Histoplasmosis is considered uncommon in India, and the diagnosis usually depends on invasive tissue sampling. The histoplasma urinary antigen assay is a non-invasive test that has been recently introduced in India.

Methods. This was a single-centre retrospective study done from January 2013 till February 2018. Case records of patients with proven (confirmed by demonstrating intra-cellular yeast like organisms on histopathology or culture) and probable (presence of antigenuria—done by IMMY Alpha Histoplasma enzyme immunoassay) histoplasmosis were analysed.

Results. A total of 37 patients (18 proven and 19 probable) with mean age of 51.59 ± 11.17 years were studied. Diabetes was the most common co-morbidity (15 patients) followed by HIV (6), whereas no co-morbidity was found in 10 patients. Adrenals (29%), lungs (27%), lymph nodes (27%), and skin and oral mucosa (24.3%) were the most common organs involved (Figure 1). Anti-tubercular therapy based on granulomatous inflammation was given to 10 patients prior to the diagnosis. Raised GGTP and ALP (54%) and hyperglobulinemia (40%) were the common laboratory features. Most patients (83.7%) came from endemic areas (North-Eastern states, West Bengal, and Bangladesh) whereas all six cases from non-endemic areas were classified as probable (Figure 2). All-cause mortality rate was 10.8%, with 27 cases (72.9%) showing improvement at a median follow-up of 6 months. Comparison of proven and probable cases revealed that the following features were significantly higher in the probable group: female sex (P = 0.001), coming from nonendemic areas (P = 0.009), requiring in-patient care (P = 0.001), leucocytosis (P = 0.043), absence of skin and oral mucosal findings (P = 0.002), simultaneous alternate diagnosis (P = 0.039), and death (P = 0.039).

Conclusion. This study emphasizes that histoplasmosis is an under recognised entity belonging to nonendemic areas and lacking typical clinical features of histoplasmosis. Further studies are needed to determine the utility of the antigen test in Indian settings.

Figure 1. Distribution of involved organs.

Figure 2. Distribution of cases in the study across Indian states.

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397. Long-Term Mortality of HIV Patients Following Cryptococcal Infection
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Background. Prevalence of cryptococcosis in HIV-positive patients in the developed world has decreased considerably in the modern antiretroviral (ART) era. While early mortality of cryptococcal infection is lower than in non-HIV-infected patients, late mortality in HIV+ patients has not been previously evaluated. Here, we describe the presentation and outcomes of HIV+ patients with cryptococcosis.

Methods. We conducted a retrospective cohort study of patients with HIV infection and cryptococcosis from January 2002 to June 2017 at our institution. Data included demographics, clinical features, diagnostics, and outcomes. Death date was obtained from the hospital system's Medical Informatics database and the Social Security Death Index.

Results. We reviewed 105 HIV+ patients with cryptococcosis. At time of analysis: 55 were living (52.4%), 17 died within 90 days of cryptococcal diagnosis (early mortality, 16.2%), and 33 died after 90 days (late mortality, 31.4%) (Figure 1). Late mortality patients were more likely to have known HIV+ status at the time of cryptococcal diagnosis (97%) than living (70.9%) or early mortality (70.6%) (P = 0.03); less likely to be ART adherent (15.2%) than living (43.6%) or early mortality (35.3%) (P = 0.02); less likely to have private insurance (6.1%) than living (34.5%) or early mortality (37.6%) (P = 0.007); and more likely to have Medicaid (51.5%) than living (29.1%) or early mortality (17.6%) (P = 0.03). Presenting symptoms and diagnostics were similar between groups. Prevalence of substance abuse (48.6%) and psychiatric history (31.4%) were high in all groups but not significantly different.

Conclusion. Despite improvements in ART, HIV+ patients have high mortality following cryptococcal infection which persists beyond their initial hospitalization. Identifying patients at higher risk for mortality is critical for successful treatment and outcomes. In our study, nonadherence to ART was associated with a higher risk of dying. Follow-up studies of late mortality in other opportunistic infections would be beneficial.

Figure 1. Kaplan-Meier curve of 105 patients with HIV and cryptococcosis. Overall mortality of 47.6% at 5,000 days with 17 patients dying in first 90 days (16.2%) and 33 patients dying after 90 days (31.4%).

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398. Review of Mucormycosis Cases at the University of Colorado Hospital From 2012 to 2018 and Evaluation of Risk Factors and Appropriateness of Antifungal Prophylaxis
Jessica Lum, MD1 and Michelle Barron, MD2; 1Infectious Diseases, University of Colorado Hospital, Aurora, Colorado and 2Internal Medicine/Cancer/Mycosis Study Group (EORTC/MSG) criteria. Medical records were reviewed, and data were collected on risk factors, antifungal prophylaxis, and mortality outcome. Weather data were collected from the National Centers for Environmental Information (NCEI).

Results. Twenty-five cases of proven or probable mucormycosis were identified. On average patients had at least two risk factors associated with mucormycosis. The most common risk factors included diabetes mellitus (DM) (13 patients), hematologic...
malignancy or hematopoietic stem cell transplant (HSCT) (11 patients), use of immunosuppressing medications (11 patients), and invasive procedures (9 patients). At the time of diagnosis, only six patients were on an antifungal with mold activity. Eighty patients died during hospitalization. The distribution of cases over time was compared with weather data for Colorado. A cluster of cases occurred in 2013 (6 cases) and in 2017 (6 cases). A majority of cases were diagnosed during the summer and fall months with July being the month with the most number of cases. There were higher levels of precipitation that occurred prior to or during the cluster of cases.

Conclusion. Cases of mucormycosis at UCH were associated with DM, hematologic malignancy, and P. marneffei infection. The management of mucormycosis is difficult. We investigated the frequency and clinical characteristics of positive GM assay results in patients with mucormycosis.

Methods. Patients who met the modified criteria for proven or probable mucormycosis and had serum and/or bronchoalveolar lavage (BAL) fluid GM assay results were enrolled at a tertiary hospital from July 2009 to October 2017. Proven mucormycosis was defined as histologic evidence of tissue invasion of hyphae with positive mucormycosis immunohistochemistry (HIC) test result and the recovery of agents of mucormycosis (Mucor spp., Rhizopus spp., Apophysomyces spp., and Saksenaea spp., Abidia spp., Macrophominae spp.) by culture from sterile specimens. Probable mucormycosis was defined as histologic evidence of tissue invasion of hyphae with positive mucormycosis HIC test result with or without recovery of agents of mucormycosis by culture from nonsterile specimens.

Results. Among 50 patients of proven or probable mucormycosis, 20 (40%) patients were positive for serum and/or BAL fluid GM assay results; 13 of 20 (65.0%) were positive in serum, nine of 12 (75.0%) were positive in BAL fluid, and two of 12 (16.7%) were positive in both. There were more patients with gastrointestinal infections (4 of 20 [20%] vs. 0 of 30 [0%], P = 0.021) and diagnosed as histopathologically aspergillosis (6 of 20 [30%] vs. 1 of 30 [3%], P = 0.012) in GM positive group than GM negative group.

These results suggest that positive GM assay results are not uncommon in mucormycosis. GM assay results from the patients with mucormycosis appear to be related with gastrointestinal infections and histopathologic diagnosis of aspergillosis. Further studies are needed on the mechanism of positive GM results in patients with mucormycosis and possible confection with other fungi such as Aspergillus species in these patients.

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401. Pneumocystis jiroveci Pneumonia in Renal Transplant Recipients After a 6-Month Trimethoprim-Sulfamethoxazole Prophylaxis: A Case–Control Study

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Background. The incidence and risk factors for PCP in KT recipients with 6-month TMP-SMX prophylaxis. The aim of this study was to investigate the incidence and risk factors for PCP in KT recipients with 6-month TMP-SMX prophylaxis.

Methods. We performed a case–control study of adult patients diagnosed with PCP from January to 2015 in a tertiary care hospital. All patients received 6-month PCP prophylaxis with TMP-SMX after kidney transplantation (KT). If there were rejection episodes, PCP prophylaxis was provided for additional 3 months. During the study period, CMV viremia was not indication of PCP prophylaxis because the concern of the nephrotoxicity of TMP-SMX. We defined the classification of early or late-onset PCP as one year after transplantation.

Results. Among 3,941 kidney or pancreas-kidney transplant recipients, 67 (1.7%) patients developed PCP after the discontinuation of TMP-SMX prophylaxis. Among 3,941 patients who were transplant recipients from other hospitals (n = 14) and pancreas-kidney transplant recipients (n = 6) were excluded. Finally, 47 of KT PCP and 94 control patients were included. Of the 47 patients with PCP, 24 (51%) revealed early PCP while the remaining 23 (49%) exhibited late PCP. Duration of PCP prophylaxis was similar between case and control (median 6 months, respectively). In multivariate analysis, rejection, OR (3.9; 95% CI, 1.4–11.1) and cytomegalovirus infection (OR, 2.4; 95% CI, 1.0–5.8) were independently associated with the development PCP after TMP-SMX prophylaxis. Rejection or CMV viremia were observed in 70% of patients with PCP. Median time to development of PCP after rejection (median 6 months; IQR 1–19 months) was slightly shorter than that after CMV viremia (median 9 months; IQR 5–12 months), although this difference did not reach any statistical significance (P = 0.18).

Conclusion. Rejection and CMV viremia appear to be risk factors for the development of PCP after completing early transplantation period of prophylaxis. Our data suggest that at least 6–9 month prophylaxis for PCP may be needed for KTRs with rejection or CMV viremia.

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