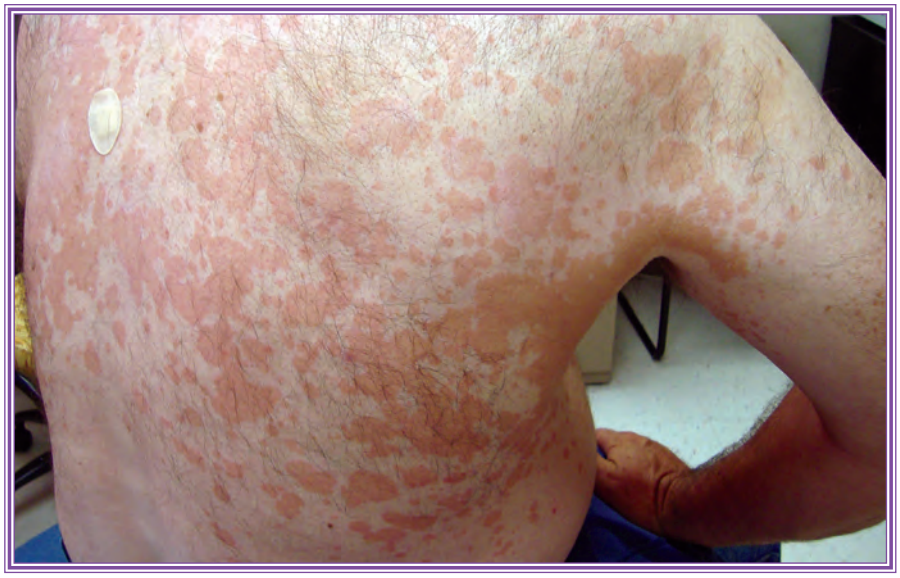
Picture This...

Brandon McNally, MD; Timothy McGraw, MD

While on deployment, a 42 year-old active duty male Soldier presented with a 1-year history of a worsening eruption on his trunk. Over several months, lightly hyperpigmented small lesions evolved into larger lesions of hyperpigmentation in the involved body locations. As the eruption progressed it became slightly pruritic prompting him to seek care. The eruption is pictured below. He stated that he had a similar eruption when he was younger, but did not recall how it had been treated. This was his first recurrence since that time. Otherwise, the patient had no significant past medical history.



Using the primary lesion definitions outlined in your SOF medical handbook, how would you describe the morphology of this lesion?

What is the differential diagnosis of this lesion?

Morphology

Upon inspection of his skin, hyperpigmented macules coalescing into patches were scattered over his chest, back, upper arms, and shoulders. There was fine scale associated with the macules and patches along with evidence of excoriation of the affected area.

Differential Diagnosis

Tinea versicolor, pityriasis rosea, acute eczematous dermatitis, contact dermatitis, vitiligo, seborrheic dermatitis, and pityriasis alba

Etiology & Pathophysiology of Tinea Versicolor

Tinea versicolor (TV) is a common fungal infection caused by a yeast that has two phases and prefers to grow in a lipid rich environment. The yeast is called *Malassezia furfur,* previously known as *Pityrosporum obiculare* (round form) and *Pityrosporum ovale* (oval form) which transforms to a pathogenic form and turns off melanin-producing cells in the skin.[1] The organism is part of the normal skin flora residing primarily around the hair follicles and concentrated in areas of increased sebacious activity. Certain factors, especially heat and humidity, cause the yeast to convert from budding form to hyphated form. The hyphated form leads to the clinical presentation of TV.[2] TV is most common in young adults, and is less common with advancing age when sebum production is reduced or absent. In the tropics, cases of TV have been reported in children which is a direct result of the hot, humid environment in these regions.[3] In fact, TV may affect up to 50% of the population in areas with warm, humid evironments.[4] *M. furfur* is not considered contagious. TV is a trivial disease and relatively common in the military population, but it typically does not affect the ability to perform duties. Therefore, it would not be necessary to evacuate a patient from theater if treatment was not readily available for TV.

Diagnosis of Tinea Versicolor

The clinical appearance of TV is often characteristic, and its "spaghetti and meatballs" appearance on potassium hydroxide (KOH) microscopic examination is confirmatory. Wood's lamp examination may show yellowish fluorescence of involved skin.[5] Physical examination often shows either round or oval shaped hypo- (in darker skin) or hyperpigmented (in lighter skin) macules and patches that are sharply marginated. Fine scaling can be appreciated on active lesions. Treated or burned out lesions usually lack scale.[1] Another technique that has been described is scraping the patches with a surgical blade which usually yields a fine white powder.

Important parts of the history to obtain:

• Where on the body did the lesions first appear? If the lesions did not first appear on the trunk, consider a different diagnosis (such as vitiligo or pityriasis alba if lesions first appear on the face.)

• How old was the patient when the lesions first appeared? If the patient is either pre-pubescent or in their 5th decade or beyond, TV is less likely and one should consider a different diagnosis such as contact dermatitis or tinea corporis.

• Was there an initial primary lesion that preceded all others? If there was one specific patch that preceded the other lesions by two days to two months and was larger in appearance consider a different diagnosis such as pityriasis rosea.[6] This initial lesion in pityriasis rosea is termed a "herald patch."

• Was the eruption preceded by a viral illness? If so, consider a different diagnosis such as pityriasis rosea.

• How are the lesions distributed? If the lesions are mostly distributed in areas of intense sweating, TV is likely. If lesions are in a linear arrangement or a well delineated pattern consider a different diagnosis such as contact dermatitis.

In those patients with a typical history and presentation, the diagnosis of TV is usually straightforward and one should confidently proceed with treatment (see below).

Treatment of Tinea Versicolor

There are a number of proposed treatments for TV. Treatments range from topical application of antifungal lotions and shampoos to oral antifungal agents. Topical treatment is indicated for limited disease, but recurrence rates are high. Ketoconazole 2% shampoo, used as a single application or daily for three days, is highly effective and is the first line treatment of choice. For this treatment to be effective, the shampoo should be applied to the entire area affected and left in place for five minutes before rinsing. The shampoo should also be used to wash the scalp. Selenium Sulfide suspension 2.5% can also be applied similarly for 10 days. It can be applied to the entire affected area and washed off 24 hours later; this should be repeated once weekly for four weeks. Finally, antifungal creams such as miconazole, ketoconazole, and clotrimazole can be applied to the entire affected area one to two times daily for two to four weeks. Relapse rate of TV is higher with topical treatment. Oral treatment is usually given to patients with more extensive disease and

those who do not respond to conventional topical treatment. Oral treatments range from itraconazole, fluconazole, or ketoconazole. Oral terbinafine and griseofulvin are *not* effective. Fluconazole and ketoconazole are usually preferred because they are highly effective after just one dose. Fluconazole is a single dose of 300 or 400mg which can be repeated in two weeks if needed, and ketoconazole is given 400mg once. Relapse may still occur with oral treatment, if so, a prophylactic dose of 400mg administered monthly thereafter may be considered.[7] Completing a vigorous workout one to two hours after taking oral treatment may help concentrate the treatment agent in and on the skin as the agent can be excreted in sweat.

Field Treatment of Tinea Versicolor

In the field, a single dose of an oral antifungal is often the preferred treatment due to ease of administration and availability. Frequently, one to two doses of fluconazole are all that is required. Topical treatment requires multiple applications, sometimes even daily, which can be impractical in the deployed and/or combat setting. If oral antifungals are not effective in treating the eruption and symptoms continue to worsen, reconsider the diagnosis by repeating history and physical examination. This will usually not be needed since the diagnosis and treatment of TV is frequently obvious and straight forward. If treatment is not easily accessible, patients do not need to be removed from duty or theater since TV is usually harmless and typically does not adversely affect the individual's mission capability.

Recommended Prevention of Tinea Versicolor

There are no proven strategies to prevent TV since the causal organism is part of normal body flora. Prophylactic doses of fluconazole or ketoconazole may be considered for long-standing cases or patients with multiple recurrences, but there is no way to predict when or if it will recur.[3]

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