1494. Validation of Methicillin-Resistant *Staphylococcus aureus* (MRSA) Risk Factors in Predicting MRSA Community-Acquired Pneumonia at an Academic Medical Center

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Session: P-67. Respiratory Infections - Bacterial

Background. The 2019 Infectious Diseases Society of America community-acquired pneumonia (CAP) guidelines recommend anti-methicillin-resistant *Staphylococcus aureus* (MRSA) therapy in patients with CAP based on previously identified risk factors for MRSA with an emphasis on local epidemiology and institutional validation of risk. Thus, we sought to assess the ability of guideline-recognized risk factors to predict MRSA CAP at our institution.

Methods. This was a single-center, retrospective cohort study from January 2016 to March 2020. Patients were included if they were >18 years old, diagnosed with CAP, and had a MRSA nasal screen and a respiratory culture obtained on admission. Patients were excluded if CAP diagnosis was not met, respiratory cultures were not obtained within 48 hours of antibiotic initiation, or they had cystic fibrosis. Sensitivity, specificity, negative predictive value, positive predictive value, and likelihood ratios (LR) were calculated using Vassar Stats 2019. Pre/post-test odds and pre/post-test probabilities were calculated using Microsoft Excel 2019.

Results. Of 705 screened patients, 221 were included. MRSA prevalence in CAP patients at our institution was 3.6%. History of MRSA isolated from a respiratory specimen had high specificity (98%), high positive LR of 20 (95% CI 5.3 – 74.8), and high post-test probability of 42.8%. Receipt of IV antibiotics during hospitalization within the past 90 days had a positive LR of 1.9 (95% CI 0.74 – 4.84). A positive MRSA nasal screen on admission had a positive LR of 6.9 (95% CI 4.0 – 12.1), negative LR 0.28 (95% CI 0.08 – 0.93), positive post-test probability of 20.7%, and negative post-test probability of 1.04%.

Conclusion. Our study utilized institutional data to validate guideline-recognized risk factors for MRSA CAP specifically at our institution. Risk factors including history of MRSA isolated from a respiratory specimen, and positive post-admission MRSA nasal screen were validated as significant risk factors; receipt of IV antibiotics during hospitalization within the past 90 days was not shown to be a risk factor for MRSA CAP based on our institutional data. Validated risk factors may help providers discern which patients with CAP at our institution would benefit most from empiric MRSA treatment.

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1495. Aspergillosis Complicating Severe Influenza in ICU Patients: A Retrospective Cohort Study

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Session: P-68. Respiratory Infections - Viral

Background. Invasive pulmonary aspergillosis (IPA) has been recognized as a complication of influenza infection even in immunocompetent patients. We aimed to understand the incidence of IPA among critically ill patients with influenza infection over multiple seasons.

Methods. A retrospective cohort study was conducted in a single center in Chicago. Data was collected over 9 seasons (March 2009-March 2018) from all adult patients admitted to the ICU at a large urban tertiary care center with influenza. Patients were included if they had a positive influenza PCR test, were ≥ 18 years, were admitted to the ICU with respiratory distress, and treated for IPA. IPA was defined per both the EORTC/MSG criteria as well as the revised *AspICU* criteria. Descriptive statistics were calculated. In univariable analysis, we compared categorical variables by Fisher's exact test and continuous variables by Wilcoxon Rank Sum where appropriate.

Results. A total of 224 patients with influenza were admitted to the ICU over the study period. The overall rate of IPA in the study population was low at 3.1% (7/224). Factors associated with development of IPA in those with severe influenza pneumonia were history of stem cell transplant (p=0.015). There was a numerical trend towards significance in those with history of hematological malignancy (p=0.09), lung disease (p=0.098) and obesity (p=0.051). There was significantly increased length of stay in those with IPA (p=0.046). There were no significant difference in outcomes such as need for mechanical ventilation, renal replacement therapy, or death. Other coinfections were common with incidences of 31.3% (bacterial), 7.6% (viral), and 8.9% (non-aspergillosis fungi).

Baseline Characteristics and Mortality/Morbidity

Table 1. Baseline Characteristics and Mortality/Morbidity

Baseline characteristics	All patients with Influenza (N=224)	With invasive pulmonary aspergillosis (N=7)	Without invasive pulmonary aspergillosis (N=217)	p-value
Median age, years (IQR)	60 (49, 72)	58 (57, 66)	60 (49, 72)	0.844
Male sex	114 (50.89)	1 (14.3)	113 (52.1)	0.062
Median LOS (IQR)	10.5 (5.5, 21.2)	24.1 (10.6, 31.8)	10.4 (5.4, 20.6)	0.046
Median ICU LOS (IQR)	4.4 (1.9, 13.0)	7.1 (1.9, 19.0)	4.3 (1.9, 12.3)	1.000
BMI over 30	81 (36.2)	0 (0.0)	81 (37.3)	0.051
Lung disease	101 (45.1)	1 (14.3)	100 (46.1)	0.098
Heart disease	99 (44.2)	1 (14.3)	98 (45.2)	0.107
Diabetes	49 (21.9)	1 (14.3)	48 (22.1)	0.524
Liver cirrhosis	6 (2.7)	1 (14.3)	5 (2.3)	0.175
Chronic kidney disease	48 (21.43)	0 (0.00)	48 (22.1)	0.180
Rheumatologic Disease	27 (12.1)	1 (14.3)	26 (11.9)	0.598
Known risk factors				
Hematological malignancy	37 (16.5)	3 (42.9)	34 (15.7)	0.090
Stem Cell Transplant	19 (8.5)	3 (42.9)	16 (7.3)	0.015
GVHD	4 (1.79)	0 (0.0)	4 (1.84)	0.880
Solid Organ Transplant	17 (7.6)	1 (14.3)	16 (7.4)	0.429
Immune Suppression not due to transplant	35 (15.7)	3 (42.9)	32 (14.8)	0.103
Solid organ malignancy	14 (6.3)	0 (0.0)	14 (6.5)	0.632
Neutropenia	52 (23.3)	1 (14.3)	51 (23.6)	0.485
Lymphopenia	146 (64.5)	4 (57.1)	142 (65.7)	0.457
ICU Data				
Mechanical ventilation	111 (49.6)	5 (71.4)	106 (48.9)	0.216
Renal replacement therapy	34 (15.2)	1 (14.3)	33 (15.2)	0.712
ECMO	8 (4.8)	1 (20.0)	7 (4.3)	0.220
Death within 1 year	25 (11.2)	0 (0.0)	25 (11.5)	0.432
RSV				
Influenza A	172 (83.9)	5 (71.4)	167 (84.3)	0.314
Influenza B	51 (27.3)	2 (28.6)	49 (27.2)	0.614
Treatment with oseltamivir	206 (91.9)	7 (100.0)	199 (91.7)	0.552
Treatment with zanamivir	3 (1.3)	1 (14.3)	2 (0.92)	0.091
Treatment with peramivir	3 (1.3)	0 (0.00)	3 (1.4)	0.909
Treatment with IVIG	22 (9.8)	2 (28.6)	20 (9.2)	0.143
Treatment with Steroids	136 (60.7)	3 (42.9)	133 (61.3)	0.437

Patient Characteristics in Invasive Pulmonary Aspergillosis

Table 2. Patient characteristics in Invasive Pulmonary Aspergillosis

	Number of patients in the RSV cohort with invasive pulmonary aspergillosis (N=7)
BAL culture positive	3 (42.8%)
BAL galactomannan test positive	2 (28.5%)
Serum galactomannan test positive	2 (28.5%)
EORTC/MSG criteria	
Proven	0 (0%)
Probable	2 (28.5%)
Possible	5 (71.4%)
AspICU criteria	
Proven	0 (0%)
Putative	4 (57.0%)
Colonization	3 (42.8%)
Not classifiable	0 (0%)
Initial Treatment	
Voriconazole	7 (100%)
Echinocandins	1 (14.3%)
Isavuconazole	0 (0%)
Posaconazole	0 (0%)
Liposomal amphotericin B	2 (28.5%)
Combination	3 (42.8%)
No treatment	0 (0%)

Conclusion. The incidence of IPA was significantly lower (3.1%) in our study over 9 influenza seasons than has been reported in similar studies. History of stem cell transplant was a risk factor strongly associated with the development of IPA. IPA did not significantly predict morbidity and mortality among critically ill influenza patients.

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