

## **A CASE STUDY OF PENICILLIUM MARNEFFEI INFECTION IN CANCER PATIENT FROM KANCHIPURAM**

### **ABSTRACT**

Penicillium marneffei is an opportunistic dimorphic fungus causing infection in both immunocompetent and immunocompromised patients. P. marneffei infection has been recognized recently as a very common emerging fungal pathogen. Since relatively little is known about the epidemiological characteristics we performed a case-control study to evaluate the risk of acquiring P. marneffei infection among cancer patients. Out of 50 sputum samples from cancer patients. The control group included 20 randomly selected patients at MMCH&RI, Kanchipuram. The samples were processed according to standard protocol. Only 1 (2%) isolate of Penicillium marneffei were isolated from 50 samples. Out of 50 Cancer patients 22 (44%) were positive for tuberculosis infection. Among the control group only 3 (15%) were found to be positive for tuberculosis infection. Hence the present study shows that tuberculosis is a predisposing factor for fungal infections among immunocompromised patients.

**KEYWORDS** Penicillium marneffei, cancer patients, tuberculosis, immunocompromised

### **INTRODUCTION**

Invasive fungal infections are frequent in patients with cancer [Armstrong, 1973]. P. marneffei can cause systemic mycosis in humans, particularly those who are immunocompromised [Jayanetra et al., 1984, Supparatpinyo et al.,1994]. The first report of P. marneffei infection in Thailand included five patients seen at a hospital in Bangkok between 1974 and 1982 [Jayanetra et al., 1984]. Penicillium marneffei a dimorphic fungus is a rare opportunistic pathogen.P. marneffei infection has been recognized recently as a very common emerging fungal pathogen.Recognition of this rare disease is important because it is amenable to treatment. It is a third most common opportunistic infection. Since relatively little is known about the epidemiological characteristics we performed a case control study to evaluate the risk of acquiring P. marneffei infection among cancer patients.

### **CASE REPORT**

A 70 years old male was admitted in the hospital during October 2010.patient was diagnosed of having pulmonary tuberculosis. Sputum samples were sent for AFB testing which revealed the presence of fungal elements. So the sample was inoculated into SDA and incubated at 37<sup>0</sup>C after 2 days culture was examined which revealed the typical morphology of P. marneffei.

#### **Study design**

Cancer patients attending the hospital with respiratory infections between 15-60 yrs of age. Demographic details were obtained from hospital record and the information recorded include age, sex, clinical diagnosis, duration of hospital stay, antibiotic usage. 50 sputum samples were collected and control group included 20 samples.

**Inclusion Criteria** Patients with clinical diagnosis of respiratory infection.

**Exclusion Criteria** Patients on ATT treatment

Samples were collected from Meenakshi medical college and research institute, Enathur, Kanchipuram, during September 2010 – December 2010.

## RESULTS

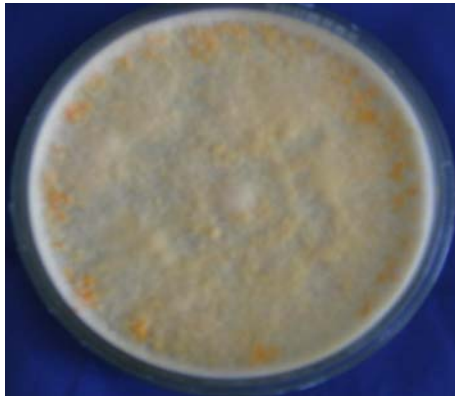
Only 1 (2%) isolates of *Penicillium marneffei* were isolated from 50 sputum samples. Out of 50 sputum samples collected from cancer patients 22 (44%) were found to be positive for tuberculosis by ZN-staining method. Out of 20 control group included in the study only 3 (15%) were found to be positive for tuberculosis infection.



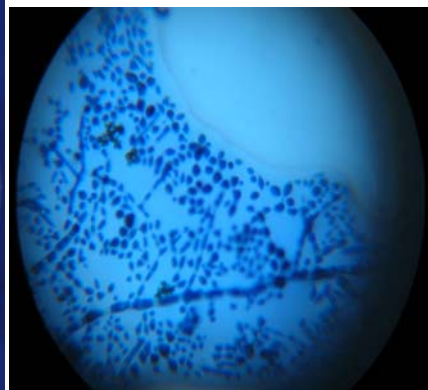
A)



B)



C)

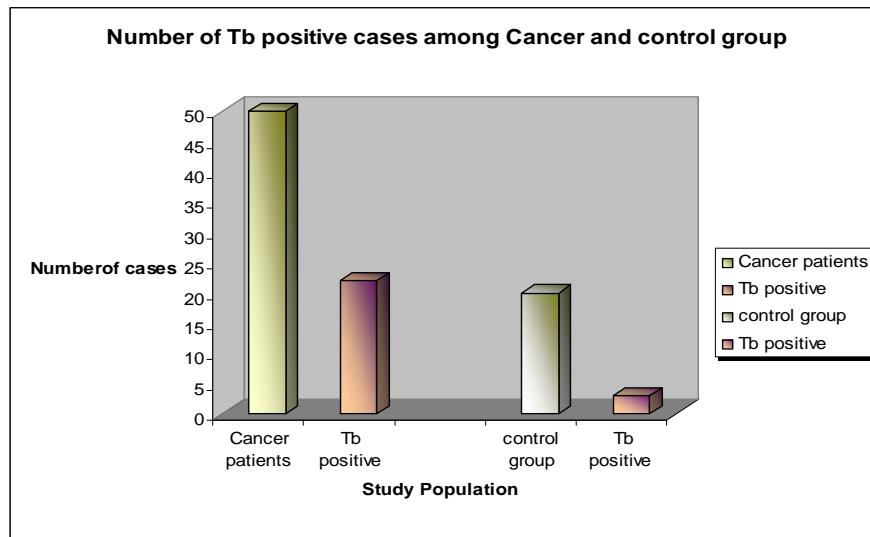


D)



E)

Fig. 1A) Shows the pigment production of *Penicillium marneffei* B) microscopic appearance of *P.marneffei* C) mycelial phase at 25°C of *P.marneffei* D) microscopic appearance of yeast phase E) yeast phase at 37°C of *P.marneffei*



Graph 1. showing number of Tuberculosis positive cases among cancer and Control group.

## DISCUSSION

*P.marneffei* is the only dimorphic fungus among the *Penicillium* species known. *P.marneffei* is now documented as one of the *penicillium* species causing severe systemic infections in humans. Since tuberculosis is very common and the clinicopathological

signs of both the diseases are similar so it is difficult to diagnose the infections. It has got a high mortality rate and if it is not diagnosed at early stage leads to mortality (Vanittanakom et al.,2006). Only a few cases of *Penicillium marneffeii* infections are reported but many cases are masqueraded as tuberculosis (Yuen-fuchan et al.,1990). Hence our study emphasizes that all tuberculosis patients should be screened for *P.marneffeii* infection to bring down the mortality rate of this fungus.

## CONCLUSION

The present study reveals that tuberculosis is endemic in India along with this even *P.marneffeii* is endemic in South East Asia. *P.marneffeii* a dimorphic fungus is known to cause various signs and symptoms which mimics tuberculosis which misleads the diagnosis of this fungus. Dimorphic fungus *P.marneffeii* mostly infects the immunocompromised patients not only the HIV population but even the Cancer populations where tuberculosis remains the underlying factor for the fungal infection. Our present study stresses the need for screening for fungal infection especially in Cancer patients with tuberculosis for *P.marneffeii* infections.

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