

**Case report:****Extensive Pityriasis Versicolor Lesions in an Immunocompetent Parking Attendant: An Occupational Disorder?**

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Abstract:

Malassezia yeasts are complex fungi, which are part of the normal skin microbiome, and are responsible of pityriasis versicolor skin condition. We report on a 35-year-old male parking attendant, the patient was describing long-term itchy lesions. Physical examination showed extensive well-delimited hyperpigmented lesions on the neck, the back, the chest and the shoulders, covered by fine scales.

The patient was immunocompetent and all blood test were normal, diagnosis of pityriasis versicolor was supported by traditional mycological detection by microscopy which were sufficient to initiate itraconazole 200 mg daily oral therapy for 1 week. On follow-up 3 weeks later, little remission was noted.

If we consider athlete's foot mycosis, pityriasis versicolor form in parking attendant should be also regarded, as a possible consequence of occupational weather exposition. Moreover, The professional long and continuous sun exposition could play a role in aggravating the clinical picture, leading to extensive forms of the disease.

Keyword: occupational dermatitis, Malassezia, pityriasis versicolor, yeast, extensive lesion,

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Introduction:

Pityriasis versicolor (PV) is a superficial fungal disease caused by *Malassezia*, a member of the skin microbiome found in humans and various warm-blooded animals¹.

Diagnosis is based on the clinical appearance of lesions which characteristically demonstrates multiple round to oval macules, patches, or plaques that vary in color (hence the name, versicolor), ranging from hypopigmented to a

hyperpigmented red, blue, pink, or grey. Lesions may have peripheral scaling and pruritis (pityron, Greek for scale)^{2,3}.

In immunocompromised individuals, *Malassezia* can behave opportunistically, causing severe unusual cutaneous infections².

Different sampling methods have been used to confirm the presence of *Malassezia* yeasts in skin conditions and these include tape stripping, skin

scraping, swabs, and contact plates ⁴. *Malassezia* is recognized by the microscopic detection of characteristic unipolar budding yeasts and in the case of pityriasis versicolor these are accompanied by short hyphae (the so-called spaghetti and meatballs appearance). Hyphae are not detected in head and neck dermatitis and rarely seen in *Malassezia* folliculitis or seborrheic dermatitis/dandruff. Even though it is possible to see differences in the shape of the *Malassezia* yeasts cells ⁵.

Malassezia species are dependent on climate, and exogenous lipids because they lack fatty acid synthase genes ⁵. Workers who spend all day out are exposed to high levels of ultraviolet radiation, excessive exposure from the sun can damage skin and potentially provoke extensive pityriasis versicolor forms.

Case report:

A 34 year-old male working as parking attendant since 2001 with no particular medical history, experienced longstanding intensely pruritic lesions for at least ten years.

Physical examination revealed well-demarcated, hyperpigmented large extensive plaques, covered by numerous fine scales that predominantly affect the neck, the back, shoulders, and chest.

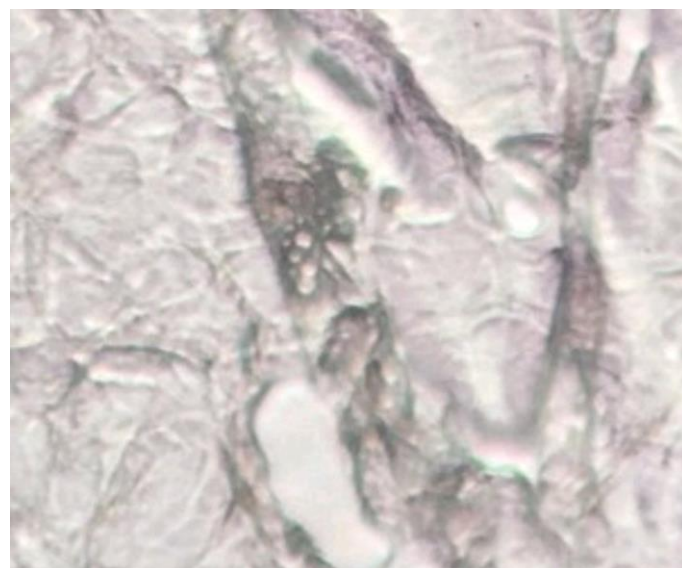
The IMC was 18,5%., and the laboratory values were within normal range (fasting blood sugar=95 mg/dl, HbA1c=4.5%, Cholesterol 120 mg/dl, TG=100 mg/dl, ALT 15 U/l, AST=36 U/l, Urea=29 mg/dl). Furthermore, Anti-HIV and Anti-HBs were negative.

Preliminary diagnosis of pityriasis versicolor was firstly based on the clinical appearance of lesions, showing hyperpigmented scaly macules. Mycology direct examination was compatible with pityriasis versicolor demonstrating characteristic round spores.

Patient has been prescribed oral itraconazole 200 mg daily for 1 week, and little improvement was noted on follow-up 3 weeks later.



Figure 1: Extensive scaly hyperpigmented patch on the neck of a parking attendant



□

Figure 2: Microscopic features of *Malassezia* sp X40

Discussion:

Yeasts of the genus, *Malassezia*, formerly known as *Pityrosporum*, are lipophilic yeasts. *Malassezia* belongs to the phylum Basidiomycota, and the genus consists of 17 species ⁵. The yeast colonizes the human skin after birth. Their role in exacerbating seborrheic dermatitis, dandruff, folliculitis, atopic eczema, psoriasis and onychomycosis is still under investigation, although it is generally supported by histopathological evidence and good results with antifungal therapy ³.

Head and neck mycoses are frequent and usually conditioned by climate, environment, and both patient's profession and immune status^{6,7,8,9,10,11,12}.

Pityriasis versicolor is significantly more common in tropical and subtropical climates¹³, and typically *Malassezia* symptoms worsen in hot and humid conditions². There is a slight male predominance², probably linked to the intensity of physical activities done outdoors, and in concordance with our report. Moreover working in hot weather conditions increases both sweating and water loss from the body. The prevalence of this common skin disease is greater in the third and fourth decades of life, and its appearance is significantly affected by environmental factors such as temperature and humidity, patient immune status, and genetic predisposition³.

Moreover, Pityriasis versicolor has an association with various diseases, including depression, HIV, Parkinson disease, and spinal injuries^{2,14,15}.

The Antigen *Malassezia* proteins are found in sweat and the disease seems to be also activated by sweating (sometimes referred to as sweat allergy)^{16,17}. The sensitization by fungi antigen in atopic dermatitis patients cause a type I hypersensitivity reaction contributing to itching redness, and extensive scaling in the seborrheic areas of the head and neck, the so-called head and neck dermatitis⁵.

Reportedly, complex interactions between *Malassezia* yeasts and their commensal or pathogenic microbial bystanders on the skin surface may not only mutually affect the survival and virulence status of both but also serve as decisive modifying cofactors of the pathogenesis of all *Malassezia*-related skin diseases³. Furthermore, it seems that the fungi may cause partial disruption of epidermal barrier function and the increased transepidermal water loss observed for this disease³. *Malassezia*'s fatty dependence explains their distribution on seborrheic skin areas (face, scalp, thorax), however they have been isolated from most body sites except the feet¹⁸.

Vitiligo, pityriasis alba, and leprosy in corresponding areas of endemicity³. *Malassezia* furfur is commensal yeast of human skin that has correlates with several common skin conditions². An infection of stratum corneum as in pityriasis versicolor is corresponding to a large number of *Malassezia* yeasts colonizing the skin. Affected areas are itchy and there is often scaling giving the appearances of an eczema flare⁵.

According to Romano et al. *Malassezia* forms were regarded extensive if they involved at least 4 out of 9 body locations (neck, back, chest, arm, face, abdomen, buttocks, genital area, and axilla)¹. Pityriasis versicolor is common and more extensive in HIV patients 1920[19,20]. Moreover, predisposing factors for extensive forms are immunosuppressive diseases (HIV, non-Hodgkin's lymphoma, leukaemia), and immunosuppressive drugs (corticosteroids, cyclosporine, cyclophosphamides, adalimumab)¹.

Routine diagnosis is based on the clinical appearance of lesions (hypopigmented or hyperpigmented scaly macules) and on direct microscopic examination of scales, demonstrating typical round spores and short curved hyphae ("spaghetti and meatballs" appearance)¹. *Malassezia* yeast assessment includes direct microscopy, culture-based methods (often combining morphological characterization of isolates with biochemical testing), molecular based methods such as Polymerase Chain Reaction techniques, and MALDI-TOF, and the chemical imprint method Raman spectroscopy.

The predominant species in non-culture-based epidemiological studies are *M. globosa* and *M. restricta*, which are found on the skin of practically all humans³. A study on extensive pityriasis versicolor forms revealed that most of the patients were colonized by more than one species of *Malassezia*¹. Furthermore, the antigens e.g., *M. globosa* protein (MGL_1304) and its homologs from *M. sympodialis* (Mala s 8) and *M. restricta* (Mala r 8) have all been implicated in the pathogenesis of head and neck dermatitis and show different histamine releasing activity²¹.

Increased *Malassezia* colonization of the skin in summer was determined by culture but not by

PCR. This finding can be attributed to the ability of culture to select viable cells, while PCR also quantifies DNA from nonviable or not metabolically active cells. Therefore, Conventional culture and identification methods offer the advantage of further evaluating the isolates for possible virulence factors, such as the production of phospholipase³, the use of robust typing methods, such as multilocus sequencing typing, for the screening of pathogenic versus nonpathogenic *Malassezia* would highlight the pathogeny of the yeast.

Relapse often occurs after treatment is completed, and maintenance therapy such as weekly topical or monthly oral antifungals has been used as a preventive measure.

It is clear that there are many variables to emphasize such as the host's profession, and general condition, along the species involved. Thus, further investigative work would help to delineate the disease mechanisms and the role of host's characteristics.

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