755. Posaconazole versus voriconazole as antifungal prophylaxis for invasive fungal diseases in patients with hematological malignancies

Reem F. Almutairy, PharmD[1]; Mansoor Khan, BPharm[1]; Majed Alshamrani, PharmD[1]; Hassan Marhabi, MD[1]; Doaa Naeem, PharmD[1]; [1]King Abdulaziz Medical City, Ministry of National Guard Health Affairs, Jeddah, jeddah, Makkah, Saudi Arabia

Session: P-30. Eukaryotic Diagnostics

Background: The incidence of Invasive Fungal Diseases (IFDs) has dramatically increased in patients with hematologic malignancies due to prolonged neutropenia. IFDs are associated with significant morbidity and mortality. Due to these risks, international guidelines have recommended antifungal prophylaxis for Acute Myeloid Leukemia (AML) and Myelodysplastic syndromes (MDS) patients. Posaconazole has been recommended as the prophylactic agent of choice. Also, voriconazole has been recommended by guidelines with different levels of recommendations. Data on a direct comparison between Posaconazole delayed-release tablets (DR) and Voriconazole for IFD prophylaxis are lacking. Therefore, we aim to compare the efficacy and safety of the fungal prophylaxis; voriconazole versus posaconazole in AML/MDS patients at Princess Nourah Oncology Center, Jeddah

Methods: Retrospective chart review study for eligible patients from January 2017 to February 2019 to identify the breakthrough IFD rates and assess the frequency of adverse events within AML/MDS patients at PNOC, Saudi Arabia

Results: A total of 48 patients (130 chemo cycles) were included in the study: 50 using posaconazole (DR) and 80 using oral voriconazole as antifungal prophylaxis. The incidence rates of IFD in the posaconazole group was 8 % (4/50) of those 2 were probable, and 2 were possible infections while 6.26 % (5/80) of patients in the voriconazole group have developed IFD of them 4 had a possible infection, and one had a probable infection (p=0.7325). A higher percentage of patients in the voriconazole group discontinued prophylaxis due to adverse events (5 patients vs. 2 patients). Use of voriconazole as antifungal prophylaxis for 15 days in 130 cycles in 48 AML/MDS patients would cost 175,500 SR in comparison to the cost of the posaconazole for the same duration of 1,350,130 SR. So, use of voriconazole would save 1.13 million SR and is more cost effective when used as antifungal prophylaxis in AML/MDS patients in comparison to posaconazole although later is category 1 recommended antifungal prophylaxis in international guidelines

Conclusion: Our study has shown that both posaconazole and voriconazole have comparable efficacy and safety in the prevention of IFD in AML and MDS receiving chemotherapy but voriconazole is more cost effective

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756. Use Risk Factors to Early Screen Pneumocystis Pneumonia in Hospitalized Patients

Ruihong Luo, MD, PhD[1];[1]University of California Los Angeles, Irvine, CA

Session: P-30. Eukaryotic Diagnostics

Background: The diagnosis of Pneumocystis pneumonia (PCP) may be delayed or missed if the underlying risk factors are not recognized, particularly in HIV-uninfected patients.

Methods: The adult hospitalized patients (≥18 years) with pneumonia were selected from the Nationwide Inpatient Sample database (2005-2014). The in-hospital outcomes of PCP patients including mortality, length of hospital stay (LOS) and charge were analyzed. The risk factors for PCP were evaluated by Logistic regression. A risk-adjusted model to screen PCP in HIV-uninfected patients was developed by discriminant analysis.

Results: 24,025,696 hospitalized patients with pneumonia were identified, including 135,749 PCP patients. The incidences of PCP in pneumonia patients were 0.12% in HIV-uninfected group and 30.5% in HIV-infected group respectively. Comparing with other pneumonia patients, those with PCP had higher mortality (11.8% vs. 8.2%), longer LOS (median 8 vs. 5 days) and increased hospital charges (median $40,082 vs. $26,980). HIV infection was the major risk factor for PCP (OR=270.2, 95% CI 264.5-276) in all patients with pneumonia. In HIV-uninfected patients, the comorbidities including lymphoma (OR=10.7, 95% CI 10.2-11.2), CMV infection (OR=8.1, 95% CI 7.6-8.7), leukemia (OR=6.8, 95% CI 6.4-7.1), metastatic cancer (OR=5.3, 95% CI 4.6-6.0), immune thrombocytopenic purpura (OR=5.0, 95% CI 4.5-5.5), chronic steroid use (OR=4.1, 95% CI 3.9-4.3), solid organ transplant (OR=3.5, 95% CI 3.3-3.8), inflammatory bowel disease (OR=2.6, 95% CI 2.4-2.8), connective tissue disease (OR=2.4, 95% CI 2.3-2.6) and non-metastatic solid tumor (OR=2.3, 95% CI 2.1-2.4) were associated with increased risk for PCP. A risk-adjusted model composed of risk factors above could help to screen PCP with the sensitivity 42.9%, specificity 94.4% and accurate rate 94.3% (Table 1).

Table 1

Table 1 Risk-adjusted model for PCP screening in HIV-uninfected patients with pneumonia

Factors†	Functions *
Connective tissue disease (X_1) Lymphoma (X_2) Metastatic cancer (X_3) Solid tumor without metastasis (X_4) CMV infection (X_5) Inflammatory bowel disease (X_6) Immune thrombocytopenic purpura (X_7) Chronic steroid use (X_8) Solid organ transplant (X_9) Leukemia (X_{10})	PCP= 0.996 x X_1 + 1.006 x X_2 + 1.12 x X_3 + 1.104 x X_4 + 0.566 x X_5 + 0.973 x X_6 + 0.843 x X_7 + 0.813 x X_8 + 0.99 x X_9 + 1.022 x X_{10} -0.782 No PCP= 2.376 x X_1 + 10.89 x X_2 + 2.678 x X_3 + 1.953 x X_4 + 35.399 x X_5 + 3.07 x X_6 + 8.262 x X_7 + 4.478 x X_8 + 5.471 x X_9 + 8.487 x X_{10} -3.638
Sensitivity (95% CI)	42.86% (42.28%-43.45%)
Specificity (95% CI)	94.41% (94.40%-94.42%)
Positive predictive value (95% CI)	0.91% (0.90%-0.92%)
Negative predictive value (95% CI)	99.93% (99.93%-99.93%)
Accuracy (95% CI)	94.34% (94.33%-94.35%)

† Occurrence of the risk factor is assigned a value of "1", whereas nonoccurrence is assigned as "0".
* The model includes 2 functions corresponding to a "PCP" discriminant score and a "No PCP" discriminant score, respectively. Both functions should be used simultaneously to predict whether the PCP occurs or not. The occurrence of PCP or not predicted by the model is determined by which function is found to have a higher discriminant score.

Conclusion: PCP should be considered as one of the differential diagnoses in patients with pneumonia if they have underlying risk factors other than HIV infection. The risk-adjusted model can help to early screen PCP for HIV-uninfected patients before the pathogen test.

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757. Association between cumulative febrile, respiratory and diarrheal illness in the first year of life and neurodevelopmental and growth outcomes among a cohort of children in rural Guatemala

Daniel Olson, M.D[1]; Molly Lamb, PhD[2]; Amy Connery, Psy.D. ABPP-CN[1]; Desiree Bauer, BS[3]; Alejandra Paniagua-Avila, MD, MPH[4]; Kathryn L. Colborn, PhD, MSPH[5]; Muktha Natrajan, PhD, MPH[6]; Jesse Waggoner, MD[7]; Evan J. Anderson, MD[8]; Mirella Calvimontes, MD[9]; Guillermo Antonio Bolanos, MD[9]; Andrea Holliday, MPH[10]; Hana El Sahly, M.D[11]; Flor M. Munoz, MD[11]; Edwin Asturias, MD[12]; [1]University of Colorado, Denver, CO; [2]Colorado School of Public Health, Aurora, Colorado; [3]Center for Human Development, Fundacion para la Salud de los Guatemaltecos, Retalhuleu, Guatemala, Denver, Colorado; [4]Columbia University, New York, New York; [5]University of Colorado Anschutz Medical Campus, Aurora, Colorado; [6]Emory University Vaccine Center, Atlanta, Georgia; [7]Emory University, Atlanta, Georgia; [8]Emory University, Atlanta VA Medical Center, Atlanta, Georgia; [9]Fundacion para la Salud Integral de los Guatemaltecos, Aurora, CO; [10]EMMES Corporation, Rockville, Maryland; [11]Baylor College of Medicine, Houston, Texas; [12]University of Colorado School of Medicine, Aurora, Colorado

Session: P-31. Global Health

Background: Recurrent infections are associated with neurodevelopmental (ND) delay in infants, but the primary drivers are poorly understood. Leveraging an infant cohort from rural Guatemala designed to evaluate the effects of post-natal Zika virus on ND (DMID 16-0057), we evaluated the association between cumulative illness and ND delay and stunting.

Methods: Infants enrolled at 0-3 months of age underwent weekly at-home surveillance for caregiver-reported syndromic illness, including cough, fever and vomiting/diarrhea for a 12-month period. Anthropometric assessments and ND testing by Guatemalan psychologists using the Mullen Scales of Early Learning (MSEL) were performmed at 12-15 months of age. Multivariable generalized linear regression models were used to test associations between syndromic illness in infancy, 12-15-month MSEL Early Learning Composite (ELC) Score, and stunting (height-for-age < -2 SD) at 12-15 months.

Results: The cohort (n=425) had a mean enrollment age of 1.3 months; 202 (48%) were female, 387 (91%) self-reported a literate mother, and 301 (71%) were breastfeeding at study completion. Infants had reported illness for a median of 16 weeks during the surveillance period; cough was reported most frequently (median=11 weeks, range=0-37 weeks). Lower maternal education (p=0.007) and literacy (p=0.002) as well as infant age (p=0.007) and male gender (p=0.004) were associated with MSEL ELC