

Pityriasis versicolor

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Pityriasis versicolor is caused by a yeast and this should be kept in mind when selecting antifungal agents to treat it.

Case presentation

A 31-year-old man presented with patches of a persistent, red and slightly scaly rash over his neck, trunk (particularly the upper half) and proximal arms (Figure 1a). It had been a problem for four years, worsening during the summer months. On one occasion the rash flared while the patient was on holiday for a few weeks in a tropical country. He was also troubled by pale marks left by the rash, mainly on his trunk (Figure 1b).

The patient had been diagnosed with pityriasis versicolor and treated with terbinafine cream twice daily for one month with only partial success. He had then been given a two-month course of 500 mg griseofulvin daily with no effect.

Treatment

The patient was treated with oral 200 mg ketoconazole a day for seven days, then 200 mg ketoconazole once a month to maintain control of his symptoms.

Comment

Pityriasis versicolor is common and affects about 1% of the population in temperate climates but up to 40% in tropical climates. It is most prevalent in teenagers and young adults, and in temperate climates is rare in children and the elderly. There is no gender bias.

Clinically, pityriasis versicolor is mostly asymptomatic, and only occasionally itchy. The active lesions are small to medium

sized well-demarcated macules that are brownish to red in colour, sometimes with a slight orange hue. These macules become more confluent in patients with more severe disease. The lesions also have a slight fluffy scale (appearing similar to bran) that is best demonstrated by firmly stretching the skin between two fingers. As described in the case above, there are often pale macules present. These frequently appear after the active rash has cleared, and then have no demonstrable scale. They are thought to be due to tyrosine inhibitors produced by the causative organism competitively inhibiting melanocyte pigment formation. The pale patches persist many months after successful treatment and are more visible in people with darker skin types.

Pityriasis versicolor is often found on covered sites and affects in particular the upper trunk, shoulders and neck. The

rash may spread down the arms or lower trunk but is less common on the buttocks, thighs, genitals, face and scalp.

Another form of the condition, in which the rash is on flexures or limbs rather than the trunk, may be seen occasionally. This rarer flexural form, named inverse pityriasis versicolour, resembles seborrhoeic dermatitis, which has also been linked to the same yeast so the conditions probably overlap.

A diagnosis of pityriasis versicolor is made if the lesions show pale yellow to orange fluorescence under Wood's light (long wave ultraviolet A). This light will also accentuate pigment change. A 10% potassium hydroxide preparation of a skin scraping from a pityriasis versicolor lesion will show many small, round to oval yeast cells, often with stumpy hyphae (this can be remembered as 'spaghetti with meatballs').

The causative organisms of pityriasis versicolor are yeasts of the genus *Malassezia* (previously called *Pityrosporum*). Some of these yeasts are considered part of the normal skin flora. Because they are lipophilic fungi they are difficult to culture. However, they have been isolated from up to 90% of humans tested in research laboratories.¹ There are

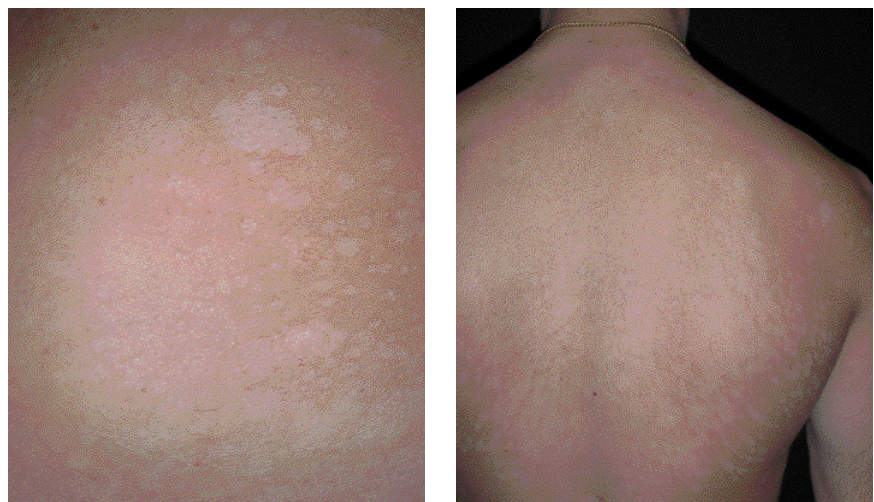


Figure 1. Pityriasis versicolor in a young man. a (left) Close up of the red and slightly scaly rash and pale areas. b (right) The pale marks left by the rash.

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at least six separate species, some of which are implicated in pityriasis versicolor (mainly *M. globosa* and *M. sympodialis*, and less commonly *M. furfur*). The factors in pathogenicity are not well understood. It is seen as a shift in the relationship between the organism and the host, with mycelial forms, rather than yeast forms, of the fungus associated with pityriasis versicolor. The condition is slightly more common among family members but it is not clear whether this is yeast or host dependent.

Pityriasis versicolor is more common in hot, humid environments, and in temperate climates is often seen in the summer months or on return from a tropical region. Hyperhidrosis can be a predisposing factor. The condition may be more common in those with Cushing's syndrome or who are malnourished, during pregnancy and in women taking oral contraceptives. It is probably not more common in HIV-infected individuals, but has been occasionally linked to the use of various immunosuppressive medications.

Differential diagnoses

The main differential diagnoses for the more common form of pityriasis are discussed below. For the inverse form of the condition, other flexural dermatoses should be considered, such as seborrhoeic dermatitis, tinea, candidiasis, erythrasma, intertrigo or flexural psoriasis.

Vitiligo

Vitiligo does not have a red or scaly component. The colour loss of the lesions in patients with vitiligo is usually complete (except in patients with the trichrome form, in which pigmentation loss is a combination of partial and complete). The colour loss in patients with pityriasis versicolor is usually not complete, but it can be hard to tell.

Seborrhoeic dermatitis

Malassezia yeasts probably play an important role in seborrhoeic dermatitis,

but potassium hydroxide preparations do not show abundant yeast cells. This condition presents alone or in combination with dandruff of the scalp or beard, or dermatitis of the face (particularly the T-zone), external auditory meatus, mid-chest or, sometimes, groin or axilla folds.

Atopic dermatitis

Atopic dermatitis is usually itchy whereas pityriasis versicolor often does not itch or does so minimally. In patients with atopic dermatitis, the patches are large, dry and prone to crusting from excoriation or secondary infection with *Staphylococcus aureus*. Atopic dermatitis often affects the flexures or the face but patches may be seen on the trunk or limbs. A personal or family history of other atopic diseases is also common. There is some research showing that *Malassezia* yeasts can aggravate atopic dermatitis in some people.

Pityriasis alba

Pityriasis alba is a low grade form of dermatitis, usually atopic, leading to hypopigmentation (partial colour loss). The mild epidermal inflammation is believed to disrupt the passage of melanosomes from melanocytes to keratinocytes, leading to the pale patches. Pityriasis alba can be hard to distinguish from pityriasis versicolor as both cause pale slightly dry patches. Pityriasis alba is most often seen on the face or forearms and the patches tend to be larger and less numerous, whereas the smaller and more numerous patches of pityriasis versicolor are more often seen on the upper trunk and the proximal arms.

Tinea corporis

Tinea corporis is usually more inflammatory than pityriasis versicolor and has larger, more scattered and less numerous lesions. The scale is more prominent at the edge, unless use of topical corticosteroids has modified the appearance. Tinea corporis may be due to a zoophilic dermatophyte, mostly *Microsporum canis*

but sometimes *Trichophyton mentagrophytes* var. *mentagrophytes*, often caught from a family pet. If an anthropophilic dermatophyte is the cause, it is usually *Trichophyton rubrum* spread from other areas of tinea, such as the feet and groin.

Psoriasis

The plaques of psoriasis vary in thickness but are usually more prominent and the scale more silvery than the almost macular red patches and thin fluffy scale of pityriasis versicolor. Psoriasis can occur anywhere on the body but is commonly found on the scalp, elbows, knees and lower back.

Pityriasis rosea

Pityriasis rosea is an idiopathic dermatosis (infection has been suspected to cause it but no agent has been proven to do so). It most often affects young adults. A herald patch may appear, followed by the typical scaly red rash – a clue being a slight annular accentuation of scaling close to the rim of each plaque. The plaques appear on the trunk in a vaguely 'fir tree'-like pattern (roughly following the line of the ribs) and on the proximal limbs. Papular and inverse (the extremities are affected but the trunk is spared) forms also occur. Pityriasis rosea resolves in six to 10 weeks and is unlikely to recur. Uncommonly, drugs can cause pityriasis rosea-like eruptions (e.g. bismuth, isotretinoin, gold, beta blockers, metronidazole and captopril). Secondary syphilis may resemble pityriasis rosea.

Erythrasma

Erythrasma is a bacterial infection seen in flexures (e.g. axillae, groin and gluteal folds, and sometimes interdigitally). The causative organism is *Corynebacterium minutissimum*. Rarely, more extensive forms are reported. Similar to pityriasis versicolor in flexures, the patches are reddish brown, moist to scaly and well demarcated. However, erythrasma tends to be more confluent and more localised in

Useful online resources for pityriasis versicolor

Doctor Fungus. *Malassezia* species

www.doctorfungus.org/thefungi/Malassezia.htm

DermNet NZ. Pityriasis versicolor

<http://dermnetnz.org/fungal/pityriasis-versicolor.html>

eMedicine. Fungal infections

www.emedicine.com/derm/topic423.htm

areas than is pityriasis versicolor. Wood's light shows coral pink fluorescence due to porphyrins released by the bacteria, if the person has not recently showered.

Rare dermatoses

A number of rarely seen dermatoses may resemble pityriasis versicolor. These include cutaneous T-cell lymphoma (particularly the uncommon hypopigmented type), epidermodysplasia verruciformis and lepromatous leprosy. Potassium hydroxide preparations show no fungal spores in any of these conditions.

Treatment

The available treatments for pityriasis versicolor generally work quickly but the condition may recur. Repigmentation can only happen after the yeast is eradicated, but may take a considerable time to do so.

Topical treatments

Localised disease

The azole antifungal creams (bifonazole [Canesten Once Daily Bifonazole Cream 1%, Mycospor], clotrimazole, econazole [Dermazole, Pevaryl Topicals – Cream], ketoconazole [DaktaGOLD, Nizoral Cream] and miconazole) are effective for localised pityriasis versicolor. These creams are applied twice daily for days to a week as required.

Terbinafine cream or gel (Lamisil Cream, Lamisil DermGel, SolvEasy Tinea Cream) may sometimes be effective.

More extensive disease

For more extensive disease the following treatments may be used:

- selenium sulfide shampoo 1% or 2.5% (Selsun Preparations), applied and lathered for 15 to 30 minutes to and around the entire affected area every day or every second day for two weeks. The exact regimen can be varied according to the severity of the infection and whether it irritates the skin
- ketoconazole 2% shampoo (Nizoral 2% Shampoo, Sebizole Shampoo 2%, Hexal Konazol 2% Shampoo) or ciclopirox olamine shampoo (Stieprox Liquid), applied neat then lathered for five to 10 minutes daily for five to seven days
- zinc pyrithione 1% shampoo (Fongitar [also contains polytar]), applied for five to 10 minutes for five days
- econazole nitrate 1% foaming solution (Pevaryl Topicals – Foaming Solution), for three consecutive nights; one sachet (10 g) applied to wet skin and left on overnight
- 50% propylene glycol in water, applied once or twice daily for two weeks; however, it is a potential contact allergen and can cause irritation.

The shampoos may be applied using a wet soft bath brush and later showered off. Their odour can be unpleasant.

If any of these topical treatments are effective, I usually recommend applications once every two to four weeks to prevent recurrence, particularly in the warmer months.

Oral treatments

All the oral azole antifungals are effective in the treatment of pityriasis versicolor. Reported regimens are:

- ketoconazole (Nizoral) 400 mg single dose or 200 mg daily for five to seven days
- itraconazole (Sporanox Capsules) 200 mg/day for five to seven days (taken with food)

- fluconazole 400 mg single dose.

It is suggested that patients do not bathe for 12 hours after taking these medications to allow adequate time for the drug to be effective on the skin. A dose of 400 mg of any of these drugs once a month can prevent recurrence. Hepato-toxicity is rarely seen with these regimens and I do not recommend routine testing of liver function. Drug interactions can occur.

It should be noted that oral griseofulvin and oral terbinafine are not effective for pityriasis versicolor. Griseofulvin is active against dermatophytes but has no effect against yeasts or other fungi. Similarly, terbinafine has a limited clinical spectrum of activity, but is especially active against dermatophytes.

Hypopigmentation

Hypopigmentation is difficult to manage. Reassuring the patient of eventual repigmentation usually suffices. If treatment is sought, fake tan lotions can be tried but are often not satisfactory. Sunlight or phototherapy may quicken repigmentation but can be counterproductive due to the tanning of normal skin making the difference more obvious.

Conclusion

The box on this page lists some useful online resources for pityriasis versicolor.

The patient in the described case was difficult to treat because griseofulvin and terbinafine are not usual treatments for the condition. Griseofulvin has no activity against *Malassezia* and is therefore ineffective as a treatment, and terbinafine is somewhat unreliable against this fungus. MT

References

1. Gupta AK, Bluhm R, Summerbell R. Pityriasis versicolor. *J Eur Acad Dermatol Venereol* 2002; 16: 19-33.

DECLARATION OF INTEREST: None.