1324. Identification of Local Risk Factors for P. aeruginosa in Community-acquired Pneumonia in a Veteran Population

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Session: P-73. Respiratory Infections - Bacterial

Background. The 2019 ATS/IDSA community-acquired pneumonia (CAP) guidelines recommend empiric P. aeruginosa (PSA) coverage if locally validated risk factors are present. They further recommend obtaining local data on CAP pathogens to quantify risk factors and help guide clinical decision-making. To comply with the current guideline recommendations and to determine which patients may benefit from empiric anti-pseudomonal therapy, we aimed to characterize our institution’s local risk factors for CAP caused by PSA.

Methods. This is a retrospective single-center matched cohort study of patients admitted to our institution with a CAP diagnosis and a positive respiratory culture who received antibiotic treatment in the past 19 years. Multivariate logistic regression was performed to assess the relationship between PSA and the following risk factors: severe or very severe COPD (FEV1 < 50% predicted), requiring invasive mechanical ventilation or vasopressor support in the first 24 hours of admission, history of PSA in infection/colonization in the previous year, tracheostomy, bronchiectasis, long-term care facility residence and admission with receipt of IV antibiotics in the previous 90 days.

Results. A total of 343 patients were screened and 213 were included. Patients were admitted to our institution with a CAP diagnosis and a positive respiratory culture who received antibiotic treatment in the past 19 years. Multivariate logistic regression was performed to assess the relationship between PSA and the following risk factors: severe or very severe COPD (FEV1 < 50% predicted), requiring invasive mechanical ventilation or vasopressor support in the first 24 hours of admission, history of PSA in infection/colonization in the previous year, tracheostomy, bronchiectasis, long-term care facility residence and admission with receipt of IV antibiotics in the previous 90 days.

Conclusion. The results of this study provide valuable data to help guide empiric PSA treatment at our institution. Based on these results, patients with PSA infection or colonization in the past year are appropriate to provide empiric anti-pseudomonal therapy for CAP. Further evaluation of severe or very severe COPD and tracheostomy would be beneficial to better characterize their role in PSA CAP.

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1325. Recalibrating Estimates of Pneumococcal Disease in Hospitalized Canadian adults from 2010 to 2017 with Use of an Extended Spectrum Serotype-specific Urine Antigen Detection

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Background. Pneumococcal vaccine recommendations in Canada include both age- and risk-based guidance. This study aimed to describe the burden of vaccine-preventable pneumococcal community acquired pneumonia (pCAP) and invasive pneumococcal disease (IPD) by age in hospitalized adults.

Methods. Active surveillance for all-cause CAP and IPD in hospitalized adults was performed from 2010 to 2017, including laboratory results, patient demographics, and outcomes. Streptococcus pneumoniae was detected using blood and sputum culture, or urine antigen detection (UAD). Serotype was assigned using Quellung reaction, PCR, or serotype-specific U Adams spanning the 24 serotypes in PCV13 and PPV23 vaccines. Data were categorized by age (16-49, 50-64, 65+, and 50+ years) and over time.

Results. 11129 ACP cases and 216 cases of IPD (non-CAP) were identified. A laboratory test for S. pneumoniae was performed in 8912 of ACP cases, identifying 1264 (14.2%) as pCAP. Compared to non-pCAP, pCAP cases were more likely to be admitted to intensive care units and require mechanical ventilation. These serious outcomes, as well as mortality, were more prominent in bacteremic pCAP and IPD. Risk factors for death in pCAP included aged 75+ years, immune compromising conditions, and BMI < 18.5. When categorized by age, the proportion of individuals aged 65+ years for CAP admissions and to determine which patients may benefit from...
74% received antibiotics. The most common sites for coinfection were urinary 33%, lower respiratory 26%, and blood 24%. [Table 2] Bacteria were most frequently recovered (82%). The most commonly recovered pathogens were Enterobacterales (42%), Staphylococcus aureus (12%), and Pseudomonas (4%). 42% of the infections were hospital acquired, 16% caused by MDRO, and 13% were catheter or ventilator associated.

Table 1. Clinical Characteristics Associated with Coinfection

|                  | With | Without | P value |
|------------------|------|---------|---------|
| N                | 72   | 329     |         |

Demographics

|                  | mean/N | mean/N (sd/%) |
|------------------|---------|---------------|
| Male Sex         | 38 (53) | 154 (47)      | 0.43    |
| Age              | 67 (17) | 59 (17)       | 0.001   |

Disease Severity

|                  | mean/N | mean/N (sd/%) |
|------------------|---------|---------------|
| Moderate         | 29 (40) | 204 (62)      | 0.001   |
| Deceased         | 17 (24) | 94 (10)       |         |

Diagnoses

|                  | mean/N | mean/N (sd/%) |
|------------------|---------|---------------|
| Fever            | 46 (65) | 232 (71)      | 0.36    |
| Cough            | 40 (56) | 233 (72)      | 0.01    |
| Rhinorrhea       | 12 (18) | 48 (15)       | 0.7     |
| Anoxia           | 2 (3)   | 15 (5)        | 0.75    |

Proxisting Conditions

|                  | mean/N | mean/N (sd/%) |
|------------------|---------|---------------|
| Hypertension     | 51 (72) | 225 (68)      | 0.67    |
| Diabetes         | 29 (41) | 123 (38)      | 0.71    |
| Obesity          | 12 (17) | 121 (57)      | 0.001   |
| COPD             | 13 (18) | 77 (24)       | 0.42    |
| Heart Failure    | 20 (29) | 53 (16)       | 0.49    |
| Cancer           | 13 (18) | 43 (13)       | 0.24    |
| Coronary Disease | 13 (18) | 40 (12)       | 0.24    |

Table 2. Characteristics of Coinfection

| Variable                  | N (%) |
|---------------------------|-------|
| **Anatomy**               |       |
| Urinary                   | 31 (33) |
| Lower Airways             | 24 (26) |
| Blood Stream              | 22 (24) |
| Abdominal                 | 13 (14) |
| Upper Airways             | 6 (6)  |
| Multiple                  | 8 (9)  |
| Other                     | 8 (9)  |
| **Microbiology**          |       |
| Bacterial                 | 77 (82) |
| Enterobacterales          | 39 (42) |
| Staphylococcus aureus     | 11 (12) |
| Pseudomonas               | 4 (4)  |
| MDRO                      | 15 (16) |
| Viral                     | 12 (13) |
| Fungal                    | 2 (2)  |
| Multiple                  | 2 (2)  |

Table 3. Hospitalization-Associated Coinfection

| Risk Factors             | Cath./Vent. Assoc. | Hospital Assoc. | Total |
|--------------------------|--------------------|-----------------|-------|

Conclusion.
Coinfection in COVID-19 was most closely associated with age, COVID-19 disease severity, and complicated hospitalization. No presenting symptoms, non-microbiologic test, or radiograph was associated with coinfection, underscoring the challenge in diagnosing coinfection. A remarkable number of infections were hospital acquired, MDRO, and catheter/ventilator associated. Further prospective study on coinfection in COVID-19 is needed to guide diagnosis and treatment.

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