709. Risk Factors for *Candida auris* Candidemia: Results from a Multicenter Case-Control Study

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Background. The emergence of *Candida auris* as a global pathogen has been described as a serious global threat by the CDC. It has caused outbreaks in healthcare settings as it is transmissible between patients. The risk factors for candidemia caused by *C. auris* may be different than candidemia caused by other *Candida spp*.

Methods. We performed a multicenter, retrospective case-control study at three hospitals in Brooklyn, New York between 2016 and 2020. Patients with at least one positive blood culture for *Candida spp* who were started empirically on an antifungal within 24 hours of blood culture positivity were included in the study. Subsequent cases in the same patient were excluded unless separated by at least 90 days from the initial case. Similar variables such as antibiotics and antifungals within the same drug class were compressed into one variable. Variables with a p-value ≤ 0.05 on univariate analysis were entered into a multivariable analysis with a p-value ≤ 0.05 considered to be statistically significant.

Results. 84 cases of *C. auris* candidemia and 105 cases of candidemia caused by other *Candida spp* were included in the analysis. The most common species of other *Candida spp* was *C. glabrata* (N=33, 31.7%) followed by *C. albicans* (N=32, 30.4%). In the multivariable model, the strongest risk factor for *C. auris* candidemia was prior infection or colonization with *C. auris* (aOR 17.5; 95% CI, 1.60-192.93; P = 0.019) followed by prior infection or colonization with multidrug-resistant bacteria (aOR 6.97; 95% CI 1.49-32.74, P = 0.014). A history of peripheral vascular disease (PVD) (aOR 7.78; 95% CI 1.34-45.34, P = 0.023), cerebrovascular disease (CVA) (aOR 4.24; 95% CI 1.18-15.20, P = 0.027) and hemiplegia (aOR 6.43; 95% CI 1.19-34.85, P = 0.031) were also statistically significant. These risk factors remained significant analyzing only patients without any history of *C. auris*.

Conclusion. These data suggest that in hospitalized patients with candidemia, a history of colonization or infection with *C. auris*, prior infection or colonization with multidrug-resistant bacteria, as well as a history of PVD, CVA, and hemiplegia are associated with *C. auris* candidemia.

Disclosures. **Samuel Simon, PharmD**, **Accelerate Diagnostics** (Employee)

710. Comparison of Initial CXR to CT in Patients (pts) with Hematologic Malignancy (HEM) and Documented Symptomatic Pulmonary Mucormycosis (PM)

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Background. There is a spectrum of pulmonary disease burden in pts with HEM and PM. There have not been any data comparing the sensitivity and findings of initial Chest X-Ray (CXR) and chest CT in these pts.

Methods. We compared the findings of the initial CXR and CT in all pts with proven or probable PM via EORTC/MSG criteria. We included only pts who had pulmonary symptoms and who had both CXR and CT within 5 days of each other and within seven days of symptom onset or date of culture at MD Anderson Cancer Center from April 2000 and April 2020. We collected data regarding demographics, status of HEM, clinical presentation, frequency and findings of BAL and imaging findings, mold-active prophylaxis and treatment regimens, and mortality. CXR findings were classified as normal or abnormal, and if abnormal sub-classified as mass-like/consolidative, nodular, cavitary or heterogenous/non-specific. CT findings were classified in a similar manner.

Results. We Identified such 39 pts with PM who had both CXR and CT within 5 d. All pts had positive CT. Five pts (13%) had a negative CXR. The majority of pts 28 (72%) were neutropenic (neutrophil count < 500). The most common CXR findings were consolidation or mass-like lesions (56%), followed by patchy, heterogenous or non-specific findings (33%) and nodules (13%). Only 3% had cavitary lesions. Similarly, consolidation or mass-like lesions were the most common finding on CT (69%), followed by nodular lesions with or without ground glass halos (56%). Cavitary lesions and/or reverse halo sign (RHS) were common (31%) on CT. Patients with normal CXR vs those with abnormal CXR were comparable in all clinical parameters we collected. The median survival from time of symptoms onset for all pts was 45 days. There was a trend for lower 42 day mortality in pts with normal CXR (20% vs 47%, P=.253).

Table 1. Imaging Findings in Patients with Invasive Pulmonary Mucorales

CXR Findings	CXR Findings N (%)	CT Findings N (%)
Consolidation	22 (56%)	27 (69%)
Nodular Lesion(s) w/ or w/o Ground Glass Halos	5 (13%)	22 (56%)
Cavitary lesion on CXR, Nodular or Consolidative Lesion(s) w/ Reverse Halo Sign or Cavitation on CT	1 (3%)	12 (31%)
Patchy, Heterogeneous or Non-Specific Findings on CXR or Ground Glass opacities on CT	13 (33%)	13 (33%)

Conclusion. A negative CXR does not preclude PM, especially in neutropenic pts. A CT is recommended for better sensitivity and although there was concordance in CXR with CT findings in some chest abnormalities (mass, consolidation), CT more commonly revealed nodules and signs highly suggestive of PM such as RHS. Although small numbers precluded a robust comparison, it is possible that HEM pts with PM and negative initial CXR have better prognosis, perhaps reflecting a lower burden of pulmonary involvement

Disclosures. **Dimitrios P. Kontoyiannis, MD**, **Astellas** (Consultant)**Cidara Therapeutics** (Advisor or Review Panel member)**Gilead Sciences** (Consultant, Grant/Research Support, Other Financial or Material Support, Honoraria)

711. A Unique Breath Secondary Metabolite Volatile Signature for the Diagnosis of Histoplasmosis

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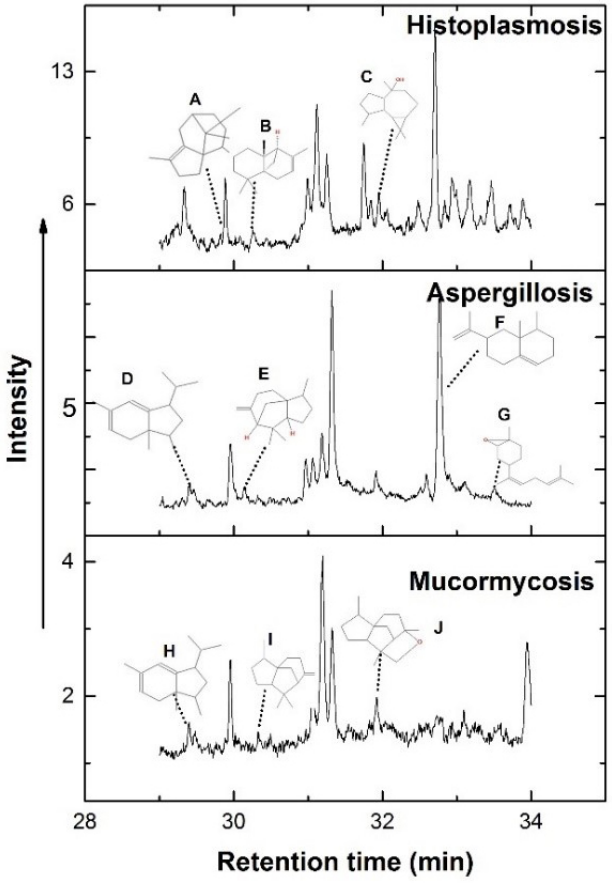
Background. Histoplasmosis is a common endemic fungal infection in the Americas, causing significant morbidity and mortality, particularly in immunocompromised patients. Existing diagnostic methods are limited in their sensitivity (especially in pulmonary histoplasmosis) and turnaround time.

Methods. We examined prospectively collected breath samples from 84 patients with suspected histoplasmosis 3/2019 - 2/2020 at Hospital Roosevelt (HR; Guatemala City, Guatemala, n = 56) and suspected invasive fungal disease 1/2018 - 10/2019 at Brigham and Women's Hospital (BWH; Boston, MA, USA, n = 28) using thermal desorption gas chromatography-tandem mass spectrometry (TDU-GC-MS/MS). Patients were evaluated for histoplasmosis and other infections according to the local standard of care – of note, 18/56 patients at HR did not have *Histoplasma* urine antigen testing.

Results. Median age was 44 years, 60 (71%) were male, 23 (27%) had HIV, 15 (18%) had hematologic malignancy. 7 patients were diagnosed with histoplasmosis over the study period (4 at HR, 5 at BWH), with a clinical syndrome + positive *Histoplasma* urine or serum antigen test, with some patients also having yeast forms on tissue biopsy. 3 patients had disseminated and 4 pulmonary histoplasmosis. 4 patients with histoplasmosis had co-infections – 2 tuberculosis (TB), 1 influenza, and 1 *Pneumocystis jirovecii* (PJP) pneumonia. 4 patients were receiving antifungal therapy active against *Histoplasma* at the time of their first breath sample. We found 3 sesquiterpenes: (A) cyperene, (B) 1R,4aR,8aR)-2,5,5,8a-Tetramethyl-4,5,6,7,8,8a-hexahydro-1H-1,4a-methanonaphthalene, and (C) viridiflorol in patients with histoplasmosis, that distinguished these patients from those with other pneumonia (TB, coccidioidomycosis, invasive aspergillosis, mucormycosis, PJP, bacterial pneumonia) with 100% sensitivity and 70% (95% CI 59, 80) specificity.

Figure 1. TDU GC-MS/MS spectral comparison in histoplasmosis vs. the other invasive mycoses aspergillosis or mucormycosis. A: Cyperene; B: (1R,4aR,8aR)-2,5,5,8a Tetramethyl-4,5,6,7,8,8a-hexahydro-1H-1,4a-methanonaphthalene; C: viridiflorol; D: 1H-Indene, 2,3,3a,4-tetrahydro-3,3a,6-trimethyl-1-(1-methylethyl)-; E: β-funebrene; F: trans-α-bergamotene; G: eremophilene; H: spathulenol; I: cedrene; J: cedranoxide, 8,14-



Conclusion. **Conclusion:** Patients with histoplasmosis have a unique secondary metabolite breath signature that can be used for the noninvasive diagnosis of pulmonary and disseminated histoplasmosis. Many patients in this cohort did not undergo urine antigen testing or other diagnostic workup for histoplasmosis, which may have affected our specificity estimates.

Disclosures. **Francisco M. Marty, MD**, **SCYNEXIS, Inc.** (Scientific Research Study Investigator)

712. Neurocysticercosis at a Large Academic Center in the USA

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Session: P-34. Eukaryotic Diagnostics

Background. Neurocysticercosis (NCC) is a parasitic infection that results from the ingestion of eggs from the adult tapeworm Taenia solium that develops when cysticercoids migrate into the central nervous system. In addition, this infection has been found to affect over 50 million individuals worldwide. In the United States, NCC mainly affects immigrants from Latin America, where the disease is endemic with seroprevalence rates ranging from 5% to 11%. Most data regarding NCC in the United States comes from hospital reports from California and Texas. We are undertaking this study to determine the differences seen in a higher Latin American and Haitian population compared to a previously seen predominantly Mexican population. In this retrospective review, we characterized the population diagnosed with NCC at one large tertiary medical center in South Florida, University of Miami Hospital.

Methods. This retrospective chart review included adult patients from January 2009 to December 2019 with the admission or discharge diagnosis of neurocysticercosis (ICD 10 Code B 69.0 Neurocysticercosis and CPT code 86682 Cysticercosis). We extracted data on demographics, clinical symptoms, recurrence, treatment, resolution and follow up.

Results. Forty-seven patients were analyzed to completion. Most of the cases were seen in Hispanics 72.3 % and from Central America 40.4%. The most common symptom was headache 53.2% followed by seizures 42.6%. Normal physical exam was noted in 93.6% of the cases. Most of the cases have 1-10 lesions (98%), located in the brain parenchyma (75%). Serum serology, CSF antibody or stool studies were not obtained in around 90% of the cases. Treatment was indicated in 70.2% of cases and recurrence was low at 17.0%. Refer to Tables 1-5 for full results.

Figure 1. Demographics and Clinical Symptoms

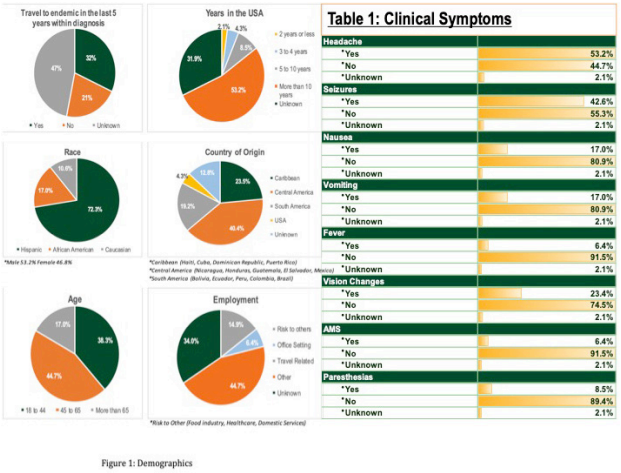

Table 1: Clinical Symptoms

Headache	
*Yes	53.2%
*No	44.7%
*Unknown	2.1%
Seizures	
*Yes	42.6%
*No	55.3%
*Unknown	2.1%
Nausea	
*Yes	17.0%
*No	80.9%
*Unknown	2.1%
Vomiting	
*Yes	17.0%
*No	80.9%
*Unknown	2.1%
Fever	
*Yes	6.4%
*No	91.5%
*Unknown	2.1%
Vision Changes	
*Yes	23.4%
*No	74.5%
*Unknown	2.1%
AMS	
*Yes	6.4%
*No	91.5%
*Unknown	2.1%
Paresthesias	
*Yes	8.5%
*No	89.4%
*Unknown	2.1%

Figure 2. History and Imaging

Table 2: History and Physical Exam

Medical History	
*Seizures	28.6%
*Prior Infection	12.5%
*Uncooked Pork	7.1%
*Other	50.9%
*No history	1.8%
Family History	
*History of NCC	0.0%
*Other	80.9%
*None	2.1%
*Unknown	17.0%
Physical Exam	
*Hemiparesis	4.3%
*AMS	0.0%
*Normal	93.6%
*Unknown	2.1%

Table 3: Imaging Characteristics

CT brain	
*Yes	61.7%
*No	38.3%
MRI spine	
*Yes	12.8%
*No	87.2%
MRI brain	
*Yes	89.4%
*No	10.6%
Location	
*Brain Parenchyma	75.0%
*Cerebellar	3.8%
*Spine	1.9%
*CNS ventricles	15.4%
*Subarachnoid	0.0%
*Ocular	0.0%
*Other	0.0%
*Unknown	3.8%
Number of Lesions	
*1 lesion	44.7%
*2- 10 lesions	46.8%
*More than 10 lesions	0.0%
*Racemose lesion	2.1%
Character of Lesion	
*Calcified Cyst	59.6%
*Non Calcified Cyst	12.8%
*Racemose	2.1%
*Other	19.1%
*Unknown	6.4%