**Candida tropicalis**, an uncommon cause of pancreatic abscess: A case report

Beena Hemanth, Partha Guchait¹, Namrata Naithani¹

Department of Microbiology, M. S. Ramaiah Medical College, ¹Department of Microbiology, M. S. Ramaiah Medical College and Teaching Hospital, Bengaluru, Karnataka, India

**ABSTRACT**

*Candida* is a ubiquitous fungus and can lead to various forms of infection like superficial, subcutaneous, and systemic-to-invasive infection. There are more than 20 species of Candida which can cause infection; of which, *Candida albicans* is the most common species. Candida can also cause deep-seated infection that can be due to hematogenous spread or through the direct introduction. Here, we report a rare case of pancreatic abscess in a 32-year-old male patient presenting with abdominal pain and fever. The pus aspirated from the abscess yielded the growth of *Candida tropicalis* and *Pseudomonas aeruginosa*. The patient was started on fluconazole and imipenem along with surgical necrosectomy. The patient recovered with subsidence of fever and abdominal pain.

**Key words:** *Candida tropicalis*, pancreatic abscess, *Pseudomonas aeruginosa*

**INTRODUCTION**

Invasive fungal infections have recently emerged as one of the major causes of morbidity and mortality in immunocompromised people, and *Candida* species are the predominant fungi.[1] Occasionally, invasive candidiasis is also seen in immunocompetent host. Invasive candidiasis can manifest as an abscess in various organs in the form of deep-seated infections, and the organs affected are spleen, brain, lungs, liver, and occasionally pancreas. Pancreatic abscess is a localized infection with collection of pus and devitalized tissue in pancreas or around it. It is usually secondary to acute pancreatitis.[2] Pancreatic infections are mainly due to bacterial organism and may be polymicrobial, the origin being the gastrointestinal tract (GIT). Though uncommon, *Candida* can be a part of this polymicrobial infection or can be a cause by itself. Intra-abdominal candidal infection is common in patients who have undergone abdominal surgery or who are receiving peritoneal dialysis. They can cause diffuse infection with generalized peritonitis.[3,4]

Among the few cases of pancreatic abscess caused by *Candida*, the most common species reported was *Candida albicans*, whereas *Candida tropicalis* and *Candida krusei* have been documented as a rare cause.[5] Hence, we report here a case of a 38-year-old male patient with pancreatic abscess who came with abdominal pain...
and fever. The pus aspirate sent for culture yielded the growth of *C. tropicalis* and *Pseudomonas aeruginosa* with a repeat sample also yielding the same isolate.

**CASE REPORT**

A 38-year-old male patient came with abdominal pain and fever since 10 days. He was a known alcoholic and a diabetic. The patient was put on total parenteral nutrition and initially managed conservatively with intravenous (IV) cefuroxime. The patient was not relieved of the symptoms, so an ultrasonography (USG) guided pigtail catheter insertion was done. The USG showed the presence of minimal ascites, features of pancreatitis, and peripancreatic collection. A computed tomography (CT) scan of the abdomen showed enlarged pancreas, inflammatory changes, and necrosis around the pancreas [Figure 1]. A diagnosis of necrotizing pancreatitis was made, and pancreatic necrosectomy was performed. Pus was aspirated under CT guidance and sent to microbiology laboratory for culture and sensitivity. The patient continued to have spikes of fever and diffuse abdominal pain, so an exploratory laparotomy was done. The patient was started on fluconazole based on the preliminary report.

The blood investigation revealed the following values: Blood pressure-110/80 mmHg, pulse rate-100/min, hemoglobin-13.5 g/dL, total leucocyte count-22,600/mm³, aspartate aminotransferase-56 IU/mL (normal-30 IU/mL), alanine transaminase-74 IU/mL (normal-30 IU/mL), fasting blood sugar-186 mg/dL (normal 70-110 mg/dL), HbA1c-8.3% (normal <6%), serum creatinine-1.01 mg/dL (normal 0.7-1.2 mg/dL), sodium-136 mEq/L (normal 136-145 mEq/L), and potassium-4.8 mEq/L (normal 3.5-5.3 mEq/L). Patient was nonreactive for human immunodeficiency virus, hepatitis C virus, and hepatitis B surface antigen. No abnormality was seen in central nervous system, respiratory system, or cardiovascular system.

Gram-stain of the pus showed plenty of white blood cells, Gram-negative bacilli and Gram-positive yeast-like cells with pseudohyphae [Figure 2]. Potassium hydroxide wet mount showed the presence of yeast cells with pseudohyphae. No acid-fast bacilli were seen on Ziehl–Neelsen stain.

The pus was inoculated on blood agar (BA), MacConkey agar, Thioglycollate media, Sabouraud’s dextrose agar (SDA) with and without antibiotics, and incubated at 37°C. After 24 h, tiny, cream-colored, yeasty colonies on SDA and BA were seen. The Gram-stain of these colonies showed oval yeast-like cells. *P. aeruginosa* was isolated from MacConkey and BA. Thioglycollate media did not yield any anaerobic organism.

Blood and urine samples remained sterile. The fungus was identified as *C. tropicalis* by germ tube test, sugar assimilation and fermentation, cornmeal agar, and CHROMagar [Figure 3]. Repeat culture of the pus and necrosectomy tissue again yielded the growth
of C. tropicalis that was sensitive to fluconazole and amphotericin B. The patient was started on oral fluconazole 200 mg daily for 2 weeks and imipenem 1 g IV, BD for 5 days. The patient improved with subsidence of fever and discharged after 4 weeks.

**DISCUSSION**

Candidal infection can range from nonlife threatening mucocutaneous disease to invasive disease that can involve any organ.[3] Candida is a ubiquitous fungi occurring in the gut and other regions on the body in healthy individuals. Pancreatic abscess is a late complication of acute necrotizing pancreatitis occurring more than 4 weeks after initial attack and occurs in 3% of these patients.[4] The pancreas is generally protected from invasion by fungus due to its retroperitoneal location. During abdominal surgery, a breach in its protective barrier can lead to invasion by Candida from the GIT through blood.[5-10] Other modes of access to the pancreas could be through IV lines.

Normally, the level of Candida in the gut is maintained by commensal bacteria. If this ratio is disturbed due to antibiotics and decreased immunity, Candida can overgrow which may result in pancreatic infection due to the associated risk factors and predisposing condition.[3,11] The predisposing factors are cholelithiasis, alcohol abuse, infection, trauma, and diabetes. Most often, the enteric organisms like Escherichia coli and anaerobes play a role, so the role of Candida in causing pancreatic abscess is rare.[12] Diabetes is one of the risk factors, as in this condition, there is a shift toward TH2 axis and a fall in the TH1 mediated immune response, along with decreased cytokine response, low complement factor 4 which can lead to decreased humoral immunity. Reduced functions in chemotaxis and phagocytosis in diabetes may also be another reason.[13] Here, the patient was a diabetic and an alcoholic, which are the known risk factors.

The agents causing pancreatic abscess are E. coli, Klebsiella pneumoniae, Enterococcus faecalis, Staphylococcus aureus, P. aeruginosa, Proteus mirabilis, and Streptococcus species.[6] Bacteria can help in a favorable environment for the growth of Candida species leading to further injury of the organ. Though, in a few cases of pancreatic abscess, Candida was the sole cause, other studies have shown mixed growth of Candida with E. coli, S. aureus, and Enterobacter species. In this case, there was growth of C. tropicalis and P. aeruginosa.

Primary drainage of the abscess and debridement of the infected tissue are crucial. The significance of candidal isolation for the 1st time in the sample received is questionable as they are a part of normal commensals of GIT. They can also colonize the drains used in the abdominal surgery. Clinical findings are similar to bacterial abscess. These factors can further delay the treatment leading to poor outcome. Therefore, a quick diagnosis with an early treatment can prevent the complications associated with pancreatic abscess.

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**Conflicts of interest**

There are no conflicts of interest.

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