Conclusion. Fungal culture is more clinically sensitive and specific than broad-range fungal PCR. The results from broad-range PCR are more likely to be positive when fungal organisms are seen in surgical pathology specimens; however, based on our number of cases, these results are not statistically significant. Larger studies are needed to identify optimal situations for the utilization of broad-range fungal PCR.

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2079. PCR-based Diagnosis of Mucormycosis Targeting Mucorales-specific Genes
Clara Baldin, PhD4; Sameh Soliman, PhD3; Heewon Jeon, BS1; Teclegiorgis Gebremariam, MS1; Sondus Alkhaazraj, PhD2; Vincent Bruno, PhD3; John Edwards, MD1, 4 and Ashraf Ibrahim, PhD2, 4, 5; Los Angeles Biomedical Research Institute at Harbor-UCLA Medical Center, Torrance, California; Department of Microbiology and Immunology, University of Maryland School of Medicine, Baltimore, MD, 3 David Geffen School of Medicine at UCLA, Los Angeles, California

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Background. Mucormycosis is a life-threatening infection caused by fungi in the order Mucorales. Among the basidiobolomycetes, Rhizomucor (R. delemar) and Rhizopus (R. oryzae) are responsible for 50-70% of all cases of mucormycosis, followed by Mucor spp and Lichtheimia spp. Standard treatment of mucormycosis involves surgical removal of infected tissue and antifungal therapy. However, the rapid progression of the disease and the current lack of early and reliable diagnostic assay contribute to the high mortality rates of 50%-100%.

Methods. We propose a PCR-based approach targeting the spore coating protein homolog encoding CotH genes. CotH genes are universally and uniquely present among Mucorales and they encode cell surface proteins that are required for mucormycosis pathogenesis. Bioreinformatic analyses were used to identify short consensus sequences present in CotH genes from different Mucorales to be used as PCR primers. Candidates were tested for the amplification of PCR-products from gDNA of different Mucorales. The sensitivity of selected primers was tested using biological samples spiked with different spore concentrations. Finally, the best candidate primers were used to detect the presence of pathogen DNA from biological samples taken from mice infected intratracheally with different Mucorales.

Results. Our best candidate primers could amplify the specific sequence from Rhizomucor, R. oryzae, M. circinelloides, L. corymbifera and Curvularia L. These primers had a sensitivity of detecting 10 spores into a spiked sample. The specificity for the unique CotH target enabled us to differentiate between Mucorales and closely related filamentous fungi, e.g., Aspergillus fumigatus. Genomic DNA extraction was successful from all considered biological samples; remarkably, infection was successfully detected from biological samples taken from mice infected with different Mucorales as early as 24 hours post infection.

Conclusion. We have successfully developed a simple PCR-based approach which is fast, reliable and sensitive enough to detect Mucorales gDNA in murine biological samples as early as 1 day post infection. We hope this approach will allow a better differentiation between Mucorales species and other closely related filamentous fungi.

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2080. Invasive Candidiasis in Pediatric Patients at King Fahad Medical City in Riyadh, Saudi Arabia: A 5-year Retrospective Study
Zainah Almoosa, post doctoral; Pediatrics, king abdulaziz hospital, hofuf, Saudi Arabia

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Background. Invasive candidiasis in children is associated with high morbidity and mortality. We aim to identify predisposing factors, species distribution, antifungal susceptibility, and outcomes among patients with candidemia.

Methods. A data collection form composed of seven sections including 51 questions was designed to gather demographic and clinical information. We collected data from all 129 patients with invasive candidiasis from January 2010 to January 2015.

Results. The 129 patients had the following risk factors: 34 (23.26%) were premature, 34 (26.36%) had low birth weight, 59 (45.74%) had a central venous catheter, 28 (21.53%) had a malignancy, 24 (18.55%) received immunotherapy, and 56 (43.41%) received ventilator support. A multivariate analysis revealed a more than two-fold mortality rate in patients who had a venous catheter (OR 2.9), and patients who had Candida isolated from their blood were more than twice as likely to die as patient with Candida isolated from other sites (OR 2.2). A total of 48.33% of patients on ventilator support died, and 26.09% of patients who were not on ventilator support died (P = 0.009); 43.75% of patients in the intensive care unit (ICU) died vs. only 24.49% of patients who were not in the ICU (P = 0.03). C. parapsilosis exhibited the highest mortality rate among all Candida species (56.2%).

Conclusion. The study revealed that C. albicans was the most common isolate among all Candida species. Mechanical ventilation and an ICU stay were significant risk factors for death in children with invasive candidiasis.

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2081. Does a Negative Rapid Diagnostic Test for Detection of Candida Bloodstream Infection Lead to Less Antifungal Use?
Tanaya Bhowmick, MD1; Rashi Sharma, MD2; Melvin Weinstein, MD3

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Background. We hypothesized that a negative rapid diagnostic test for detection of Candida bloodstream infection (Candida RDT) would lead to less antifungal use.

Methods. This was a retrospective cohort study performed at a 400-bed academic medical center in Southern California between November 2013 and July 2016. We identified all patients with a positive blood culture for Candida within 1 week of initiating antifungal therapy. After excluding patients with fungemia from operations or infections, patients with the following risk factors were included: neutropenia, immunocompromise, or a central venous catheter. The following information was collected: patient age, gender, site of Candida, prior antifungal therapy, and mortality. Multivariate analysis was performed to determine predictors of antifungal use.

Results. 53% (11/21) of patients with a negative Candida RDT received antifungal therapy vs. 80% (10/13) of patients with a positive Candida RDT (P = 0.10). A negative RDT was associated with a prolonged length of stay (22 days vs. 14 days; P = 0.03), but not mortality (6% vs. 0%, respectively).

Conclusion. A negative Candida RDT did not predict less antifungal use, and was associated with a prolonged length of stay. Further investigation is needed to determine other factors that influence antifungal use.

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