Background: Pseudomonas aeruginosa is an uncommon cause of community-acquired bacteremia among patients without severe immunodeficiency. Because tension exists between the need to limit unnecessary use of anti-pseudomonal agents and the need to avoid a delay in appropriate therapy, clinicians require better guidance regarding when to cover empirically for P. aeruginosa. We sought to determine the occurrence of and construct a model to predict P. aeruginosa bacteremia upon hospital admission.

Methods: A retrospective study was conducted in 4 tertiary care hospitals. Microbiology databases were searched to find all episodes of bacteremia caused by gram-negative rods (GNRs) \( \leq 48 \text{ h} \) after hospital admission. Patient data were extracted from the medical records of 151 patients with P. aeruginosa bacteremia and of 152 randomly selected patients with bacteremia due to Enterobacteriaceae. Discriminative parameters were identified using logistic regression, and the probabilities of having P. aeruginosa bacteremia were calculated.

Results: P. aeruginosa caused 6.8% of 4114 unique patient episodes of GNR bacteremia upon hospital admission (incidence ratio, 5 cases per 10,000 hospital admissions). Independent predictors of P. aeruginosa bacteremia were severe immunodeficiency, age \( >90 \text{ years} \), receipt of antimicrobial therapy within past 30 days, and presence of a central venous catheter or a urinary device. Among 250 patients without severe immunodeficiency, if no predictor variables existed, the likelihood of having P. aeruginosa bacteremia was 1:42. If \( \geq 2 \) predictors existed, the risk increased to nearly 1:3.

Conclusions: P. aeruginosa bacteremia upon hospital admission in patients without severe immunodeficiency is rare. Among immunocompetent patients with suspected GNR bacteremia who have \( \geq 2 \) predictors, empirical anti-pseudomonal treatment is warranted.

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