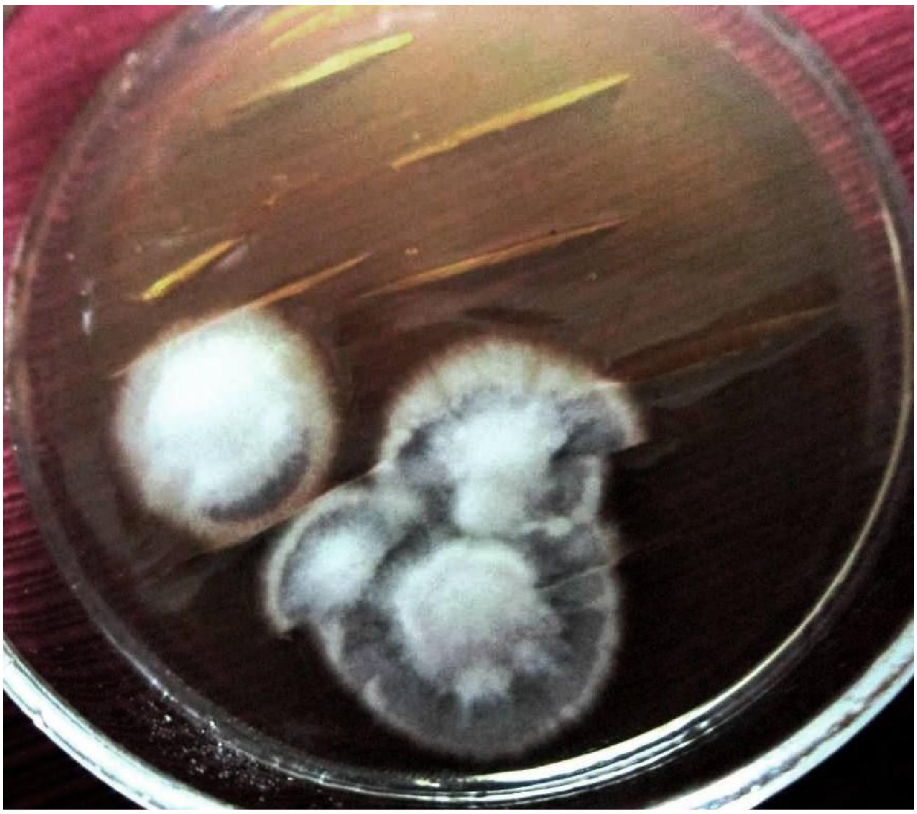

Figure 4. Culture on Sabouraud's dextrose agar revealed slightly raised, white cottony, suede-like to downy colonies suggestive of *T. rubrum.*

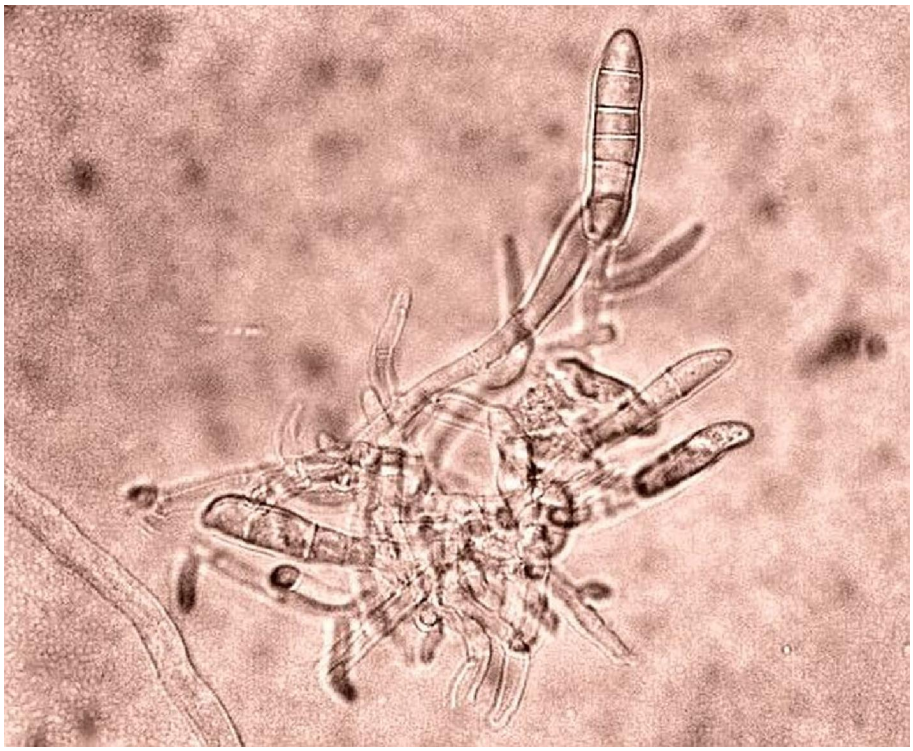

Figure 5. Typical septate, smooth, thin-walled, cigar-shaped macroconidia consistent with *T. rubrum* (water mount x400).

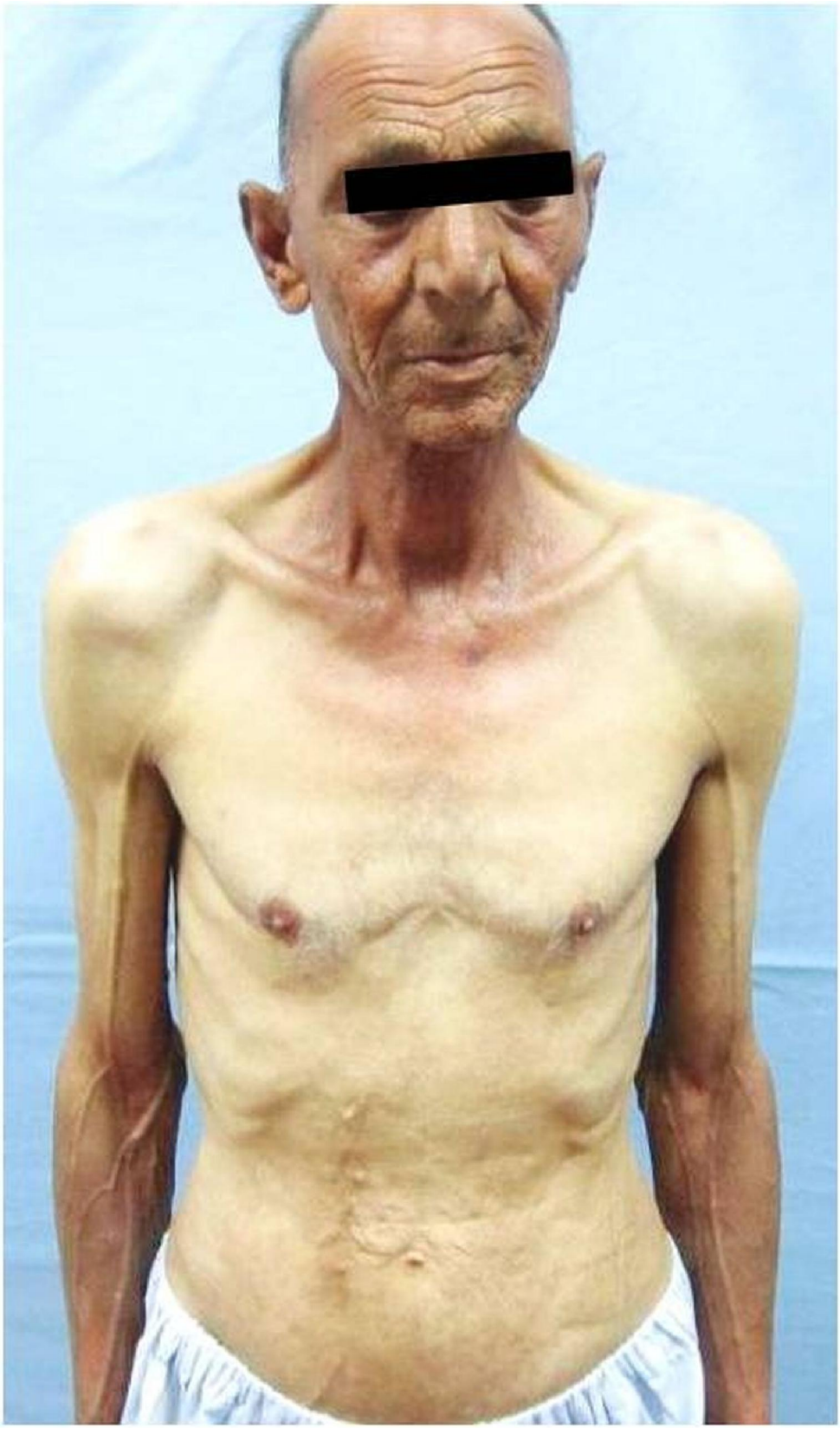

Figure 6. Complete response after 10 weeks treatment with ultramicronized griseofulvin.

Acknowledgements: none.

Conflict of interest: none.

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3/16/2021