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CASE REPORT

A RARE CASE OF TINEA NIGRA OF SCALP IN AN IMMUNOCOMPETENT INDIVIDUAL CAUSED BY *HORTAEA WERNECKII AND RHODOTORULA RUBRA* FROM KANCHEEPURAM, SOUTH INDIA

***Prasanna, S., Sunil Kumar Jada and Karthika Jayakumar**

Department of Microbiology, Shri Sathya Sai Medical College and Research Institute, Kancheepuram, Tamil Nadu, India

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ABSTRACT

Hortaea werneckii is a most common cause of tinea nigra transmitted by contact between humans and is an example of phaeoid (dematiaceous)fungi. Tinea nigra is an uncommon superficial fungal infection of horny layer of epidermis characterized by presence of painless brown to black, pigmented, non-scaly, macular patches usually affecting palms (tinea nigra palmaris), occasionally soles (tinea nigra plantaris) and very rarely other parts of body of young adults. *Rhodotorula species* are common airborne contaminant fungi and are also considered as normal inhabitants of the skin, lungs, urine and feces in humans. Rhodotorula species are considered as an important agent for invasive infection among immunocompromised patients. The main objective of this case report is to present "a rare case of tinea nigra of scalp caused by *Hortaea werneckii* and *Rhodotorula rubra*"in an immunocompetent patient residing in a silk city of Kancheepuram.

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INTRODUCTION

Tinea nigra is an uncommon superficial fungal infection of horny layer of epidermis characterized by presence of painless brown to black, pigmented, non-scaly, macular patches usually affecting palms, occasionally soles and very rarely other parts of body of young adults. It is caused by two phaeoid (dematiaceous) fungi (superficial phaeohyphomycosis) i.e., *Hortaea werneckii* and *Stenella araguata.* Tinea nigra affecting palms and soles are known as tinea nigra palmaris and tinea nigra plantaris respectively. *H.werneckii* is known by many synonyms like *Phaeoannellomyces werneckii*, *Exophiala werneckii* or *Cladosporium werneckii* (Chander, 2009; Abliz *et al*., 2003; McGinnis *et al*., 1985; Zalar *et al*., 1999). Rhodotorula species are common airborne contaminant and considered as an important agent for invasive infection among immunocompromised patients (Ruiz *et al*., 2005). Here we present "A Rare Case of Tinea nigra of Scalp caused by *Hortaea werneckii* and *Rhodotorula rubra"* in an immunocompetentindividual residing in a silk city of Kancheepuram.

****Corresponding author: Prasanna, S.,***
Department of Microbiology, Shri Sathya Sai Medical College and Research Institute, Kancheepuram, Tamil Nadu, India.

Case description

A 23 year old male presented to dermatology OPD with itching and loss of hair over the scalp for about two weeks. There was no history of contact with infected persons and pets. There was no evidence of skin lesions anywhere else on the body. The patient was immunocompetent, non-diabetic and not on immunosuppressive drugs. On clinical examination, he was found to have hyper pigmented scaly lesions with loss of hair over the scalp (Fig. 1). The microscopic examination of skin scrapping after treatment with 10% KOH revealed the presence of Yeast like cells and septate hyphae seen. The material was cultured in Sabouraud dextrose agar (SDA) slant tubes with and without cycloheximide at 25°C and 37°C. SDA without cycloheximide grew smooth, moist, adherent yeast like growth which later matures to leathery, wrinkled brown to black colonies with black reverse pigment after about 7 days and also there was pink to red colour mucoid or creamy colonies (Fig.2 and 3). However, there was no growth on SDA with cycloheximide and urease is hydrolysed by pink mucoid or creamy colonies. Lactophenol cotton blue (LCB) mount showed budding yeast-like cells with occasional septa and producing a characteristic two celled (bi-cellular), oval structures with central darkly pigmented septa (Fig.4a). There are annelloconidia (Fig.4b & 5) in addition to dematiaceous septate hyphae with conidia on intercalary annellides seen. The fungus was identified as *Hortaea werneckii and Rhodotorula*

rubra with the help of cultural characteristics and the typical microscopic features on LCB mounts: septate yeast cells with annelloconidia and yeast cells with urease positive respectively. The patient was put on oral fluconazole 150 mg weekly one tablet for 6 weeks and topical ketoconazole plus selenium sulphide shampoo for topical for 6 weeks and tablet cetirizine 10 mg one tablet at night for 10 days. He was assessed for therapeutic success after 4 weeks and had shown significant improvement. Fluconazole was discontinued after 6 weeks and the lesions showed complete resolution in the next follow up and there was no further hair loss during the course of treatment.

DISCUSSION

H.werneckii is known by many synonyms like *Phaeoannellomyces werneckii*, *Exophiala werneckii* or *Cladosporium werneckii*. *H.werneckii* was first isolated by Paulo Parreiras Horta in 1921 and proposed new taxon, *Cladosporium werneckii* by honouring Machado Werneck (Brazilian dermatologist) under him Horta worked. Later the nomenclature of this genus was designated as Hortaea (Chander, 2009).

Fig.1. Tinea nigra of scalp showing hyper pigmented (brownish); scaly, macule with loss of hair

Fig.2. A-Sabouraud Dextrose agar showing smooth, moist, adherent yeast like growth which later matures to leathery, wrinkled brown to black colonies (left); B-Sabouraud Dextrose agar showing black reverse pigment (right)- *H.werneckii*

Fig.3. A-Sabouraud Dextrose agar showing smooth, moist, adherent yeast like growth which later matures to leathery, wrinkled brown to black colonies and also pink to red colour mucoid or creamy colonies (left); B-Sabouraud Dextrose agar showing subcultured growth of *Rhodotorula rubra*- pink to red colour mucoid or creamy colonies (right)

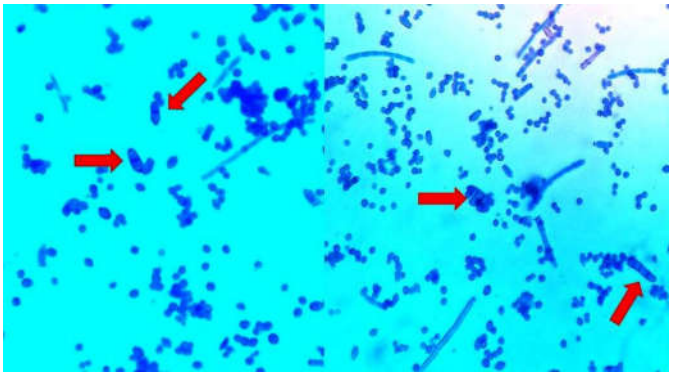

Fig.4. A-Lactophenol cotton blue (LCB) mount budding yeast-like cells with occasional septa and producing a characteristic two celled (bi-cellular), oval structures with central darkly pigmented septa by 40X magnification. B- Annelloconidia in addition to dematiaceous septate hyphae with conidia on intercalary annellides

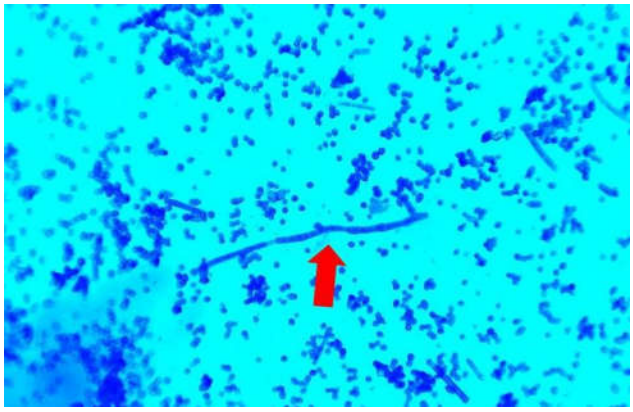

Fig.5. Annelloconidia in addition to dematiaceous septate hyphae with conidia on intercalary annellides

H.werneckii is a melanised yeast like halophilic fungal species called black yeast (initially brown to black pasty colonies), but majority of the black yeast occur as synanamorphs in association with polymorphic phaeoid hyphomycetes (Chander, 2009; Abliz *et al*., 2003; McGinnis *et al*., 1985). The halophilic behaviour of the fungus has been proven by residing in the hyper saline environments as the natural habitat (Zalar *et al*., 1999). The studies that were carried out during the period of 30

years (1972 to 2002) among the 12 patients, tinea nigra was more prevalent among young people with fair skin and was less frequently seen among black population in Venezuela (Perez *et al*., 2005). Out of these 12 patients, the predominant causative agent was *H.werneckii* (eight) and *Stenella araguata* (two). Tinea nigra has been reported rarely from India. So far, only five cases (2 from Chennai, 1 from Pondicherry and 2 from Belgaum) have been reported from South India and one from Uttar Pradesh, North India (Kamalam and Thambiah, 1982; Gnanaguruvelan *et al*., 1998; Dasgupta *et al*., 1975; Hemashettar *et al*., 1985; Ragini Tilak *et al*., 2009). The hot and humid conditions may be the predisposing factor for reporting of this fungus among the South Indian population. To our best knowledge, the present case is the "first case of tinea nigra of scalp from South India". *Rhodotorula species* are common airborne contaminant and considered as an important agent for invasive infection among immunocompromised patients and only few reports are there about causing onychomycosis and septicaemia (Ruiz *et al*., 2005). In our case the patient was an immunocompetent individual and both the organism was isolated twice to prove it as pathogens.

Conclusion

We report "A Rare Case of Tinea nigra of Scalp caused by *Hortaea werneckii* and *Rhodotorula rubra"* in an immunocompetent individual residing in a silk city of Kancheepuram. The main aim of this case report is to prevent the misdiagnosis of superficial fungal infections of skin. So proper clinical evaluation, categorization into superficial or deep infection is very important, diagnosis after culture and microscopy leads to a positive clinical outcome.

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