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A descriptive study of *Trichosporon fungemia* cases from tertiary care center from north India

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Poster session 2, September 22, 2022, 12:30 PM - 1:30 PM

Objective: Incidence of fungemia with *Trichosporon* spp is increasing especially in immunocompromised patients. High mortality of 60% is associated with *T. fungemia*. *Trichosporon* species are intrinsically resistant to echinocandins, exhibit high MICs to amphotericin B, and have a propensity to form biofilm necessitating accurate and timely diagnosis. Cases of *Trichosporon* fungemia are often misdiagnosed and under-reported owing to the difficulties in diagnosis. Here, we report the clinical presentation and outcome of *Trichosporon* fungemia cases at the tertiary care center from north India.

Methods: This is a descriptive study conducted at the Department of Medical Microbiology, PGIMER, Chandigarh, India. A total of 8 patients who had fungemia due to *Trichosporon* spp. were included in the study. *Trichosporon* spp. was identified by matrix-assisted laser desorption ionization time-of-flight mass spectrometry (MALDI-TOF MS) with an updated database. Antifungal susceptibility was done using microbroth dilution method recommended by the Clinical and Laboratory Standards Institute (CLSI). Beta-D-glucan (BDG) assay was performed as per the manufacturer's recommendation. Demographic and clinical data along with treatment outcomes of all the patients were noted from medical records.

Results: The average age of presentation of patients diagnosed with *Trichosporon* fungemia was 44 years and the male to female ratio was 5:3. The underlying conditions included necrotizing pancreatitis ($n = 2$), infective endocarditis ($n = 2$) and renal transplant ($n = 1$). The other risk factors included the use of broad-spectrum antibiotics ($n = 7$), a central venous catheter ($n = 4$), and prior surgical procedures ($n = 3$). BDG was tested in 5 patients and 4 patients had a positive value of >80 pg/ml. A total of 5/8 patients received antifungal treatment. Six patients clinically improved and were discharged while two patients died of refractory shock despite treatment with amphotericin B. Minimum inhibitory concentration of *Trichosporon* isolates was (range): amphotericin B 0.5-16 $\mu\text{g/ml}$, fluconazole 0.12-32 $\mu\text{g/ml}$, voriconazole 0.03-1 $\mu\text{g/ml}$, itraconazole 0.03-1 $\mu\text{g/ml}$, and posaconazole 0.03-0.5 $\mu\text{g/ml}$.

Conclusion: *Trichosporon* spp. is an opportunistic pathogen causing fungemia in immunocompromised patients. Most of the patients in our study were immunocompetent except for one post-transplant patient. BDG helps in the diagnosis of this infection. This study highlights the need to accurately diagnose *Trichosporon* infections and perform antifungal susceptibility testing for guiding appropriate management and reducing mortality.

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Overview of post-covid mucormycosis in a tertiary care hospital in South India

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Poster session 2, September 22, 2022, 12:30 PM - 1:30 PM

Introduction: The unprecedented rise of COVID-associated Mucormycosis (CAM) cases even before the havoc caused by COVID-19 pandemic could settle posed a major challenge to the medical fraternity. COVID-associated Mucor had rapid dissemination, relentless progression and high fatality rates requiring a high index of clinical suspicion for early diagnosis and aggressive management for a successful outcome. Herein, we report our experience in the management of COVID-associated Mucor mycosis patients.

Objectives: To analyze the risk factors, clinical presentation, diagnostic information, and treatment data of COVID-associated Mucormycosis patients treated in our hospital.

Method: A Retrospective Observational study was done on the clinical, microbiological, histopathological, imaging, and treatment data of 36 patients with Mucor mycosis in the setting of COVID-19 during the period of 2020-2022 and analyzed.

Results: Of the 36 patients analyzed, 27 were male and 9 were female. In all, 75% of patients (27) were diabetic, 24 patients (66%) had suffered SEVERE COVID-19 pneumonia. A total of 30 patients were treated with steroids; 28 patients required supplemental oxygen. The most common type was sino-nasal (26 patients) followed by rhino-orbital disease (5 patients), 30 patients developed clinical symptoms within 4 weeks of post-COVID status.

Facial pain or swelling (27 patients) and headache (11 patients) were the common presenting symptoms. The most common diagnostic nasal endoscopy finding was necrotic debris with blackish crusts in the respective sinuses (28 patients).

Cross sectional-imaging (CT and/or MRI) showed involvement of paranasal sinus in 26 patients, orbital in 5 patients, and intracranial extension in 2 patients.

Histopathological examination of the surgically debrided tissue showed tissue invasion in 23 patients and 9 patients had angioinvasion as well.

Mucorales spp (24) was the most common pathogen isolated followed by mixed infection with *Aspergillus* spp and *Zygomycosis* (9). A total of 7 patients had ITS sequencing and 8 patients had antifungal susceptibility testing done to guide the treatment.

All patients with rhino-sinal disease underwent sinus debridement and patients with clinical suspicion of Mucormycosis were empirically started on Azole-based therapy. Liposomal amphotericin B was initiated after confirmation of Mucor mycosis and was limited to patients with extensive disease such as an orbital or cerebral extension or pathological evidence of angioinvasion. LAB was given for a period of 2 weeks (18 patients) overlapping with Azole-based therapy for a period of 6-8 weeks depending on the treatment response assessed in detail at follow-up by clinical recovery, repeat check endoscopy, and imaging. Azole-based therapy (IV followed by oral tablets) was given to 18 patients (12 received posaconazole and 6 received isavuconazole). Therapeutic drug monitoring was done in all patients receiving posaconazole and where appropriate in 11 patients. Redebriement was required in 6 patients due to disease progression. Overall survival was 72% (26) and mortality 16% (6). Remaining patients (4) lost follow-up.

Conclusion:

1. Uncontrolled diabetes, steroid therapy, oxygen supplementation, and COVID-related immune dysregulation are significant risk factors for the development of COVID-associated Mucormycosis.
2. Early diagnosis and adequate surgical debridement allow usage of antifungal therapy for a short duration with good clinical outcomes.

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The role of *Candida* in acute pancreatitis: A disregarded pathogen

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Poster session 2, September 22, 2022, 12:30 PM - 1:30 PM

Background: Acute pancreatitis is often complicated by infection of peri-pancreatic necrotic tissue. The infectious etiology commonly involves gram negative enteric bacilli and enterococci. Role of *Candida* species has remained debatable, despite being isolated in pure or mixed cultures in specimens. We evaluated patients with acute pancreatitis with *Candida* infection over a duration of 4 years for assessment of risk and prognostic factors.

Objectives: To determine the prevalence and role of *Candida* infection in patients of acute pancreatitis and ascertain the species distribution and risk factors.

Methods: This study was conducted including adult patients who were admitted to gastro-surgery department and had clinical suspicion of peri-pancreatic fungal infection. Specimens included peri-pancreatic fluid collection obtained intra-operatively or aspirated USG-guided, drain fluid and blood. In addition to aerobic bacterial culture, fungal cultures were performed availing standard mycological procedures. *Candida* infections were categorized into true and possible as per Chakraborty et al. with some modifications.

True *Candida* infection of pancreatic tissue was considered when yeast cells were seen and grown in pure or mixed culture from

- i. Peri-pancreatic fluid obtained intra-operatively, or
- ii. USG-guided aspirate, or
- iii. Abdominal drain fluid and blood culture.

Possible *Candida* infection of pancreatic tissue was considered when *Candida* spp were isolated from

- i. Abdominal drain effluent (at least two samples) in postoperative patients, or
- ii. *Candida* spp grown in only in blood culture.

Relevant patient information was obtained from hospital information system. Data were analyzed by SPSS 20 statistical software and MS Excel.

Results: A total of 14 cases were identified amongst which 6/14 (42.9%) had true *Candida* infection whereas possible *Candida* infection was seen in 8/14 (57.1%) patients. Out of these, *C. tropicalis* was the predominant species seen in 9/14 (64.3%) whereas *C. albicans* was seen in 4/14 (28.6%). One isolate of *C. auris* was identified. Patients with *C. tropicalis* infection showed higher mortality (6/9, 66.7%) as compared with patients with other *Candida* species, in whom 20% (1/5) mortality was noted. Acknowledging limitations inherent to retrospective data extraction, we delineated some of the possible risk factors predisposing to *Candida* infection, given in Table 1.

Table 1. Prevalence of risk factors.

Predisposing factor	Prevalence
Usage of broad-spectrum antibiotics	100% (7/7)
Presence of central venous catheter	77.8% (7/9)
Surgical intervention/USG guided aspiration	100% (13/13)
Intensive care unit (ICU) admission	35.7% (5/14)

Conclusion: Role of *Candida* species in the pathogenesis of adjacent tissues in case of acute pancreatitis has been neglected in past, but now being increasingly recognized. *C. tropicalis* is the commonest isolate in our study and carries very high mortality. Screening for *Candida* spp should be carried out in these patients in view of starting antifungal treatment at the earliest possible so that proper diagnosis and management can be undertaken.

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Disseminated histoplasmosis from skin to adrenals a cosmetic catastrophe—a rare case report

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Poster session 2, September 22, 2022, 12:30 PM - 1:30 PM

Background: The varying presentations of histoplasmosis is always a diagnostic dilemma for clinicians. Cases of disseminated histoplasmosis can present in multiple specialties like dermatology, medicine, endocrinology, with skin, and mucosal hyperpigmentation as the only major symptom.

Case Report: Here we present a case of a 54-year-old male with hyperpigmentation all over the body with multiple specialty consultations done in the past 2 years. There was a significant history of loss of weight over a period of 2 years. His cortisol levels were low which explained the focus in the adrenals, with bilateral adrenomegaly found in imaging studies. His diagnostic work-up for TB and possible malignancy was ruled out. The provisional diagnosis of histoplasmosis was made and confirmed with biopsy and culture. Definitive treatment with antifungals was initiated, which showed improvement on follow-up.

Conclusion: Histoplasmosis is always underreported, because of a lack of information regarding the various clinical presentations. Early diagnosis and prompt treatment may save the patient from catastrophic adrenal insufficiency. The diagnosis of adrenal histoplasmosis should be considered in patients presenting with constitutional symptoms and adrenal masses with or without adrenal insufficiency. Adrenal histoplasmosis can be the only possible presentation in disseminated histoplasmosis.

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SWOC analysis of a virtual clinical mycology training module of short duration conducted by iMARC laboratory at AIIMS, Bhopal

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Poster session 2, September 22, 2022, 12:30 PM - 1:30 PM

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Objectives:

1. To discuss the strengths, weaknesses, opportunities, and challenges of the virtual clinical mycology training module conducted for a short duration of 20 h.
2. To identify vital areas for improvisation in the training module.

Methods: A group of 15 members through small subgroup discussions collaborated across departments and branches over a period of 5 days to analyze the Karyashala Mycology training module of September 2021. The SWOC quadrant was prepared with questions by the key organizers. The group of 15 members represented faculty, residents, participants, and logistic data managers. This large group was further divided into small groups of 3-4 members in each. They were provided with flip charts and writing boards to reflect on questions in the individual component of SWOC. A flow of SWOC analysis by each small group included steps of generating ideas, prioritization of themes, and finally moving forward to selective workable or doable questions with complete clarity on internal and external factors.

Results: Strengths included the appropriate relevant topics, collaboration of mycologists with CFM and pathologists was good. Need for inclusion of clinical vignettes for demonstration of clinical, radiological, pathological, and microbiological collaboration, and approach to a given case was mentioned. The feedback of participants were analyzed by each small group and the need for similar handholding was noted. Virtual training modules uploaded online are available forever for reference to all interested. Being online 131 institutions participated.

Weaknesses included the struggle in managing platforms, network issues in virtual meetings, and arranging routine logistics timely. The time management for incorporation of more participant trainer interaction immediately after each session was lacking. These were felt by the group and also participants' feedback mentioned the same. Major weakness involves contractual technical staff with new recruitments affecting the already skilled techniques resulting in poor delivery. To overcome this faculty will take lead in all practical sessions was also decided.

External attributes as opportunities for organizing standard training programs are funds provided by the Government of India research SSR and several others. Need to tap more resources mentioned by all members in terms of expertise and funds.

Challenges pointed toward human resources, quality instruments, and consumables deficit due to institutional policies. To overcome this the team felt EQAS for fungal diagnostics is essential. A group of train the trainers (TOT) must be prepared for each tier of healthcare system.

Conclusion: The SWOC analysis of the training module weaknesses and challenges for improvisation. Strengths and opportunities discussed for future planning of similar events.