the risk of non-albicans candida infections can be higher with the use of azoles; however, further studies are recommended.

Disclosures: **All Authors**: No reported disclosures

744. Clinical Performance of Real-time PCR in the Diagnosis of Pneumocystis jirovecii Pneumonia compared with Immunofluorescence Assay

Cristina Veintimilla, n/a[1]; Ana Alvarez-Uria, n/a[1]; Pablo Martin-Rabadan, n/a[1]; Luis Alcala, n/a[1]; Patricia Muñoz, n/a[2]; Mercedes Marin, n/a[1]; [1]Hospital General Universitario Gregorio Marañon, MADRID, Madrid, Spain; [2]Hospital General Universitario Gregorio Marañón. Clinical Microbiology and Infectious Diseases Department, Madrid, Spain, Madrid, Madrid, Spain

Session: P-30. Eukaryotic Diagnostics

Background: The laboratory diagnosis of *Pneumocystis jirovecii* pneumonia (PJP) has been traditionally based on microscopy techniques, which have suboptimal sensitivity and depends on the experience and skills of the microbiologist. Molecular detection assays based in PCR (Polymerase chain reaction) could improve sensitivity.

Our aim was to evaluate the utility of real-time PCR in the diagnosis of PJP compared with IFA (Immunofluorescence assay) performed in different respiratory samples of patients with PJP suspicion for routine use in a clinical laboratory setting.

Methods: From September 2015 to April 2018, we studied by a real-time PCR targeting the large subunit of rRNA gene of *P. jirovecii* (PJ-PCR RealCycler PJIR kit Progenie Molecular) and Immunofluorescence assay (MONOFLUO *P. carinii* IFA BioRad) in all respiratory samples received for microbiological diagnosis of PJP. The definite clinical diagnosis of PJP was established by infectious disease physicians considering symptoms, radiological and laboratory findings.

Results: Overall, 302 samples were included (182 bronchoalveolar lavage, 67 sputum, 53 tracheal aspirates). PJ-PCR was positive in 51 (16.9%) and IFA in 11 (3.6%) of the patients with PJP. There were not IFA positive/PCR negative samples. Sensitivity, specificity, PPV and NPV for IFA were 26% (95%CI 15.9-39.6%), 100% (95%CI 98.5-100%), 100% (95% CI 77.2-100%) and 87.2% (95% CI 82.6-90.6%). Whereas, sensitivity, specificity, PPV and NPV for PCR was 92% (95%CI 81.2-96.8%), 98% (95% CI 95.4-99.2%), 90.2% (95% CI 79.0-95.7%) and 98.4% (95% CI 96.0-99.4%).

PJ-PCR had sensitivity > 80% and specificity > 90% in all type of samples included.

A definitive diagnosis of PJP was considered in 50 (16.6%) patients, including 4 (1.3%) cases with negative PJ-PCR. Five cases (9.8%) with positive PJ-PCR were considered as colonization.

Conclusion: *P. jirovecii* PCR improves the sensitivity and NPV of PJP diagnosis respecting to IFA, regardless of respiratory sample type. Our results suggest that Microbiology laboratories should use PCR techniques to diagnose PJP better than IFA.

Disclosures: **All Authors**: No reported disclosures

745. Combination Treatment of Liposomal Amphotericin B and Isavuconazole is Synergistic in Treating Experimental Mucormycosis

Teclegiorgis Gebremariam, MS[1]; Yiyou Gu, PhD[1]; Shakti Singh, PhD[1]; Therese Kitt, MD[2]; Ashraf S. Ibrahim, PhD[3]; [1]The Lundquist Institute, Torrance, California; [2]Astellas Pharma, Northbrook, Illinois; [3]David Geffen School of Medicine, Torrance, California

Session: P-30. Eukaryotic Diagnostics

Background: Mucormycosis is a life-threatening infection that predominantly occurs in immunocompromised hosts. Liposomal amphotericin B (L-AMB) and isavuconazole (ISAV) are commonly used antifungal drugs to treat mucormycosis. However, the efficacy of combination therapy of L-AMB + ISAV compared to monotherapy is unknown. We used an immunosuppressed mouse model of pulmonary mucormycosis to compare the efficacy of L-AMB + ISAV vs. either drug alone.

Methods: ICR mice were immunosuppressed with cyclophosphamide (200 mg/kg) and cortisone acetate (500 mg/kg) on Days -2, +3, and +8 relative to intratracheal infection with 2.5 x 10^5 cells of *Rhizopus delemar* 99-880, or 2.5 x 10^6 cells of *Mucor circinelloides*. Treatment with L-AMB (10 mg/kg, given intravenously qd), ISAV (56 mg/kg, by oral gavage TID), or a combination of both started 8 h post-infection and continued through day +4. Placebo mice received vehicle control. Survival studies through day +21 and tissue fungal burden (by conidial equivalent [CE] using qPCR) on Day +4, served as primary and secondary endpoints.

Results: For mice (n=20) infected with *R. delemar*, L-AMB and ISAV equally prolonged median survival time and enhanced survival vs. placebo (19 and 16 days for L-AMB and ISAV, respectively, and overall survival of 50% for either drug alone, vs. 9 days and 5% overall survival for placebo, P< 0.002 for either drug vs. placebo by Log Rank test). Importantly, combination treatment enhanced median survival time (>21 days) and resulted in an overall survival of 80% (P< 0.05 vs. all treatments). Both antifungal drugs reduced tissue fungal burden of mice (n=10) lungs and brain by ~1.0-2.0 log vs. placebo-treated mice (P< 0.02 by Wilcoxon Rank Sum). Consistent with the survival data, treatment with combination therapy resulted in 2.0-3.5 log reduction in fungal burden of either organ vs. placebo and 1.0 log reduction vs. either drug alone (P< 0.005). Similar results were obtained using mice infected with *M. circinelloides*.

Conclusion: L-AMB + ISAV demonstrate greater activity vs. monotherapy treatment in immunosuppressed mice infected with either of two common causes of mucormycosis. These studies warrant further investigation of LAmB + ISAV combination therapy as an optimal therapy of human mucormycosis.

Disclosures: Therese Kitt, MD, Astellas Pharma (Employee) Ashraf S. Ibrahim, PhD, Astellas Pharma (Research Grant or Support)

746. Comparing Hospital Course in Hospitalized Patients Infected with Babesiosis Versus Patients Coinfected with Lyme Disease and Babesiosis

Rachel Spector, BS[1]; Michael D. Lum, MD[2]; Aikaterini Papamanoli, MD[2]; Kelsey Reardon, MPH[2]; Evan Garry, n/a[1]; Luis Marcos, MD, MPH[3]; [1]Renaissance School of Medicine, Merrick, New York [2]Stony Brook University Hospital, Holbrook, New York [3]Stony Brook University, Stony Brook, New York

Session: P-30. Eukaryotic Diagnostics

Background: Research is currently lacking on the interplay between Babesiosis and Lyme disease (LD) and how this coinfection may translate into morbidity and mortality. The aim of this study is to compare the clinical features of patients with single-infection with *Babesia microti* to those co-infected with *Borrelia burgdorferi* and *Babesia microti*.

Methods: A retrospective review of all adult patients diagnosed with babesiosis and tested for LD at Stony Brook University Hospital between 2014 and 2019 was performed (n=40). Patients with single babesia infection (Group 1, n=22) were compared to those with Babesia and LD (Group 2, n=18). Babesiosis diagnosis was determined by microscopic visualization of Babesia spp under peripheral blood smear, and confirmed by PCR for *B. microti*. LD inclusion criteria included a positive screened ELISA test for lyme followed by positive IgM antibody by western blot per CDC criteria (2-3 positive bands). Statistical analysis of the data involved Fisher exact test, Chi-square test, independent t-test, and Wilcoxon rank sum tests. Statistical significance was considered as a p-value less than 0.05.

Results: There was no significant difference in gender, race, and age (p >.75) between both groups as well as comorbidities including hypertension, diabetes, heart conditions, and immunocompromised state (p=1.0). Maximum parasitemia (Group 1: 1.1%, Group 2: 1.7%, p= 0.26) and percentage admitted to the ICU (Group 1: 18.18%, Group 2: 22.22%, p=1.0) were similar among both groups. While lab values on admission including WBC, hemoglobin, platelets, LDH, ALT, and AST did not significantly differ (p >.09), the length of hospital stay in group 2 was significantly longer than group 1 (Group 1: 3.0 days, Group 2: 5.5 days; p=0.03). There was a 0% mortality rate among both groups.

Table 2: Biomarkers of Patients Monoinfected with Babesiosis Versus Patients Coinfected with Babesiosis and Lyme Disease.

N= 40 **Only those Tested for Lyme	Infection		
	Babesiosis Monoinfection (n=22)	Babesiosis and Lyme Disease Coinfection (n=18)	P-value
Hemoglobin (g/dL)			
Median (IQR)	11.9 (2.5)	11.6 (3.7)	0.1571
WBC (K/uL)			
Median (IQR)	5.6 (3.6)	6.1 (2.5)	0.6537
Platelets (K/uL)			
Median (IQR)	105.5 (74.5)	64.0 (36.0)	0.0935
Creatinine (mg/dL)			
Median (IQR)	0.87 (0.26)	0.89 (0.20)	0.6931
GFR (mL/min)			
Median (IQR)	90.5 (32.0)	82.0 (35.0)	0.2821
ALT (U/L)			
Median (IQR)	42.5 (31.0)	36.0 (29.0)	0.6438
AST (U/L)			
Median (IQR)	47.5 (46.0)	46.5 (41.0)	0.4068
T-billi (mg/dL)			
Median (IQR)	1.6 (0.90)	1.3 (1.6)	0.7542
D-billi (mg/dL)			
Median (IQR)	0.40 (0.40)	0.35 (0.50)	0.8791
Alk Phos (U/L)			
Median (IQR)	98.0 (36.0)	93.0 (49.0)	0.4966
LDH (IU/L)			
Median (IQR)	690.0 (522.5)	466.5 (350.0)	0.9699
Haptoglobin (g/L)			
Median (IQR)	8.0 (0.70)	7.4 (0.60)	0.5109
Parasitemia at Admission (%)			
Median (IQR)	1.0 (1.6)	1.7 (4.1)	0.1425
Parasitemia Max (%)			
Median (IQR)	1.1 (1.4)	1.7 (4.1)	0.2590