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Cutaneous Penicilliosis by Penicillium Marneffei in A Human Immunodeficiency Virus Infected Individual From A Tertiary Care Center of Tripura, North-East India

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Abstract **Case Report**

Penicillium marneffei infection is an important emerging public health problem, especially among patients infected with human immunodeficiency virus in the areas of endemicity in Southeast Asia, India, and China. Within these regions, it is regarded as an AIDS-defining illness, and severity of the disease depends on the immunological status of the infected individual [1]. We report a case of *Penicillium marneffei* infection in a 28 years male under antiretroviral therapy for HIV infection. He was presented with papulo-nodular umbilicated skin lesions all over body and fever for 1 month. This is the first case report of *Penicillium marneffei* from Tripura.

Key Words: *Penicillium marneffei*, immune-compromised, dimorphic.

INTRODUCTION

Penicillium marneffei also known as *Talaromyces marneffei*, is the only known thermally dimorphic species of *Penicillium*, and it can cause both localized and lethal systemic infection in human being [2]. It is considered to be 3rd most frequent opportunistic pathogen in endemic areas after Tuberculosis & Cryptococcosis [2]. It is regarded as one of the AIDS defining illness. The fatal systemic infection by this fungus is known as Penicilliosis – may manifested with fever, anemia, hepatomegaly, generalized lymphadenopathy, soft tissue abscesses, papulo-nodular umbilicated skin lesions and chronic skin ulcers. The fungus is an opportunistic pathogen endemic in South East Asia and its neighbouring countries. In India it is mostly isolated from north-eastern states- Manipur, Nagaland, Mizoram, upper part of Assam [3],[4]. This is probably because of abundance of the bamboo groves, the habitat of bamboo rats which are the natural reservoir or carriers of *Penicillium marneffei.* An individual usually get the infection when CD_4 T-lymphocytes count drops down to 60 cells/ul or below. Although *Penicillium marneffei* infection is common in some of the regions of north-eastern India, but this is the first diagnosed case reported from Tripura.

CASE REPORT

A 28 years old Human Immunodeficiency Virus (HIV) infected truck driver attended ART Center with multiple papulo-nodular skin lesions with central umbilication all over the face & trunk (Figure 1) along with low grade fever for last 1-month duration. He had been diagnosed with HIV infection 3 months back & was under antiretroviral drugs along with tablet cotrimoxazole for the same duration. Multiple papules first appeared on the trunk and the extremities and later spread all over the skin. There was no oro-genital lesions. His body weight decreased 10 kg in last 1 month

Fig-1: Nodulo-papular umbilicated Skin lesion (face & back)

On Physical examination findings were as follows: sensorium alert, blood pressure 110/70 mmHg, pulse 82 times/min, regular, respiration, 22 times/min, body temperature, 38.4°C. Multiple generalized papules were seen on the face, ear, chest, abdomen and the extremities with central umbonation on most of the lesion. There was no palpable lymphadenopathy, his chest was clear and his abdomen was soft and non-tender with no organomegaly.

Laboratory examination shows, his hemoglobin 6.5 g/dL, white blood cell count 3500/µL and platelet 210,000/µL, ESR 50mm/1st hr, Urea: 30mg/dL; Creatinine: 1.04 mg/dL. Peripheral CD4+ T lymphocyte count were 09 cells/µL. AST: 47 U/L; ALT: 42 U/L; HbsAg, Anti HCV and VDRL test: non-reactive, respectively. Automated Blood culture for bacterial & fungal agents done by BecT ALERT did not grow any organism after 7 days of incubation.

Slit skin smear was prepared, and the scrapped materials were further processed for isolation & identification of the causative organism. From the direct scrapped material Giemsa staining was done which was showing both intracellular & extracellular yeast cells with cross-walled septa (figure 2). Fungal culture was done on Sabourauds dextrose agar (SDA) and incubated at both 25^{0}C & 37^{0}C. After 5 days incubation at 25^{0}c, the colony morphology appearance was wrinkled, folded, velvety, and grey-brown in colour with brownish red/wine colour diffusible pigmentation on reverse side (figure 3). After 12 days incubation, 37^{0}Cculture tube showed the presence of smooth cream coloured dry yeast like colonies without any pigmentation. Slide culture test was also performed. Lacto phenol cotton blue (LPCB) mount was done for morphological identification of the fungus. In LPCB mount from 25^{0}C - short septate hyphae were seen with chains of elliptical smooth walled phialoconidia arising from ends of tapered phialides (Broom-stick appearance) (figure 4) and in 37^{0}C - oval yeast cell with cross-septation were seen. Giemsa staining from 37^{0}C culture tube was also corresponding with LPCB mount report (figure 5). Slide culture test was done for morphological confirmation of the isolated organism.

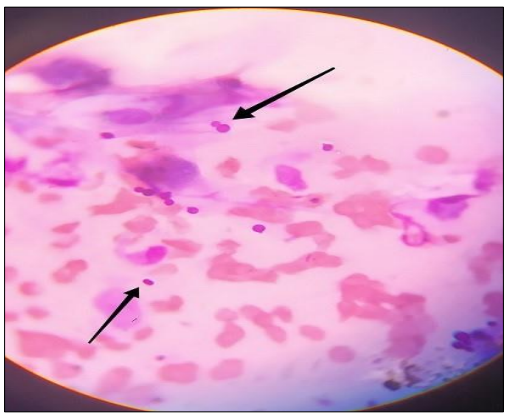

Fig-2: Giemsa stain showing cross-walled septate yeast cell (X 1000)

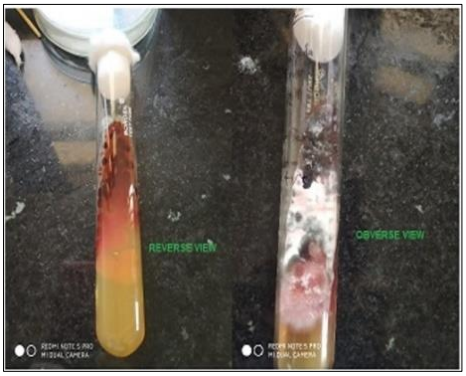

Fig-3: Colony character at 25^{0}c SDA culture tube

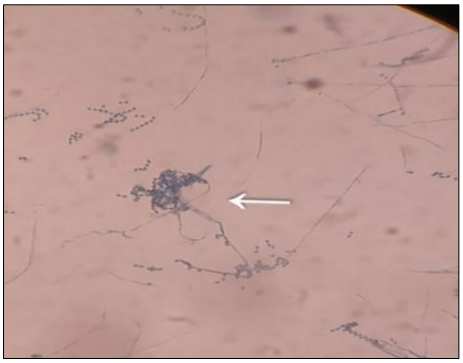

Fig-4: LPCB mount showing "Broom-stick" mold of Penicillium marneffei (X 1000)

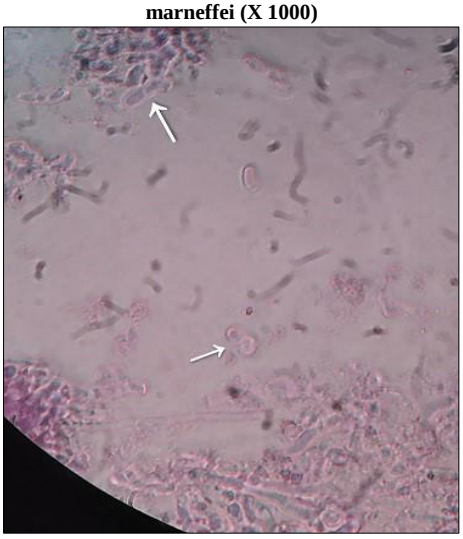

Fig-5: Giemsa stain showing "cross-walled" yeast cell (X 1000)

From the clinical history, clinical finding, macroscopic & microscopic morphology of the isolate, the presence of characteristic red diffusible pigment & the dimorphic nature of the isolate, it was identified as *Penicillium marneffei.* The patient was prescribed with Tab Itraconazole 200 mg twice daily, but after 15 days of initiation of treatment, the patient expired.

DISCUSSION

Penicillium marneffei infection is an important disease among HIV-infected in South-east Asia. Discovered in 1956 from bamboo rat *Rhizomys sinensis* in Vietnam, [2] *Penicillium marneffei* was first

identified in an HIV-infected patients in 1988 [2]. Till date many cases are reported from our neighbouring State Manipur, but from Tripura this is the first laboratory confirmed case of Penicillium *marneffei* infection. This infection has been reported from non-endemic regions of India such as Tamil Nadu, Maharashtra, Assam, Meghalaya & Delhi [5-8]. The case from Delhi was a patient of immune restoration syndrome and was of Manipur origin [8].

The fungus is sensitive to Amphotericin B & Itraconazole. The current recommended treatment regimen is to give amphotericin B 0.6 mg/kg/day for 2 weeks followed by Itraconazole 400 mg/day orally in two divided doses for next 10 weeks [2].

CONCLUSION

The incidence of HIV infection and opportunistic mycotic infections are on the rise in this part of India. Penicilliosis is mostly seen in late HIV infection with CD4+ count less than 100/uL. Up to 80% or more of the cases have CD4+ count below 50/uL [9]. In our case at diagnosis patients CD4 count was only 09/uL. A robust screening mechanism especially for the high risk individuals along with high degree of clinical suspicion & appropriate laboratory test is the need of the hour to identify both HIV and Opportunistic infection, as early detection and prompt treatment is necessary to reduce mortality & morbidity.

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