179. Candida parapsilosis Candidemia Resistance Patterns and Treatment Outcomes: An Opportunity for Antifungal Stewardship
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Background. Candida parapsilosis has emerged as an important fungal pathogen with mortality rates up to 30%. Recent studies show no difference in treatment outcomes for patients treated both empirically and definitively with either echinocandins or fluconazole. However, the impact of antifungal susceptibility testing and opportunities for antifungal stewardship are less clear in this patient population. The purpose of this study was to assess antifungal susceptibility rates, treatment patterns, and outcomes among patients with C. parapsilosis candidemia.

Methods. This was a single-center, retrospective cohort review of adult patients with a positive blood culture for C. parapsilosis hospitalized at Baylor St. Luke's Medical Center, between 2006 and 2016. Patients with mixed or breakthrough candidemia were excluded as well as patients who expired within 3 days of candidemia onset.

Results. Eighty patients with C. parapsilosis candidemia were identified of which 48 met inclusion criteria. Nine patients had infections caused by fluconazole non-susceptible isolates (19%). The most common empiric treatment choice was an echinocandin (33/48, 68%), followed by fluconazole (9/48, 19%), and combination therapy (6/48, 13%). Of the 39 patients with fluconazole susceptible isolates, only 17 were treated with fluconazole (49%). The primary indications for fluconazole prophylaxis were acute myelogenous leukemia (58%), aplastic anemia (15%), and refractory neutropenia (8%). Among patients receiving fluconazole, there was no difference in 14-day mortality (9% vs. 11%, P = 1.00) or in-hospital mortality (12% vs. 11%, P = 1.00). Empirc combination therapy was the only independent risk factor for treatment failure (OR, 13.8; 95% CI, 1.4–183.3; P = 0.025).

Conclusion. Treatment outcomes for patients receiving echinocandins were similar for those receiving fluconazole. At our institution, the increased incidence of fluconazole non-susceptible isolates warrants the use of echinocandins empirically. Patients were more likely to remain on echinocandin therapy even when fluconazole susceptible isolates were identified. This study reinforces the guideline suggestion that neither echinocandins nor fluconazole treatment leads to superior outcomes, but also identifies a cohort of patients in need of antifungal stewardship.

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180. Phaeohyphomycosis: A 10-Year Review (2006–2016)
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Background. Phaeohyphomycosis is a rare infection caused by dematiaceous (pigmented) fungi, frequently reported in tropical and sub-tropical countries. Data regarding this infection is sparse and comprises mainly of case reports. This study was carried out to review epidemiology, causative spectrum, clinical features, and treatment outcomes in patients with Phaeohyphomycosis.

Methods. We reviewed 20 cases of culture proven Phaeohyphomycosis over a 10-year period (2006–2016) at Christain Medical College, Vellore, South India.

Results. In our cohort, 16 of the 20 patients were male (80%) with an average age of 42 (range 17–66 years). Most of them (35%) were from Tamil Nadu, India and some from Bhuban and Nepal. Eighty-five percent presented with cutaneous lesions, 5% with involvement of the paranasal sinuses, and 5% each had organ involvement in brain and liver. Possible predisposing factors included type II diabetes mellitus (35%), renal transplantation (30%), long-term use of steroids (15%), and human immunodeficiency virus (5%). For all the patients, the direct microscopy and the culture positivity was 100%. The common species isolated were C. bantiana (5%). For all the patients, the direct microscopy and the culture positivity was 100%. The common species isolated were

Conclusion. Phaeohyphomycosis, though an uncommon infection, causes life-threatening disease in both the immunocompetent and immunocompromised hosts. To our knowledge, this is the largest single-centre retrospective study on Phaeohyphomycosis. Though our follow-up was sub-optimal and possible in only 50%, it was noteworthy that disease recurrence was common. Better understanding of this pathogenesis and newer antifungals are needed for optimal cure of this disease.

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181. Clinical Outcomes of the Oral Suspension vs Delayed-Release Tablet Formulations of Posaconazole for Prophylaxis of Invasive Fungal Infections
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Background. Posaconazole is effective prophylaxis for invasive fungal infections (IFI). We compared incidence of breakthrough IFI (bIFI) and early posaconazole discontinuation outcomes in patients receiving delayed-release tablet and oral suspension formulations.

Methods. This was a retrospective cohort study of patients receiving posaconazole at Oregon Health & Science University Hospital between 1/1/2010 and 6/30/2016. Oral suspension was the preferred formulation until 1/1/2014; afterwards the tablet was preferred. We included all courses of primary prophylaxis for each patient during the study period. Data were extracted from an electronic health record repository and via chart review. Three independent reviewers identified bIFI using European Organization for Research and Treatment of Cancer criteria. We assessed rationale for early discontinuation of posaconazole for patients that were still indicated for antifungal prophylaxis based on National Comprehensive Cancer Network (NCCN) criteria.

Results. 547 patients received 859 courses of posaconazole (53% oral suspension and 48% tablet). Prophylaxis was indicated according to NCCN criteria in 91% of courses. A total of 162 (19%) patients received empiric prophylaxis for acute myelogenous leukemia (68%), graft-vs-host disease (18%), and myelodysplastic syndrome (3%). There were no significant differences in demographics or indication between patients receiving the different formulations. The overall incidence rate of bIFI was 4.15/10,000 posaconazole-days (16 total bIFI events). Incidence of bIFI was not significantly different between patients receiving the different formulations (P = 0.92). Posaconazole was discontinued early in 147 (17%) courses; frequency of discontinuation was not significantly different between the tablet (20%) and oral suspension (15%) formulations (P = 0.10). The primary reasons for early discontinuation were high creatinine levels, positive fungal culture, or QT prolongation (25%), inability to take an oral formulation (17%), and drug cost (17%).

Conclusion. Among patients receiving posaconazole prophylaxis, incidence of bIFI was low and not significantly different between those receiving the tablet vs oral suspension formulations.

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182. Clinical Characteristics and Outcomes in Hospitalized Patients with Proven and Probable Coccidioidomycosis at the National Institute of Respiratory Diseases in Mexico City
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Background. Coccidioides spp. endemic dimorphic fungus is present in the north and south of Mexico. The Ministry of Health report in Mexico between 1988 and 1994 0.5 to 1.3 cases per 100,000 inhabitants. The clinical picture ranges from asymptomatic to disseminated disease. They should be classified according to the EORTC/MSG criteria in proven and probable disease, in Mexico there is no study about clinical characteristics and outcomes in hospitalized patients according to this classification.

Objective. Evaluate the clinical characteristics and outcomes in hospitalized patients with proven and probable coccidioidomycosis according to EORTC/MSG criteria.

Methods. The National Institute of Respiratory Diseases in Mexico City is the national referral center for complicated pulmonary infectious diseases. This retrospective cohort from 2010 to 2016 included proven and probable coccidioidomycosis hospitalized patients classified according to EORTC/MSG 2008 criteria. We collected data about clinical characteristics on admission and outcomes.

Results. Fifty-seven patients were evaluated, 26 proven and 31 probable, mean age 43 years. The proven group was associated with DM2 OR 2.8 (IC95% 1.1–7, P = 0.014) and hemoptysis OR 3.2 (IC95% 1.1–9, P = 0.013), the probable group with dyspnea OR 3.5 (IC95% 1.0–11, P = 0.034), high respiratory rate 27.2 ± 13 vs. 22 ± 3 (P = 0.05), and low O2 saturation 83.97% ± 11.1 vs. 91.8% ± 4.31 (P < 0.001). In the proven group, multiple cavities in CT scan were more frequent. The probable group had association with severe ARDS (P = 0.011), use of invasive mechanical ventilation (P = 0.025), and increase in mortality 14% vs. 1.8% OR 1.2 (IC95% 1.03–1.6, P = 0.025) with lower survival in Kaplan–Meier (P < 0.02). In the proven group, there was more disseminated disease (P < 0.001), HIV was associated with lower survival (P < 0.001) and they received more days of antifungal treatment 109.5 ± 127 vs. 59.8 ± 93 days. Amphotericin B was the most prescribed in both groups.
Conclusion. At present, we do not use the EORTC/MSG criteria due to lack of tests in our country, in this study the probable group referred usually from community centers had worse outcome and clinical characteristics, that is why we cannot underestimate this group of patients. We need to have better diagnostic tests in order to identify promptly these patients and avoid a late disease presentation.

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183. Do Liver Transplant Recipients Have a Higher Risk for Cryptococcosis Than Non-liver Transplant Recipients?  
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Background. Patients with liver cirrhosis have an increased risk for cryptococcosis. However, it is unknown whether they remain at a higher risk for cryptococcosis after liver transplantation.

Methods. Patients undergoing solid organ transplantation at a tertiary hospital in Taiwan were included for analysis. Cryptococcosis was defined based on criteria proposed by the European Organization for Research and Treatment in Cancer and the Mycoses Study Group. Only Nystatin oral suspension but no systemic anti-fungal agents was prescribed routinely post-transplant.

Results. From 2001 to 2016, in total, 1576 patients underwent solid organ transplantation, including 756 kidney, 411 liver, 336 heart, and 12 multi-organ transplantation. Cryptococcosis developed in 20 patients (1.3%), including cryptococcosis in 9, pulmonary/urine in 6, meningitis in 3, and surgical site infection in 2. Its incidence was 3.2% (13/411) in liver, 1.5% (5/336) in heart, and 0.3% (2/756) in kidney transplant recipients. Compared with 1165 non-liver transplant recipients, 441 liver transplant recipients had a significant higher incidence of cryptococcosis (3.1% vs. 0.01%, p < 0.01). We developed the disease a shorter duration after transplantation (75 vs. 213 days). Cryptococcosis with very early onset (<30 days after transplantation) developed in 38.5% (5/13) of liver transplant recipients with cryptococcosis, but only 14.3% (1/7) in non-liver transplant recipients. Six patients (30%) died after a median follow-up duration of 399 days, and only two deaths were related to cryptococcosis.

Conclusion. Our findings showed that liver transplant recipients still had a higher risk for cryptococcosis, and the disease developed earlier after transplantation than non-liver transplant recipients.

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184. Review of Treatment Regimens for Mucormycosis in a Las Vegas County Hospital Between 2013 and 2017  
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Background. Mucormycosis (MC) is a group of invasive fungal infections with a mortality rate approaching 100% in disseminated disease. The incidence of MC is low, with one study estimating 500 cases/year in the United States, making optimal treatment difficult to identify. Liposomal amphotericin B (L-ampho), along with aggressive surgical intervention, is the first-line treatment for MC. Isavuconazole (ISA) and posaconazole (POSA) are newer azoles used as salvage therapy in patients not improving with L-ampho. Limited data are available about the use of L-ampho in combination with ISA or POSA as an initial treatment regimen, but aggressive treatment empirically may increase favorable outcomes.

Methods. We performed a retrospective review of patients diagnosed with MC from 2013 to 2017 at University Medical Center of Southern Nevada in Las Vegas, Nevada. Data collected included patient demographics, comorbidities, and predisposing risk factors as well as treatment regimens. Patients were evaluated for outcome after treatment regimen including monotherapy (L-ampho, POSA or ISA) or combination therapy (L-ampho with ISA).

Results. From 2013 to 2017, seven cases of MC were identified – five rhinocerebral (RC), one cutaneous (CT), and one pulmonary (PM). The most common risk factor was uncontrolled diabetes (5/7), following by HIV (2/7) and non-Hodgkin lymphoma (1/7). Fifty-seven percent of patients received monotherapy and 43% received combination therapy (L-ampho/ISA). All the patients receiving combination therapy had RC. Seventy-one percent of patients survived to discharge regardless of treatment regimen. One hundred percent of combination therapy patients survived to discharge, whereas 50% of monotherapy patients survived to discharge. The two mortalities were patients with PM and CT MC.

Conclusion. MC is a rare infection with high mortality. For this reason, we are using ISA in combination with L-ampho as initial treatment to improve clinical outcomes. With our limited experience, combination therapy showed better rates of survival to discharge, without increasing adverse events. Our data suggest the use of combination therapy may improve outcomes in MC, but a larger sample of patients treated with initial combination therapy is required to strengthen conclusions about patient outcomes.

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185. The Trends in the Distribution of Candida species Causing Candidemia at a Community Hospital in 2005 and 2014  
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Background. Candida remains the most common cause of invasive fungal infections, with an attributable mortality of 15–35%. Although five Candida species (C. albicans, C. tropicalis, C. parapsilosis, C. glabrata, and C. krusei) account for 92% of cases of candidemia, Candida albicans remains the most common cause of candidemia. However, recent studies report that the frequency of non albicans species are increasing globally and the distribution of Candida spp. varies significantly among different geographic regions and hospitals units.

Objective. We determined the distribution of Candida species causing candidemia at an adult level 1 Trauma Center in Brooklyn, New York and compared the trends of Candida species between 2005 and 2014. The results were compared with trends of US data collected in 2004 and 2012. Knowledge of the frequency of causative species would facilitate appropriate selection of empiric antifungal therapy.

Methods. We performed a retrospective chart review of patients with candidemia who were admitted in 2005 and 2014. We determined the frequency of Candida species and compared 2005 data with those in 2014.

Results. In total, 226 and 109 patients with candidemia were admitted to our hospital in 2005 and 2014, respectively. Although, C. albicans was the most common species (43% of candidemia in 2005), its frequency decreased to 33% in 2014. The frequencies of C. glabrata and C. parapsilosis increased in 2014 compared with those in 2005 (24% vs. 16% and 33% vs. 26%, respectively). Figure 1 compared the proportion of Candida species in Maimonides Medical Center to National data.

Figure 1

Conclusion. Our finding of an increase in non-albicans spp. causing candidemia is consistent with published reports. We saw more cases of C. parapsilosis compared with published data. Our results may be used to inform empiric antifungal therapy.

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186. Epidemiology of Invasive Fungal Disease by Aspergillus in a University Hospital in Santiago – Chile, During the Period 2005–2015  
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