276. Detection of Rhizopus oryzae-Specific Antigen (RSA) in Serum and Bronchial Alveolar Lavage Is a Potential Early Diagnostic Marker in Mucormycosis by R. oryzae

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Session: 40. Fungal Diagnostics
Thursday, October 3, 2019: 12:15 PM

Background. The diagnosis of mucormycosis was made by the identification of an organism in the histopathology with culture confirmation. However, culture often yields no growth, and histopathological identification of organism with typical of mucorales is sometimes difficult. Therefore, a reliable new diagnostic tool is expected. We reported a novel Rhisopus-specific antigen (23kDa, named protein RSA) by screening with a signal sequence trap was detected at significantly higher concentrations in serum and in lung homogenates in the infected mice on day 4. And the results were suggested RSA was a possible diagnostic marker of mucormycosis (Sato K, et al. Medical Mycology, 2017, 55,713–719). Here, we examined whether the RSA was detected on early stage in sera and bronchial alveolar lavage (BAL) of infected mice.

Methods. We developed the ELISA Kit using monoclonal antibody for RSA. The mice were injected with cortisone acetate and cyclophosphamide, and *R. oryzae* was infected intratracheally. Mice sera and BAL was obtained from infected mice on day 1, 2, 3, and 4. Then the concentration of RSA in sera and BAL was evaluated using the ELISA Kit for RSA.

Results. The RSA was detected in sera and BAL on day 1, 2, 3, and 4. The concentration of RSA in sera and BAL were significantly higher on day 1 as compared with uninfected mice. And the concentration of RSA in sera was the upward trend through day 1 to 4. However, the concentration of RSA in BAL was stable through day 1 to 4.

Conclusion. The RSA is a potential early diagnostic marker in mucormycosis by *R. oryzae*.

Disclosures. **All authors:** No reported disclosures.

277. Identification and Antifungal Susceptibility of Candida Species Isolated from Bloodstream Infections Over a 14-Year Period

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Session: 40. Fungal Diagnostics
Thursday, October 3, 2019: 12:15 PM

Background. Invasive infections caused by *Candida* species are associated with significant morbidity and mortality. Historically, *C. albicans* has been the predominant species recovered from patients with candidemia. However, the changing epidemiology of invasive candidiasis now includes more non-*C. albicans* species, which may exhibit intrinsic resistance or reduced susceptibility to antifungal agents used for therapeutic intervention. We sought to evaluate the epidemiology and susceptibility of invasive *Candida* ssp. isolates causing bloodstream infections at the NIH Clinical Center over a 14 year period.

Methods. *Candida* spp. isolates causing bloodstream infections between 2004 and 2018 were identified. Retrospective chart review was performed for infected patients in accordance with the IRB. All *Candida* isolates were recovered from frozen storage by plating onto Sabouraud Dextrose Agar, and isolate identities were confirmed by MALDI-TOF MS. Antifungal susceptibility testing was performed by broth microdilution and MICs were interpreted using current CLSI criteria.

Results. Between 2004–2018, we identified 98 unique clinical isolates from 77 patients with candidemia. Records from 75 of these patients were able to be reviewed, and the 30-day and 90-day mortalities were 24% and 52%, respectively. The average age at the time of culture positivity was 41.3 years (range 6.5 to 76.9 years). Thirty-one of the patients were female and 44 were male. *C. albicans* only constituted 18% of isolates (N = 18) and was the third-most prevalent *Candida* species identified behind *C. parapsilosis* (28%, N = 27) and *C. glabrata* (23%, N = 23), and followed by *C. tropicalis* (8%, N = 8) and *C. krusei* (6%, N = 6). As expected, fluconazole resistance was prevalent among *C. glabrata* (70%, N = 16) and *C. krusei* (100%, N = 6); however, a sizable proportion of *C. parapsilosis* (11%, N = 3), *C. tropicalis* (63%, N = 5) and *C. albicans* (22%, N = 4) strains also exhibited fluconazole resistance.

Conclusion. Our findings illustrate a high prevalence of non-*C. albicans Candida* spp. as the causative agents of bloodstream infections among patients at our institution. The clinical risk factors associated with the development of candidemia and azole resistance, as well as the molecular mechanisms of antifungal resistance are under investigation.

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278. CNS Blastomycosis: A Descriptive Analysis and Review of Diagnosis and Treatment

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Thursday, October 3, 2019: 12:15 PM

Background. *Blastomycosis* is a systemic infection, well known to regions of the Southeastern and Ohio River Basin in the United States. Inhalation of the dimorphic fungus most often causes pulmonary manifestations. Hematogenous dissemination can affect various organs in immunocompromised hosts. Central Nervous System (CNS) involvement is a rare manifestation of *Blastomycosis* infection, accounting for 5%–10% of extrapulmonary involvement. It is important to diagnosis early and treat due to the increased morbidity in high-risk patients.

Methods. Our study retrospectively reviewed cases from a Tertiary Care Facility in East Tennessee from 2011 to 2018 with the diagnosis of CNS Blastomycosis. Data collection included demographics, risk factors, varied clinical presentation, methods of diagnosis, treatment plans and outcomes.

Results. Total of 8 CNS *Blastomycosis* cases were identified. Detailed demographics are presented in Table 1. The average age was 52 years, 7 (87.5%) were male. 6 (75%) were classified as immunocompromised. 6 of the 8 cases were tested for HIV, all of which were negative. MRI brain imaging was utilized in 7 (87.5%) cases, which demonstrated lesion enhancements, Table 2 and Images 1 and 2. CSF was collected in 6 (75%) patients. 5 patients (62%) presented with neurological complaints. All patients received Liposomal Amphotericin B (LAmpB), followed by a prolonged course of azoles. 5 (62%) developed acute renal insufficiency after starting Amphotericin B. 2 (25%) died.

Conclusion. CNS *Blastomycosis* is a rare diagnosis with increased morbidity and mortality. Obtaining brain imaging in addition to lumbar puncture can help in timely diagnosis of CNS *Blastomycosis*. Treatment involves lipid formulation of Amphotericin B followed by oral azole therapy, preferably voriconazole. Renal insufficiency was a common finding after this treatment. A high level of suspicion is crucial for recognition of CNS *Blastomycosis* in endemic regions of the Southeastern and Ohio River Basin.

Table 1. Characteristics of 8 Patients with CNS Blastomycosis

Characteristics	Pt with CNS Blastomycosis (n=8)
Age, Median years (range)	52 (41-61)
Sex	
Male	7 (87.5)
Female	1 (12.5)
Immunocompromised State	
Any [1]	2 (25)
Diabetes Mellitus Type II	1 (12.5)
Solid Organ Transplant [2]	1 (12.5)
HIV/AIDS	0
Tobacco abuse	5 (62.5)
Alcohol abuse	1 (12.5)
Hepatitis C	1 (12.5)
Autoimmune Disease [3]	1 (12.5)

1. patient had >1 of the conditions
2. Liver Transplant
3. Autoimmune Disease included antiparietal +, RF +

Table 2. Characteristics of Patients with CNS Blastomycosis

Patient	Neurological Complaint	MRI Findings	CSF WBC	CSF Protein	CSF Glucose	AKI (Cr)	Fungal study	Therapy	Death
1	Headache	No enhancement	0	27	74	No	Cutaneous biopsy pathology positive	LAmpB	No
2	Headache, Confusion	Hemi foci of Left Temporal Occipital	0	55	165	ESRD	Negative	LAmpB; Itraconazole	No
3	SOB	NO MRI	26	35	83	2.68	Positive BAL culture	LAmpB; Voriconazole followed by Itraconazole	No
4	None	frontal and parietal enhancement	N/A	N/A	N/A	1.75	Cutaneous biopsy pathology positive	LAmphB; Voriconazole	No
5	Weakness, Vision changes	Pons/cerebellar enhancement	11	49	84	1.83	Negative	LAmphB; Voriconazole	No
6	Headache	Frontotemporal lesion 13mm	N/A	N/A	N/A	2.1	N/A	LAmphB; Fluconazole	No
7	Weakness	Meningeal and intra-parenchymal enhancing lesions, leptomeningeal enhancement	83	186	18	No	Negative	None	YES
8	Confusion	R infarct, hyperintensities on FLARE	2	21	111	3.84	Negative	None	YES

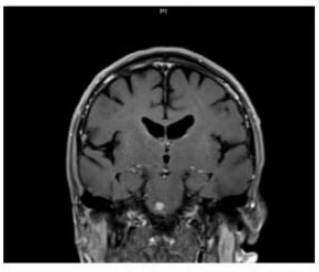

Image 1. Demonstrating a Right Cerebellar Peduncle Lesion

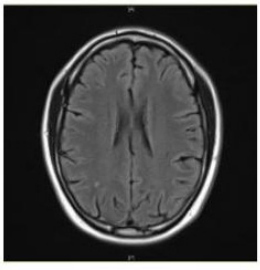

Image 2. Lesion affecting the Right Parietal lobe

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