
Pityrosporum folliculitis: A common disease of the young and middle-aged

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Fifty-one patients, thirty-nine women and twelve men, with *Pityrosporum* folliculitis are described. This investigation clearly demonstrates that *Pityrosporum* folliculitis is a real entity. The diagnosis is based primarily on the clinical picture, direct microscopy, histopathology, and the effect of antimycotic treatment. The typical patient is a woman of 30 years with itching follicular papules and pustules localized to the upper trunk or upper arms. Direct microscopy reveals round yeast cells and sometimes even hyphae. In biopsy specimens, abundant round budding yeast cells and occasionally hyphae are seen in a dilated follicle. Yeast growth is obtained only on lipid-enriched media. Twenty-five patients were treated with selenium sulfide shampoo, twelve with 50% propylene glycol in water, and ten with topical econazole cream with good results. Cure or marked improvement was seen after 3 to 4 weeks, but symptoms and lesions recurred if treatment was not continued intermittently. Predisposing factors such as occlusion and greasy skin are probably important, and future studies should focus on fungal hypersensitivity, quantitative variations in the number of *Pityrosporum orbiculare*, lipid composition of the skin, and extended epidemiologic data. (J AM ACAD DERMATOL 12:56-61, 1985.)

The *Pityrosporum* yeasts are inhabitants of normal-looking stratum corneum and hair follicles.^{1,2} *Pityrosporum orbiculare* and *Pityrosporum ovale* are lipophilic, dimorphic, and probably identical.^{3,4} The etiologic role of the organisms in pityriasis (tinea) versicolor is now well documented.¹⁻⁴ Their role in seborrheic dermatitis and some forms of psoriasis, especially in the scalp, is doubted by some⁵ but believed by others.^{6,7}

The *Pityrosporum* yeasts have been mentioned earlier in relation to folliculitis and acne,⁸ but Potter et al⁹ were the first to really link the organisms to a special type of folliculitis. This was later

doubted by Plewig and Klingman,¹⁰ but newer studies again indicated a link between the organisms and folliculitis.^{7,11-13}

In order to verify that *Pityrosporum* folliculitis (PF) is a real entity and to define the disease clinically, the results from direct microscopy and culture of skin scrapings, histopathology, effect of antimycotic treatment, and the association with other diseases are described.

MATERIALS AND METHODS

Fifty-one patients, thirty-nine female and twelve male, with a median age of 30 years (range, 9-67) and admitted as either outpatients or inpatients, were investigated. Symptoms and clinical appearance were noted. Material for direct microscopy was obtained either with cellophane stripping (Scotch tape) stained with methylene blue or for potassium hydroxide (KOH) smears. Skin scrapings for culture were taken with a

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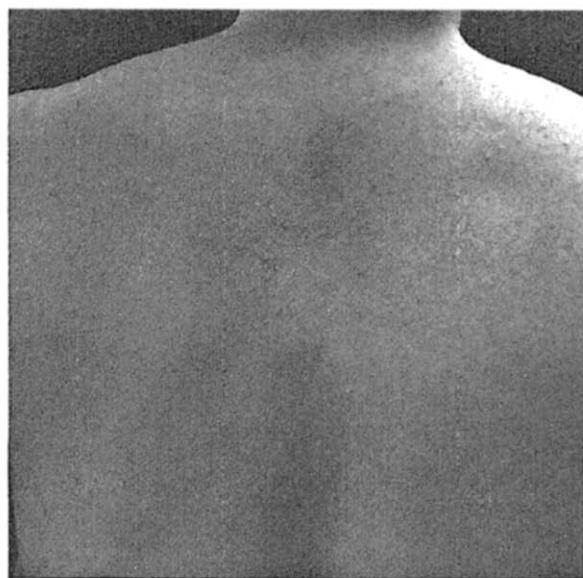


Fig. 1. Typical follicular papules and pustules on the upper portion of the back in a female patient with *Pityrosporum folliculitis*.

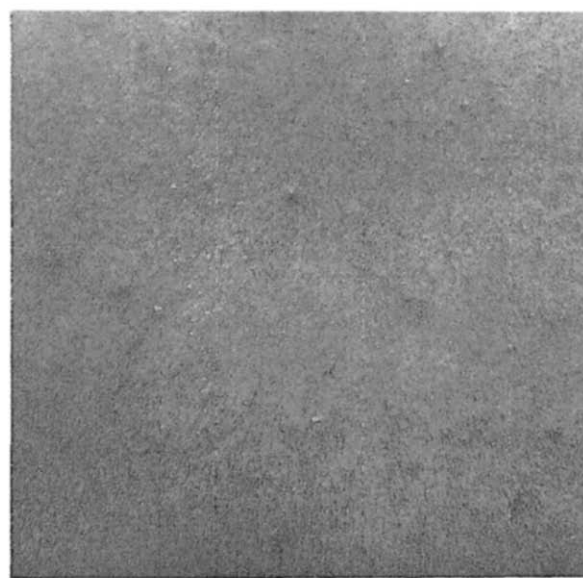


Fig. 2. Close-up view of Fig. 1 showing follicular papules and pustules.

curet and transferred to a glucose-neopeptone-yeast extract medium containing olive oil (2%), glycerol monostearate (2.5 gm, 1⁻¹), and polysorbate 80 (Tween 80) (2 ml 1⁻¹) described in detail earlier.³ Cultures were incubated at 37° C for 3 days. Punch biopsy specimens were processed and stained with methenamine silver (MS) for the demonstration of fungi and hematoxylin-eosin (H&E) for typing of inflammatory cells.

The patients were treated topically with one of three modalities. Selenium sulfide shampoo was used in twenty-five patients and initially applied for 30 minutes, followed by a shower on 3 consecutive days with subsequent intermittent treatment once a week. Another twelve patients were given propylene glycol 50% in water applied twice daily with a gauze pad for 3 weeks and after that twice weekly as maintenance therapy.¹⁴ Ten patients were treated with econazole cream applied every night for a week followed by once a week for several months. Patients were seen following control after 4 and 8 weeks.

RESULTS

Clinical data

The lesions consisted mostly of small dome-shaped follicular papules, 2 to 4 mm in diameter, and scarce intermingling small pustules with minute inflammatory reactions. They were localized most frequently to the upper portion of the back,

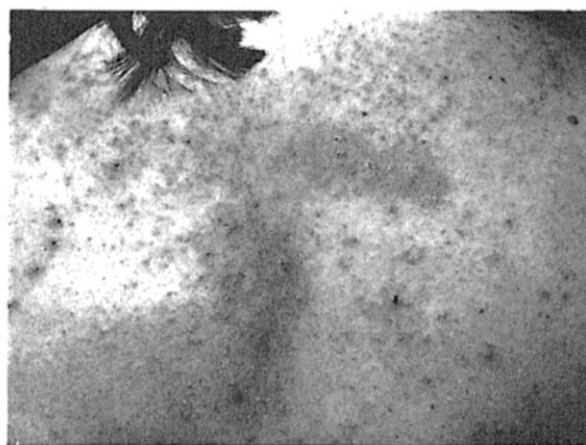


Fig. 3. Numerous papules and a few scattered pustules on the upper portion of the back displaying wheal-and-flare reactions when scratched.

shoulders, and chest (Figs. 1 and 2). Sometimes the lesions were found even on the forearms, dorsa of the hands, lower legs, and the face. Every now and then the lesions were excoriated, especially when located on the extensor surfaces of the forearms and on the face and scalp. Furthermore, we had the impression that the patients, with few exceptions, had oily skins.

Most of the patients sought medical advice not



Fig. 4. Numerous round budding *Pityrosporum* yeast cells in a dilated hair follicle.

for the lesions but for the itch. They sometimes suspected infestation with scabies or other mites. The itch came episodically, accompanied by an intense and stinging sensation. Scratching often helped. Some of the patients noticed an exacerbation of the itch after sudorific exercise or after a shower. There was a cyclic pattern of the appearance of the itch during the premenstrual phase in several of the women. When scratched the papules often displayed a wheal-and-flare reaction (Fig. 3).

Twenty of the patients had been seen at the clinics before with the same symptoms and received diagnoses such as superficial folliculitis, acne vulgaris, pruritus, dermatographic prurigo, chronic urticaria, eczema, and neurotic excoriations. They were not satisfied with their previous therapy.

Eight patients had associated pityriasis versicolor, nine patients had also seborrheic dermatitis, and three had classic acne vulgaris. Furthermore, two patients had insulin-dependent diabetes mellitus; one of them was also in the last trimester of pregnancy. One patient, a 67-year-old man, received systemic corticosteroid therapy because of bronchial asthma.

Mycologic investigation

Direct microscopy showed round and budding yeast cells. In patients with associated pityriasis

versicolor and in a few other patients, hyphae were also noticed. In culture *P. orbiculare* was isolated in thirty-seven patients and *P. ovale* in two of the forty-four patients from whom specimens were obtained.

Histopathology

In MS-staining, black, round and budding yeast cells appeared in the upper part of a dilated hair follicle, but they could also be seen in the central parts of the follicle (Fig. 4). Fungal hyphae were found in the stratum corneum of all patients with associated pityriasis versicolor but also in nine other patients. Then the hyphae were observed in the follicles in four patients (Fig. 5) or outside the follicles in connection with small subcorneal pustules.

The papular lesions showed very little comedo formation. There was an accumulation of mononuclear cells in or around the upper part of the follicle. In the superficial part of the dermis outside the follicles there was a lymphohistiocytic perivascular cell infiltrate. A few spongiotic vesicles were seen in the epidermis in close connection with the perivascular cell infiltrate.

Treatment

All three topical therapies were successful and the patients reported cure or improvement (Table I). In most cases the itch was relieved during the

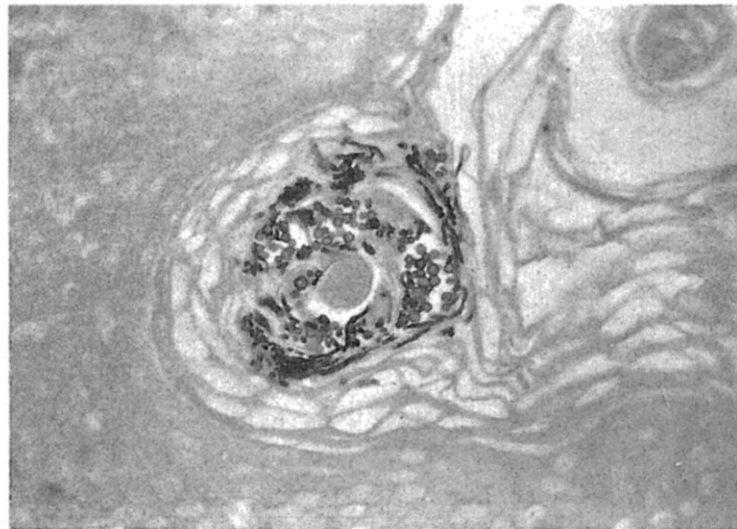


Fig. 5. A dilated hair follicle showing both round, budding *Pityrosporum* yeast cells and hyphae.

first week while the papules remained for up to 3 or 4 weeks. Recurrence of symptoms was seen in most cases if the topical treatment was not maintained intermittently.

Eradication of itch and skin lesions was also noted in two female patients after the medication with progesterone had been withdrawn. Another two patients, who failed to improve on topical treatment with selenium sulfide and econazole cream, were completely cured by oral ketoconazole, 200 mg a day for 1 month, and remained free from symptoms during follow-up for 3 months.

DISCUSSION

Our investigations clearly show that PF is a real entity. The diagnosis is based on a typical clinical picture, with itching papules as the dominating symptom, direct microscopy and culture in combination with histopathology, and effect of topical antimycotic treatment. The excellent effect of oral ketoconazole treatment further corroborates the role of the *Pityrosporum* yeasts in the etiology of PF.⁷

The typical patient is a young woman complaining of itching and with follicular papules and sparse pustules localized to the back, chest, upper arms, and sometimes the neck and more seldom the face. The distribution of lesions predominantly to the trunk, itching, and lack of comedones dif-

Table I. Effect of topical treatment modalities

Treatment	4 weeks		8 weeks	
	Cured	Im- proved	Cured	Im- proved
Selenium sulfide shampoo, n = 25	20	4	22	2
Propylene glycol 50% in water, n = 12	9	3	12	—
Econazole cream, n = 10	7	2	8	1

ferentiate the condition from acne. Many other diagnoses have been proposed earlier to several of our patients, suggesting that PF should always be considered in young and middle-aged patients with itching follicular lesions located on the trunk. Direct microscopy is more informative than culture because *P. orbiculare* (*P. ovale*) can also be cultured from normal looking skin.^{1,2} However, culture verifies the genus and species diagnosis.

If the biopsy specimen is cut in serial sections, a typical dilated follicle containing abundant round budding yeast cells and sometimes also hyphae will almost always be found. The surrounding inflammatory response is only mild, with a cell infiltrate dominated by lymphocytes. In accordance

with earlier results¹¹ we sometimes found the yeast deep in the follicle. Plewig and Kligman¹⁰ stated that *P. orbiculare* (*P. ovale*) is aerobic and they have found it only in the acroinfundibulum. We have shown earlier that *P. orbiculare* (*P. ovale*) survived and even multiplied under strictly anaerobic conditions.¹⁵ Besides, the environment in the deepest part of the follicle is not in fact oxygen-free¹⁶ and the oxygen in itself has no direct bearing on anaerobiosis provided that reducing agents are present.

We found the same luxuriant growth when the *Pityrosporum* yeasts were grown under micro-aerophilic conditions compared with aerobic conditions.¹⁵ Furthermore, they have a lipase activity although it is less pronounced than that of *Propionibacterium acnes*.^{17,18} The lesions seen in PF may be explained by, in a predisposed individual, an overgrowth of *P. orbiculare* in the follicle. The inflammation may be due to products released by the yeasts and also free fatty acids produced as a result of the lipase activity of the yeasts.^{17,18} As hyphal transformation was noted only in a minority of the patients, particularly in patients with pityriasis versicolor, yeast-mycelial transformation is obviously not necessary for the pathogenicity of the *Pityrosporum* yeast in PF.

The effect of antimycotic treatment seen in our patients, and earlier mentioned by others^{7,9,11-13} is often dramatic. Even if some of the drugs used also have an antibacterial activity, it is the antifungal effect that produces the clinical benefit.^{8,12} The fact that antibacterial therapy has no effect on the disease is clearly documented by us as well as in earlier findings. We had three patients with classical acne and also some other patients treated earlier with tetracycline or erythromycin without effect on this itching disease.

Predisposing factors are probably responsible for the disease. Some of our patients had pityriasis versicolor and/or seborrheic dermatitis, indicating that the same predisposing factors as in pityriasis versicolor are important. Local occlusion may play a role, and it would be interesting to know the prevalence of PF in tropical areas. Some of our patients had a flare reaction around their lesions and a wheal after scratching, suggesting histamine release.

Acne aestivalis with a clinical picture corresponding to PF was originally described as a condition associated with heavy sun exposure.¹⁹ Some of our patients reported that their PF started after sun exposure and application of sunscreens and emollients containing olive oil or coconut oil. In two patients, who cleared spontaneously after withdrawal of the emollient, reinstitution of the incriminated emollient reproduced the lesions and the itching. Since the *Pityrosporum* yeasts are lipophilic and the clinical pictures of PF and acne aestivalis are very similar, we believe that they are in fact the same entity. With this in mind, other papular and itching follicular diseases, such as steroid acne and some forms of neurotic excoriations, should be reevaluated with regard to the *Pityrosporum* yeasts.

Future studies of PF should include hypersensitivity to *Pityrosporum* antigens, quantitative cultures of *P. orbiculare* (*P. ovale*), composition of skin lipids, and a more extensive survey of the epidemiologic data.

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Group therapy of psoriasis

Duo formula group treatment (DFGT) as an example

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Between 1978 and 1982 an experiment on group treatment for and by psoriasis sufferers was conducted, based on a pyramid of previous investigations since 1968. Each group was facilitated by a duo consisting of a fellow sufferer and a physician, both having trained together. The subjects practiced the procedure described, directed toward self-care and mutual aid facilitated and supported by the duo, in a series of ten 2-hour weekly sessions. A pretest/posttest control group design was used. Comparing the results of the quantitative analysis of the experimental groups with those of the control groups, the experimental groups showed significant change. The results of the qualitative analysis showed that decrease of anxiety correlated with mastering of the skills involved. The key element affecting outcome was the balance in cooperation within the duo, the expertise of the patient lying in his personal experience of the condition, and the expertise of the physician in his knowledge and skills. One of the method's main characteristics was the intrinsic complementarity of the duo partners. (*J AM ACAD DERMATOL* **12**:61-66, 1985.)

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Group treatment for and by psoriasis patients in collaboration with physicians has been the subject

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