

## PENICILLIUM MARNEFFEI - AIDS DEFINING ILLNESS PENICILLIUM MARNEFFEI – AIDS, DEFINICJA CHOROBY

Anaparthi Usharani, Bharathi M.

Dept. of Microbiology, Andhra Medical College, Visakhapatnam-2, Andhra Pradesh,  
India [usharani.anaparthi@gmail.com](mailto:usharani.anaparthi@gmail.com)

N Dermatol Online. 2011; 2(2): 58-60

### Abstract

**Background:** *Penicillium marneffeii* infection is the emerging fungal infection in the present day global scenario of HIV pandemic. *P. marneffeii* is a dimorphic fungi with mycelial growth at 37°C. Suspicion of *P. marneffeii* infection arises when an immunocompromised individual especially HIV positive persons present with *Molluscum contagiosum* like skin lesions. But pulmonary manifestations are not characteristic of *P. marneffeii* infection unless we test the sputum for fungal growth in individuals with low CD<sub>4</sub> counts, we may miss *P. marneffeii* respiratory infection. **Material and methods:** 100 sputum samples from HIV patients with cough were examined for fungal pathogens by inoculating the samples on SDA and incubated at 28°C. The samples with greenish yellow mycelial growth with diffusible red pigment were inoculated on blood agar and SDA and incubated at 37°C for conversion to yeast. **Results:** We isolated two cases of *P. marneffeii* out of 100 samples. The CD<sub>4</sub> counts of the cases were 33 and 84. **Conclusions:** Early diagnosis and treatment reduces the mortality of *P. marneffeii* HIV patients.

### Streszczenie

**Wstęp:** Infekcja *Penicillium marneffeii* jest pojawiającym się zakażeniem grzybiczym w obecnym, globalnym scenariuszu pandemii HIV. *P. marneffeii* jest dymorficznym grzybem ze wzrostem grzybnicy w 37°C. Podejrzanie zakażenia *P. marneffeii* powstaje, gdy u osób z obniżoną odpornością, zwłaszcza HIV stwierdzimy obecność mięczaka zakaźnego, jako zmiany skórnej. Płucne objawy nie są charakterystyczne dla infekcji *P. marneffeii* chyba, że test płwociny jest dodatni (dla wzrostu grzybów) u pacjentów z niskim mianem CD<sub>4</sub>; możemy przeoczyć wówczas infekcję *P. marneffeii* w układzie oddechowym. **Material i Metody:** Zbadano 100 próbek płwociny od pacjentów zakażonych HIV z towarzyszącym kaszlem; zbadano patogeny grzybicze poprzez zaszczerpienie próbek na SDA i inkubację w temperaturze 28°C. próbki z żółto-zielonkawym wzrostem grzybnicy z dyfuzyjnym, czerwonym barwnikiem zaszczerpieno na krew, agar oraz SDA i inkubowano w temperaturze 37°C do konwersji na drożdżach. **Wyniki:** Stwierdziliśmy dwa przypadki izolowanych *P. marneffeii* ze 100 próbek. Miano komórek CD<sub>4</sub> w analizowanych przypadkach wynosiło 33 i 84. **Wnioski:** Wczesne rozpoznanie i leczenie zmniejsza śmiertelność z powodu infekcji *P. marneffeii* u pacjentów z HIV.

**Key words:** infection, dimorphic, fungi, low CD<sub>4</sub> counts

**Słowa kluczowe:** zakażenia, dymorfizm, grzyby, niskie CD<sub>4</sub> miano

### Introduction

*Penicillium marneffeii* is known to be endemic in S E Asia. It causes infections of RE system in humans in immunocompetent & more often in immunocompromised individuals especially in AIDS patients. As a result of recent increase of HIV infection *P. marneffeii* has become one of the principal new emerging fungal pathogens. First human infection was reported in 1959 and caused by accidental puncture of finger by a needle used to inoculate hamsters in Segretain who had given the name *P. marneffeii*. First spontaneous infection in humans was reported in 1973 in a splenic abscess case. Second case was reported in 1984 as a focal pulmonary infection. During the period of 1988-89 disseminated *P. marneffeii* infection began to be observed in AIDS patients [1] and it is also included as

an AIDS defining illness among patients who have lived or visited endemic areas. At present it is considered to be the third most frequent opportunistic pathogen after tuberculosis and cryptococcosis in endemic areas [2].

### Material and methods

Two consecutive sputum samples at an interval of 3 days were collected from HIV positive patients, whose CD<sub>4</sub> cell counts are less than 500 /cumm, as shown in Table no. 1, with complaint of cough and fever for more than one week, in a sterile wide mouthed container. Patients were asked to wash their oral cavity with distilled water before collecting sputum in order to avoid contamination of sputum with commensal flora from oral cavity.

Sputum was inoculated on two sets of Sabouraud's dextrose agar (SDA with antibiotic gentamicin alone and SDA with gentamicin and cycloheximide) and incubated at 25°C +or - 2°C in BOD for 4 weeks. SDA bottles were examined for growth once in two days during 1<sup>st</sup> week and twice a week thereafter up to 4 weeks.

SDA medium with growth was processed by standard methods. LPCB mount was done for filamentous growth. Growth was identified by arrangement of conidia. Slide cultures were done to demonstrate hyphal and conidial arrangement. When two samples yielded the same fungal isolates, then only they were considered as pathogenic.

CD <sub>4</sub> Count	Males	Females
< 100	6	0
101-200	13	2
201-300	15	13
301-400	20	7
401-500	13	11
	<b>67</b>	<b>33</b>

**Table 1. Showing CD<sub>4</sub> counts**

### Results

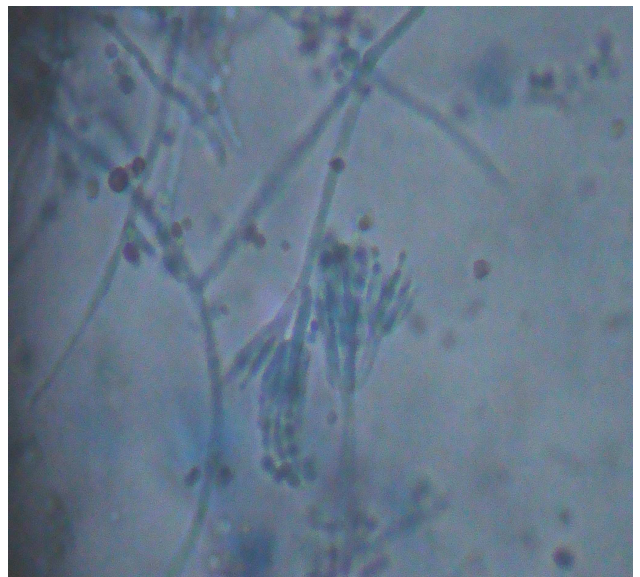
*P. marneffei* is a dimorphic fungi. At 25°C on SDA grows as a mycelial fungus producing rapidly growing greenish yellow sporulating colony with a red centre and dark green edges with diffusible brick red pigment (Fig.1). At 37°C on SDA it produces smooth glabrous off white yeast like growth with little pigment (fig. 2). Microscopically the fruiting heads sometimes have terminal conidia larger than the ones beneath them called Corda's phenomenon, characteristic of *P. marneffei* (fig. 3).



**Fig. 1 Growth of *P.marneffei* on SDA at 25<sup>0</sup> C with diffusable red pigment**



**Fig. 2 Growth of *P.marneffei* on SDA at 37<sup>0</sup> C glabrous off white yeast like growth**



**Fig. 3 Photomicrograph of *P.marneffei* showing Corda's phenomenon**

### Discussion

Clinical picture includes fever, lymphadenopathy, hepatosplenomegaly, leucocytosis, anaemia, persistent cough, molluscum contagiosum like lesions and disseminated infection. Pulmonary manifestations like cough, dyspnoea, occasionally chest pain, haemoptysis associated with pneumonia, pulmonary abscess or pulmonary infiltrates are seen. We isolated two cases of *P.marneffei* from HIV positive individuals with cough of more than one week duration who attended the ART centre, KGH, Visakhapatnam. The CD<sub>4</sub> counts of the two individuals are 33 and 84 respectively. We got permission from Local Ethics Committee, Andhra Medical College, Visakhapatnam to conduct the study Annexure-I. *Penicillium marneffei* was isolated for the first time in and around Visakhapatnam. Bhagyabati Devi S. et al. isolated *P.marneffei* from sputum of HIV positive individuals

whose CD<sub>4</sub> counts were less than 100 (21.4% positivity) in Imphal [3]. *P. marneffei* is a potentially fatal disease in the absence of treatment as documented by a case fatality rate of 91.3% in immunocompetent individuals and 100% in AIDS patients. As Penicillosis is highly susceptible to Iatrankonazole, it can be used in the treatment as well as in secondary prophylaxis and also in primary prophylaxis [1].

### **Conclusions**

So early diagnosis and timely treatment reduces the mortality from *P. marneffei*.

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