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CASE STUDY

ISOLATION OF *CRYPTOCOCCUS LAURENTII* IN A PATIENT OF RENAL TRANSPLANTATION

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ABSTRACT

Background: *Cryptococcus laurentii* is one of the several non *neoformans* *Cryptococci* that has rarely been associated with human infection. However in recent years, there has been an increase in incidence of opportunistic infections with *Cryptococcus laurentii*. *Cryptococci* are a saprophytic fungi present in soil contaminated with bird droppings mainly pigeons, roosting sites and decaying vegetables. Some authors reported a case of pulmonary cryptococcosis caused by *C. laurentii* in a diabetic AIDS patient who was on antituberculosis and antiretroviral treatments. *Cryptococcus species* is now recognized as a potential pathogen which can cause superficial as well as systemic disease, the most common presentation being meningitis, but can cause lung disease, pneumonia or respiratory failure. Here we report a case of 43 year old male patient who presented with fever, cough, chest pain and expectoration for 3 days. The patient gave the history of hypertension, diabetes mellitus and kidney transplantation. The patient gave a history of corticosteroid treatment for last 5 years. Sputum and pus samples were received in the lab in sterile container was cultured on blood and mac Conkey agar plates. On the basis of colony morphology, gram staining, yeast panel was selected for identification and sensitivity of the microorganism on Vitec II, fully automated microbiology analyser (Biomerieux).

Conclusion: To the best of my knowledge it is the first case reported from IGIMS, Patna, Bihar. In the present case report the patient was having renal transplantation and on prolonged corticosteroid therapy so was immunocompromised. Recent report on the outbreak of *Cryptococcus* infections should be considered as an alarming signal. Generally, immunocompromised patients are at risk of *Cryptococcal* infection, but infection in immunocompetent patients cannot be ruled out. The infection is easy to miss, so a high degree of clinical suspicion, improved culture methods and identification techniques like Vitec II can contribute to the diagnosis of unusual fungal infections. Previous report have suggested that HIV negative patients (30-70 %) suffer from pulmonary cryptococcosis more frequently as compared to AIDS (2%) patients who suffer from disseminated *Cryptococcal* disease.

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INTRODUCTION

Cryptococcosis, usually due to *Cryptococcus neoformans*, is considered to be one of the most serious fungal infections in immunocompromised patients (Johnson *et al.*, 1998; Kamalam *et al.*, 1977). In the past, non-*neoformans* species have been generally regarded as nonpathogenic saprophytes. However, in recent years, opportunistic infections associated with *Cryptococcus albidus*, *Cryptococcus curvatus*, *Cryptococcus humicolus*, *Cryptococcus uniguttulatus* and *Cryptococcus laurentii* have been reported (Kordossis *et al.*, 1998; Ritterband *et al.*, 1998; Velez *et al.*, 1996). *Cryptococcus laurentii*, a basidiomycetous encapsulated yeast, is present in the droppings and cloacal samples of feral pigeons. It is responsible for both deep seated infections, such as fungemia and meningitis, and superficial infections such as keratitis. (Kwon Chung *et al.*, 2002; Khawcharoenporn *et al.*, 2007) Most of the cases of infection with *C. laurentii* have been seen in immunocompromised host. We report a case of infection

caused by *C. laurentii* in a post renal transplant patient with long term treatment of corticosteroids and having history of hypertension and diabetes mellitus. The organism was isolated twice from pus culture and sputum culture drawn 2 days apart. *Klebsiella pneumoniae* was also isolated from pus along with *C. laurentii* (Yang *et al.*, 2006).

Case Report

A 41 year old male patient was admitted in the department of nephrology, with complains of dyspnoea and multiple pus discharging wound infection all over the body for 15 days. The patient had kidney transplantation 2 years back and was regularly having corticosteroids medication. Patient was a vegetarian and did not have any significant history of travel. He was apparently well 3 months prior to admission, when he developed mild cough and dyspnoea along with wound infection all over the body. Pus and sputum samples were sent to microbiology laboratory for culture and sensitivity. Both the samples were processed on blood agar, macConkey agar and Sabouraud's Dextrose agar. In sputum sample, cream coloured, smooth colonies of 1-2 mm in diameter on blood agar,

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macConkey agar and Sabouraud's Dextrose agar after an incubation of 24 hours. In pus sample, two types of colonies develop, one is lactose fermenter and mucoid, 3-4 mm size on macConkey agar and second is cream coloured, smooth colonies of 1-2 mm in diameter on blood agar, macConkey agar and Sabouraud's Dextrose agar after an incubation of 24 hours. Gram stained smear of the colonies revealed gram positive spherical budding yeast cells. India ink preparation showed narrow capsules surrounding the yeast cells. Urease production was noted (cream coloured colony). Culture from other sites like blood and pleural fluid did not yield any yeast. Other lactose fermenter colonies were identified as *Klebsiella pneumoniae* by different biochemical reactions.

DISCUSSION

Cryptococci generally occur in soil contaminated with pigeon feces and are transmitted to humans primarily through inhaled fomites. Species other than *C neoformans* have generally been thought to be nonpathogenic to humans (Ritterband *et al.*, 1998; Custis *et al.*, 1995; Lynch *et al.*, 1981). Although *C laurentii* has been reported as occurring worldwide, its natural habitat has not yet been thoroughly established. Cryptococcosis, an uncommon disease before the AIDS epidemic, has emerged as an important cause of illness and death in HIV-infected patients (Velez *et al.*, 1996). Thus, the present report is significant in that it potentially describes the first case of pneumonia resulting from *C laurentii* in the Indian HIV population. *Klebsiella pneumoniae* was isolated from the sputum and pus sample also. Previous studies have shown 29% incidence of pulmonary Cryptococcosis in HIV negative patients. Pulmonary Cryptococcosis either asymptomatic or with symptoms can resolve even without treatment in immunocompetent patients. Confirmation of Cryptococcal infection is traditionally done by isolation of *Cryptococcus laurentii* in sputum or other respiratory secretions like BAL fluid and identification by Gram's stain, India ink staining for capsule and latex agglutination tests. There is no validated standard treatment for *Cryptococcus laurentii*. Studies correlating in vitro antifungal susceptibility test results and treatment do not exist. Amphotericin B and Fluconazole are considered to be good antifungal drugs against non *neoformans* Cryptococci. However, *in vivo* susceptibility has been observed with oral fluconazole and patients have tolerated it well. However amphotericin B was given to our patient and he responded well to the treatment.

Conclusion

In the present case report the patient was a chronic asthmatic patient on prolonged corticosteroid therapy but was otherwise immunocompetent as evident from his HIV negative status.

The rising incidence of *Cryptococcus* infections should be considered as an alarming signal. Generally, immuno compromised patients are at risk of Cryptococcal infection, but infection in immunocompetent patients cannot be ruled out. The infection is easy to miss, so a high degree of clinical suspicion, improved culture methods and identification techniques like Vitec II can contribute to the diagnosis of unusual fungal infections.

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