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Emergence of Verticillium as a cause of invasive mycoses-a case report.

Microbiology

Teena Wadhwa — Associate Consultant, Dept. of Microbiology, Medanta-The Medicity, Sector-38, Gurugram, Haryana, India

Smita Sarma — Senior Consultant, Dept. of Microbiology, Medanta-The Medicity, Sector-38, Gurugram, Haryana, India

Shalini Upadhyay — Post graduate fellow, Dept. of Microbiology, Medanta-The Medicity, Sector-38, Gurugram, Haryana, India

Sonam Singla — Post graduate fellow, Dept. of Microbiology, Medanta-The Medicity, Sector-38, Gurugram, Haryana, India

ABSTRACT

Invasive fungal infections due to rare fungi are rising with the increase in number of immunocompromised patients. We report a case of post liver transplant wherein *Verticillium* was isolated from intercostal drainage fluid. The patient was a follow up case of cirrhosis with portal hypertension and hepatic hydrothorax and was planned for liver transplant. Post transplant, the patient had fever on 7th postoperative day. Hyaline septate hyphae were demonstrated in intercostal drainage fluid and identification was done based on morphological characteristics of the growth and microscopic features. Intercostal drain was removed and Fluconazole was added. There was no recurrence of fever and patient was discharged in clinically stable condition.

KEYWORDS:

Verticillium; Liver transplant recipient; Immunosuppression

1. Introduction

There has been a rising trend in invasive fungal infections since the beginning of the 21st century. This can be attributed to the increase in number of immunocompromised patients as compared to earlier decades. Rare fungi such as *Mucor*, *Fusarium*, *Paecilomyces* are emerging as causes of systemic fungal infections in immunocompromised hosts [1]. Species of the genus *Verticillium* is usually considered a contaminant and has rarely been reported as a cause of invasive mycosis. We present a case of post liver transplant patient wherein *Verticillium* was isolated from intercostal drainage fluid.

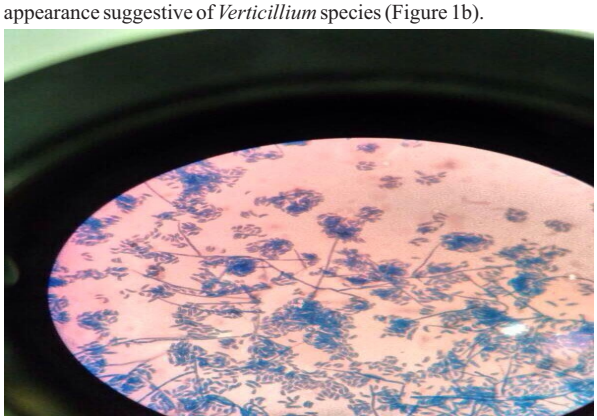
2. Case

A 33 year old male presented to the emergency department with history of shortness of breath for the last 3 days. He is a known case of alcoholic liver disease with cirrhosis, portal hypertension, grade II hepatic encephalopathy with ascitis and hydrothorax. There was history of multiple admissions in different hospitals during past one year for the management of fever and hepatic hydrothorax. He was referred to our hospital for further evaluation and management. At the time of admission, he was afebrile and haemodynamically stable. Physical examination revealed icterus, clubbing of finger nails and pedal oedema. There was decreased air entry on the right side of the chest. Ultrasonography (USG) and X-ray chest done at the time of admission showed gross pleural effusion on right hemi-thorax which was drained by placing intercostal drainage (ICD) catheter. The patient was reviewed and planned for liver transplant.

Postoperative period was uneventful; however he had a spike of fever on 7th postoperative day. Laboratory investigations revealed hemoglobin 6.8 mg/dL; total leucocyte count $13.34\times10^3/mm^3$; differential leucocyte count: neutrophils 84.4%, lymphocytes 5.6%; platelets $50,000/mm^3$ Non contrast computerized tomography (NCCT) abdomen was done which showed free fluid in abdomen and gastro-hepatic space that was drained with Endoscopic Ultrasound (EUS) guidance. Blood and ascitic fluid were sent for aerobic culture. In addition, ICD fluid was sent for KOH, aerobic and fungal culture. His blood and ascitic fluid cultures were positive for multidrug resistant *Kleibsiella pnuemoniae* for which the patient was started on Tigecycline and Colistin. The KOH wet mount of ICD fluid showed hyaline septate hyphae with conidia like structures for which Enidulafungin was added. There was growth of filamentous fungi in Blood, Mac Conkey agar and Sabourad Dextrose Agar (SDA) after 3 days of aerobic incubation at 37ºC. The colonies were dry white powdery with a yellowish background (Figure 1a).

Figure 1. (a) Dry white powdery colonies with a yellowish background

Lactophenol cotton blue preparation demonstrated hyaline septate hyphae with elongated conidiophores having tapering pointed ends. Conidia were arranged in clusters at the ends giving a whorled appearance suggestive of *Verticillium* species (Figure 1b).



Conidia arranged in clusters at the ends giving a whorled appearance suggestive of Verticillium species.

Computed tomography (CT) chest done subsequently showed bilateral mild pleural effusion with subsegmental areas of consolidation in both

lung bases. ICD drain was removed and the patient was continued with the same antibiotics but Fluconazole was added. There was no recurrence of fever and the patient was discharged in clinically stable condition on Fluconazole. The patient was readmitted after 20 days of discharge with complaint of high grade fever. He was re-evaluated and found to be having bile leak from the anastomotic site. Bile sent for culture had growth of Kleibsiella pneumonia for which the antibiotics were upgraded and Fluconazole was continued.

3. Discussion

Verticillium spp. are usually categorized as contaminants but have been reported to be pathogenic in immunocompromised patients. *Verticillium* spp. has been reported to be isolated from various sites mainly fungaemia [1], peritonitis [2], subcutaneous infection [3], keratitis [4] and hepatosplenic abscess [5].

Since these are rare fungi and less frequently isolated, no specific guidelines regarding anti-fungal therapy is mentioned in the literature. As per the few case reports documented, there is evidence of patients improving with Amphoterecin B [1] and combinations like Fluconazole and oral Flucytosine [2]; Amphoterecin b and oral Flucytosine [4]; and Amphoterecin B and Itraconazole [5].

Our patient was initially on Enidulafungin. After *Verticillium* was isolated, ICD was removed and oral Fluconazole was added to Enidulafungin. Blood and pleural fluid cultures sent later were sterile and patient was discharged in clinically stable condition on oral Fluconazole. Thus early detection of this rare isolate and addition of the azole prevented the dissemination of *Verticillium* which could have led to invasive mycosis if not treated or taken care of.

These rare fungal isolates should be monitored judiciously and not be discarded as environmental contaminants particularly in immunocompromised patients unless indicative of non-relevance to any infection in these patients.

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