

Distribution of Malassezia Species from Scales of Patient with Pityriasis Versicolor by Culture in Vietnam

Van Tran Cam¹, Thuong Nguyen Van¹, Khang Tran Hau¹, Doanh Le Huu¹, Phuong Pham Thi Minh¹, Sau Nguyen Huu¹, Thu Nguyen Minh¹, Marco Gandolfi², Francesca Satolli², Claudio Feliciani², Michael Tirant^{3,4}, Aleksandra Vojvodic⁵, Torello Lotti⁴

¹National Hospital of Dermatology and Venereology, Hanoi, Vietnam; ²Unit of Dermatology, University of Parma, Parma, Italy; ³University of Rome G. Marconi, Rome, Italy; ⁴Psoriasis Eczema Clinic, Melbourne, Australia; ⁵Department of Dermatology and Venereology, Military Medical Academy of Belgrade, Belgrade, Serbia

Abstract

Citation: Tran Cam V, Van TN, Hau KT, Huu DL, Thi Minh PP, Huu SN, Thu Nguyen M, Gandolfi M, Satolli F, Feliciani C, Tirant M, Vojvodic A, Lotti T. Distribution of Malassezia Species from Scales of Patient with Pityriasis Versicolor by Culture in Vietnam. Open Access Maced J Med Sci. 2019 Jan 30; 7(2):184-186. https://doi.org/10.3889/oamjms.2019.091

Keywords: Pityriasis versicolor; Yeast; Malassezia spp.

***Correspondence:** Marco Gandolfi, Unit of Dermatology, University of Parma, Parma, Italy. E-mail: marco.gandolfi5@gmail.com

Received: 02-Jan-2019; **Revised:** 16-Jan-2019; **Accepted:** 17-Jan-2019; **Online first:** 28-Jan-2019

Copyright: © 2019 Van Tran Cam, Thuong Nguyen Van, Khang Tran Hau, Doanh Le Huu, Phuong Pham Thi Minh, Sau Nguyen Huu, Minh Thu Nguyen, Marco Gandolfi, Francesca Satolli, Claudio Feliciani, Michael Tirant, Aleksandra Vojvodic, Torello Lotti. This is an open-access article distributed under the terms of the Creative Commons Attribution-NonCommercial 4.0 International License (CC BY-NC 4.0)

Funding: This research did not receive any financial support

Competing Interests: The authors have declared that no competing interests exist

BACKGROUND: The detection of pathogenic fungus is an important step and key to assessing the sensitivity of the antifungal drugs, and therefore choosing an effective treatment method.

AIM: To identify Malassezia species from scales of a patient with pityriasis versicolor.

METHODS: Three hundred patients with pityriasis versicolor who were positive with direct examination, were isolated by culture.

RESULTS: Identification of Malassezia species by culture: the growth rate was 90.3%; the detection rate was 97.0%, including 11 species: *M. globosa* (42.4%), *M. dermatitis* (17.3%), *M. furfur* (14.4%). *M. globosa* was the most prevalent species in the 20-29 group 36.5%, in hyphae and yeast cells (42.2%).

CONCLUSION: *M. globosa* is the main cause of pityriasis versicolor in Vietnam.

Introduction

Malassezia spp. Is lipophilic yeast which is of the normal cutaneous commensal flora on humans and animals. Malassezia includes 14 species in which *M. globosa*, *M. furfur*, *M. sympodialis* are the most common. Symptoms of Malassezia fungal diseases include pityriasis versicolor, seborrheic dermatitis, atopic dermatitis, Malassezia folliculitis, psoriasis, even skin cancer [1], [2] in all parts of the world, especially in tropical countries (18% of the population) [3].

In the world, depending on climate, geographic conditions, there is a difference between the distribution of Malassezia species in other areas.

Therefore, we carried out a study to identify

Malassezia species that caused pityriasis versicolor (PV) by the culture at National Hospital of Dermatology and Venereology (NHDV), Viet Nam.

Methods

A cross-section study of 300 patients with PV who had a positive direct examination test at NHDV from January 2016 to December 2016. Skin scales samples: Identification culture. MDixon media culture, SDA, TABLE 20, Tween 40, Tween 60, Tween 80, Malassezia Chromatase. Data were collected by SPSS 23.0 software and statistical tests study, to determine the incidence of Malassezia species.

Results

On 271 cultured samples, 11 *Malassezia* species were identified: *M. globosa*, *M. furfur*, *M. dermatis*, *M. sympodialis*, *M. restricta*, *M. obtusa*, *M. slooffiae*, *M. pachydermatis*, *M. japonica*, *M. equina*, and *M. cuniculi*.

Table 1: Identification of Malassezia species by culture

Species	N	%
<i>M. globosa</i>	115	42.4
<i>M. furfur</i>	39	14.4
<i>M. dermatis</i>	47	17.3
<i>M. sympodialis</i>	13	4.8
<i>M. restricta</i>	12	4.4
<i>M. obtusa</i>	16	5.9
<i>M. slooffiae</i>	5	1.8
<i>M. pachydermatis</i>	1	0.4
<i>M. japonica</i>	11	4.1
<i>M. equine</i>	3	1.1
<i>M. cuniculi</i>	1	0.4
<i>Malassezia</i> spp.	8	3.0
Total	271	100

We tested the development of *M. pachydermatis* on Sabouraud agar (SDA). *M. restricta* has a negative Catalase test. Then, proceeding with the reaction with Tween 20, Tween 40, Tween 60, Tween 80. Next, comparing with colony morphology and microscopic staining of three species including *M. sympodialis*, *M. japonica*, *M. slooffiae*. Some other species cultured in CHROM agar *Malassezia*, based on morphology, colour and colony characteristics, identified six species including *M. furfur*, *M. dermatis*, *M. globosa*, *M. obtusa*, *M. cuniculi*, and *M. yamatoensis*.

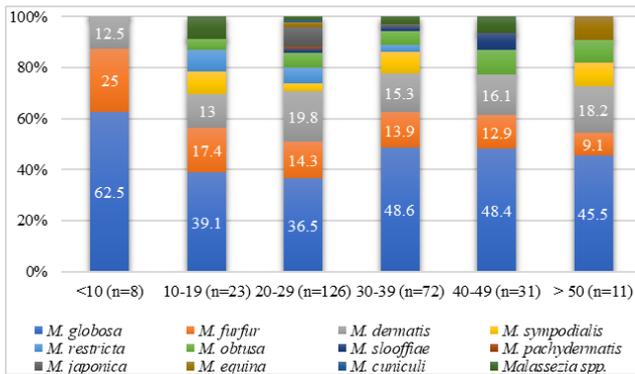


Figure 1: Distribution of Malassezia species isolated according to a group of ages

In different age groups, *M. globosa* is a common species, following *M. dermatis*, *M. furfur*. We did not find *M. furfur* in humans who was over 50 years old, while *M. obtusa* which was normal flora, had a higher rate. In the group of under 10 years old, only found 3 species: *M. globosa*, *M. furfur*, *M. dermatis*. The male/female ratio is approximately 2/1. Men may be the main occupational and physical activity partners, so exposure to a variety of environmental factors may be a favourable factor for the pathogenicity of the fungus, which can lead to infection rate.

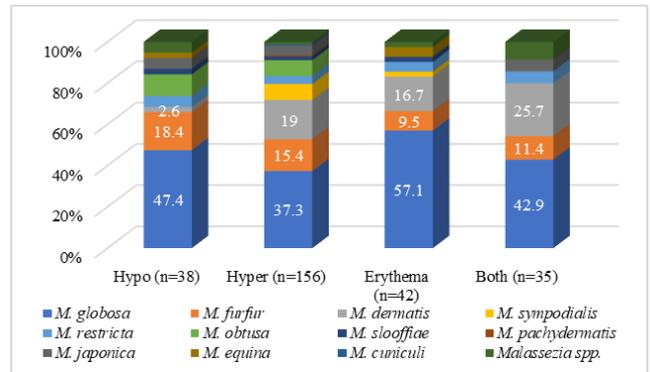


Figure 2: Distribution of Malassezia species isolated according to colour lesions

Fungus infection in the male is higher than female. In the study, we found that hyperpigmented was the most common with 58.3%, following Hypopigmented, Erythema and Both.

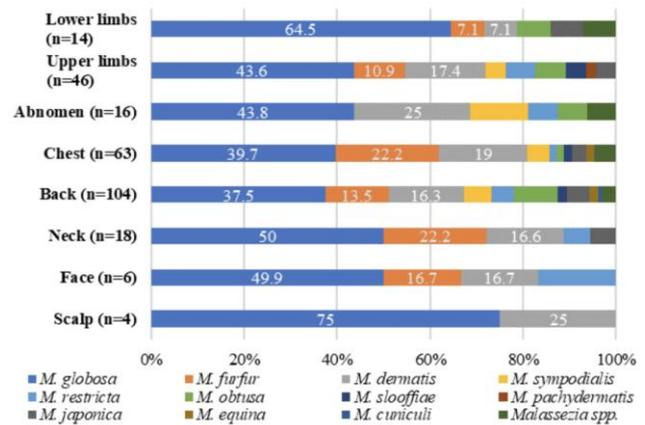


Figure 3: Distribution of Malassezia species isolated according to the site of lesions

Discussion

Results in the study showed a higher method of Abbas Rasi và cs (2009) [4], Kaneko Takamasa et al., (2011) [5], Rezvan Talaei et al., (2014) [6]. Nguyen Dinh Nga et al., (2007) [7]. However, in addition to the culture environment, climate and geography are also a major factor influencing the distribution of *Malassezia* species. Also, some new species have been discovered in recent years, such as *M. equina*, *M. caprae* (2007), *M. cuniculi* (2011), can increase the number of species discovered.

Results matched with Karakas et al., (2009) [8] with 47.7%. As such, *M. globosa* was found in the different area of the world and Vietnam. *M. furfur* was referred to as the most frequent species and most common disease, but in our study, only 14.4% was ranked third after *M. globosa* (42.4%) and *M. dermatis*

(17.3%). In particular, *M. furfur* grows well in mDixon agar, which is more easily indentified than other species. Our results are similar to those of other authors: Karakas et al., (2009) [8], Rezvab Talaei et al., (2014) [6].

A study by Nguyen Dinh Nga et al., (2007) conducted in Vietnam showed that the majority of species were *M. furfur* (57.33%) and *M. globosa* [7]. Our results from Table 1 show that *M. globosa* is the common species (42.4%), *M. furfur* (14.4%).

In comparable climates, our findings are similar with other authors: Talaei et al., (2014) [6] with hyperpigmented 50%; Karakas et al., (2009) [8] with 47.4%. We found that the hyperpigmented lesions were mainly related to *M. globosa* by Talaei et al., (2014), Karakas et al., (2009) *M. dermatitis* is quite common in erythema lesions [6], [8]. *M. sympodialis* is mainly found in hyperpigmented [9].

In conclusion, using culture method, we identified 11 Malassezia species including *M. globosa* (42.4%); *M. dermatitis* (17.3%); *M. furfur* (14.4%). *M. globosa* is the main cause of pityriasis versicolor in Vietnam.

References

1. Pedrosa AF, Lisboa C, Rodrigues AG. Malassezia infections with systemic involvement: Figures and facts. The Journal of Dermatology. 2018; 45(11):1278-82. <https://doi.org/10.1111/1346-8138.2009.00663.x> PMID:30264900
2. Prohic A, Jovovic Sadikovic T, Krupalija-Fazlic M, Kuskunovic-Vlahovljak S. Malassezia species in healthy skin and in dermatological conditions. International Journal of Dermatology. 2016; 55(5):494-504. <https://doi.org/10.1111/ijd.13116> PMID:26710919
3. Velegraki A, Cafarchia C, Gaitanis G, Iatta R, Boekhout T. Malassezia infections in humans and animals: pathophysiology, detection, and treatment. PLoS Pathogens. 2015; 11(1):e1004523. <https://doi.org/10.1371/journal.ppat.1004523> PMID:25569140 PMCid:PMC4287564
4. Rasi A, Naderi R, Behzadi AH, Falahati M, Farehyar S, Honarbakhsh Y, et al. Malassezia yeast species isolated from Iranian patients with pityriasis versicolor in a prospective study. Mycoses. 2010; 53(4):350-5. PMID:19500258
5. Kaneko T. A study of culture-based easy identification system for Malassezia. Medical mycology journal. 2011; 52(4):297-303. <https://doi.org/10.3314/mmj.52.297> PMID:22123328
6. Talaei R, Katiraei F, Ghaderi M, Erami M, Kazemi Alavi A, Nazeri M. Molecular Identification and Prevalence of Malassezia Species in Pityriasis Versicolor Patients From Kashan, Iran. Jundishapur Journal of Microbiology. 2014; 7(8). <https://doi.org/10.5812/jjm.11561>
7. Nguyễn Đình Nga, Lê Thị Ngọc Huệ, Phạm Ngọc Hiền Vy. Isolating and identifying Malassezia spp. from scales of Vietnamese volunteered. Ho Chi Minh City Medicine Magazine. 2007; 11(2):186-91.
8. Karakas M, Turac-Bicer A, Ilkit M, Durdu M, Seydaoglu G. Epidemiology of pityriasis versicolor in Adana, Turkey. The Journal of Dermatology. 2009; 36(7):377-82. <https://doi.org/10.1111/j.1346-8138.2009.00663.x> PMID:19583685
9. Chokoeva AA, Wollina U, Lotti T, Maximov GK, Lozev I, Tchernev G. Psoriasiform Dermatophytosis in a Bulgarian Child. Open Access Maced J Med Sci. 2018; 6(1):118-119. <https://doi.org/10.3889/oamjms.2018.009> PMID:29484004 PMCid:PMC5816278