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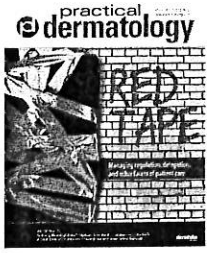

Case Report: Pityriasis Versicolor: Using the Wood's Lamp in Diagnosis; Residents of Distinction Honored

UTILITY OF WOOD'S LAMP SCREENING IN PATIENTS WITH PITYRIASIS VERSICOLOR

BY ELIZABETH M. YOUNG, BS, AT AND JAMES W. YOUNG DO

Pityriasis versicolor (PV) first described in 1801[1] and the causative fungus isolated in 1846[2], is a well-known skin eruption due to any number of fungi of the genus *Malassezia*. It is well known that this organism fluoresces yellow-green with black (Wood's) light due to *Malassezia's* production of pityrialactone, a tryptophan derivative.[3] We seek to quantify this fluorescence to determine its utility as a screening tool and diagnostic aid.

Malassezia are lipid-dependent dimorphic fungi that typically survive without incidence within our stratum corneum as part of normal cutaneous microbiota. They are encapsulated organisms which commonly evade immune response. They at times can actively suppress local immune response via downregulation of inflammatory cytokines. Both of these factors contribute to the characteristic lack of significant inflammation associated with typical PV infection.[4,5,6]

When observed in healthy skin, *Malassezia* is most often found in its yeast form. It is found in both its yeast and filamentous hyphal forms when isolated from PV lesions and surrounding skin.[7] These fungi are opportunistic pathogens, and many factors increase the likelihood of overgrowth and infection with hyphal form of this organism. These include but are not limited to increased sebum production, humidity, high

RESIDENTS OF DISTINCTION RECOGNIZED

Four dermatology residents attended the 15th Annual Caribbean Dermatology Symposium in Grand Cayman in January, as part of the dermMentors™ Resident of Distinction Award program, supported by Beiersdorf, Inc. Andrew Lin, MD of the University of Michigan, Jean McGee, MD of Boston University School of Medicine, Kelly Park, MD of Loyola University Medical Center and Steve Xu, MD of Northwestern University presented new scientific research at the symposium.

Andrew Lin, MD, a second-year resident in dermatology at the University of Michigan, was awarded the overall grand prize for his presentation, entitled, "Sulfasalazine and thalidomide inhibit

temperatures, sweating, hypercortisolism, pregnancy, oral contraceptive use, any type of local or systemic immune dysregulation, or genetic susceptibility.[8,9]

PV is mainly a cosmetic concern, most commonly presenting with hypopigmented macules in darker-skinned individuals, and pink-hued macules in lighter-skinned patients. Hyperpigmented lesions can also be seen. Lesions are consistent in appearance among individuals, and patients will typically only present with one of the three patterns. The sternal and inter-scapular regions of the trunk, as well as the upper arms, are the most commonly affected. Sometimes these lesions have a grossly visible fine scale, but all should have an abundance of powdery scale if scraped, referred to as the "evoked scale sign."[10] The scale is due to an atypical and fragile structure of the stratum corneum.[11] The organism produces several substances that contribute to altered pigmentation. Hypopigmentation has been attributed to several substances secreted by the fungus including azaleic acid with subsequent suppression of tyrosinase, malassezin induced apoptosis of melanocytes, and pityriacitrin, which has sunscreen like properties.[12,13] Less is known about the pathophysiology behind *Malassezia*-induced hyperpigmentation, but it is thought to possibly be due to melanocyte stimulation by inflammatory milieu.[14]

extracellular trap formation by human neutrophils."

Back Row (from left): Resident of Distinction Mentors: Jonathan Wilkin, MD, Charles Ellis, MD, Vincent DeLeo, MD and Julie Harper, MD. Front Row (from left): 2016 Residents of Distinction: Jean McGee, MD, PhD, Steve Xu, MD, MSc, Andrew Lin, MD, and Kelly Park, MD, MSL

These fungi are unable produce long chain saturated fatty acids. Therefore, these fungi require those lipids in their environment to grow. Standard fungal culture medium will be fruitless in the growth of *Malassezia* species of interest. Only lipid-enriched agars such as Dixon, Leeming-Notman, or olive oil-enhanced Littman or Sabourad's dextrose agar will support growth.[15] Since culture is often impractical, microscopic examination with KOH prep is commonly used to make the diagnosis of PV and to differentiate it from possible clinical mimickers. We sought to examine the proportion of newly diagnosed PV patients who would demonstrate positive fluorescence.

MATERIALS AND METHODS

Twenty-nine patients presented to a general dermatology practice in a one year time frame ending October 15, 2015. There were 21 males and eight females with ages ranging from 15-75, with an average age of 35.25 years. All had a typical clinical presentation. All were seen by a board certified dermatologist, (JWY). As a control, all had a microscopic examination of skin scraping preparation done with Chlorazol Black reagent. Chlorazol Black stains the glucose-derived chitin portion of the fungal cell wall blue, highlighting the hyphae and yeast cells in a "sticks and stones" or "spaghetti and meatballs" configuration.[16] Visualization of typical fungal elements was considered positive microscopy.

RESULTS

One patient who presented with typical clinical appearance of PV, was microscopy- and Wood's-light-negative, and was then excluded. The other 28 patients had positive microscopy, and were continued as the study population. Twenty-three of the 28 patients with a typical clinical presentation of PV and positive microscopic visualization were positive with the Wood's light screening (82.14 percent). This high proportion of positive Wood's lamp screening in patients with confirmed PV is similar to the findings of Shah et al in a 2013 study based in India.[17]

CONCLUSION

Our conclusion is that Wood's light is a useful and practical screening tool in patients whom PV is suspected or should be ruled out. Wood's light examination is rapidly accomplished and easily learned. In an era of cost containment, this may be a valid, cost effective screening tool, although examination of lesion scrapings with KOH will remain the gold standard for diagnosis of PV.

LIMITATIONS

The limitations of this study center on the subjectivity of the observer's interpretation of both the microscopy and with fluorescence. A definite possibility of confirmation bias will occur with any clinical observer.

Disclosures: The authors report no relevant disclosures or conflicts of interest.

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1. Dourmishev AL, Iliev B, Mitov G, Radev M. Pityriasis versicolor. Infectology. Academic publishing house; 2001:812-813.

2. Inamadar AC, Palit A. The genus Malassezia and human disease .Indian Journal of Dermatology, Venereology and Leprology . 2003:265–270.

3. Mayser P, Stapelkamp H, Krämer H-J, et al. Pityrialactone- a new fluorochrome from the tryptophan metabolism of Malassezia furfur. Antonie Van Leeuwenhoek Journal of Microbiology. 2003; 84(3):185–191.

4. Krämer HJ, Kessler D, Hipler UC, Irlinger B, Hort W, Bödeker RH, Steglich W, Mayser P. Pityriarubins, novel highly selective inhibitors of respiratory burst from cultures of the yeast Malassezia furfur: comparison with the bisindolylmaleimide arcyriarubin A. Chembiochem. 2005 Dec; 6(12):2290-7.

5. Mayser P, Gaitanis G. Malassezia and the skin. Science and clinical practice. Physiology and biochemistry.2010:121–138.

6. Vlachos C, Schulte BM, Magiatis P, Adema GJ, Gaitanis G. Malassezia-derived indoles activate the aryl hydrocarbon receptor and inhibit Toll-like receptor-induced maturation in monocyte-derived dendritic cells. British Journal of Dermatology. 2012 Sep; 167(3):496-505.

7. Gordon, MA. The Lipophilic Mycoflora of the Skin-In Vitro Culture of Pityrosporum orbiculare n. sp. Mycologia. 1951; 43:524–535.

8. Habif TP. Fungal Infections. In Skin disease: diagnosis and treatment. 3rd ed. Edinburgh: Saunders/Elsevier; 2011: 254–256.

9. Hafez M, el-Shamy S. Genetic susceptibility in pityriasis versicolor. Dermatologica. 1985; 171(2):86-88.

10. Han A, Calcara DA, Stoecker WV, Daly J, Siegel DM, Shell A. Evoked scale sign of tinea versicolor. Arch Dermatol. 2009 Sep; 145(9):1078.

11. Gaitanis G, Magiatis P, Hantschke M, Bassukas ID, Velegraki A. The Malassezia Genus in Skin and Systemic Diseases. Clinical Microbiology Reviews. 2012; 25:106–141.

12. Krämer H-J, Podobinska M, Bartsch A, et al. Malassezin, a Novel Agonist of the Aryl Hydrocarbon Receptor from the Yeast Malassezia furfur, Induces Apoptosis in Primary Human Melanocytes. ChemBioChem. 2005;6:860–865.

13. Mayser P, Schäfer U, Krämer H-J, Irlinger B, Steglich W. Pityriacitrin – an ultraviolet-absorbing indole alkaloid from the yeast Malassezia furfur. Archives of Dermatological Research Arch Dermatol Res. 2002; 294:131–134.

14. Chander J. Malassezia infections. Textbook of Medical Mycology. 3rd ed. India: Mehta Publishers; 2002:92–102.

15. Marcon M, Powell D. Human Infections Due to Malassezia spp. Clinical Microbiology Reviews. 1992; 5(2):101–119.

16. Piérard GE, Arrese JE, Doncker PD, Piérard-Franchimont C. Present and potential diagnostic techniques in onychomycosis. Journal of the American Academy of Dermatology. 1996; 34:273–277.

17. Shah A, Koticha A, Ubale M, Mehta P, Khopkar U, Wanjare S. Identification and speciation of Malassezia in patients clinically suspected of having pityriasis versicolor. Indian Journal of Dermatology. 2013:239–239.

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