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Early-Onset Versus Late-Onset Nosocomial Pneumonia in ICU

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Ibrahim and colleagues, from the Washington University School of Medicine, report on a study designed to compare the clinical outcomes of critically ill patients developing early-onset nosocomial pneumonia ([NP] ie, within 96 hours of ICU admission) and late-onset NP (ie, occurring after 96 hours of ICU admission). It was a prospective cohort study in a medical ICU and a surgical ICU from a university-affiliated urban teaching hospital. Between July 1997 and November 1998, 3,668 patients were prospectively evaluated.

The results showed that 420 patients (11.5%) developed NP. Early-onset NP was observed in 235 patients (56.0%), whereas 185 patients (44.0%) developed late-onset NP. Among patients with early-onset NP, 114 patients (48.5%) spent at least 24 hours in the hospital prior to ICU admission, compared to 57 patients (30.8%) with late-onset NP (P=.001). One hundred eighty-three patients (77.9%) with early-onset NP received antibiotics prior to the development of NP, as compared to 162 patients (87.6%) with late-onset NP (P=.010). The most common pathogens associated with early-onset NP were *Pseudomonas aeruginosa* (25.1%), oxacillin-sensitive *Staphylococcus aureus* (OSSA; 17.9%), oxacillin-resistant *S aureus* (ORSA; 17.9%), and *Enterobacter* species (10.2%). *P aeruginosa* (38.4%), ORSA (21.1%), *Stenotrophomonas maltophilia* (11.4%), OSSA (10.8%), and *Enterobacter* species (10.3%) were the most common pathogens associated with late-onset NP. The ICU length of stay was significantly longer for patients with early-onset NP (10.3±8.3 days; P<.001) and late-onset NP (21.0±13.7 days; P<.001), as compared to patients without NP (3.5±3.2 days). Hospital mortality was significantly greater for patients with early-onset NP (37.9%; P=.001) and late-onset NP (41.1%; P=0.001) compared to patients without NP (13.1%).

The authors concluded that both early-onset and late-onset NP are associated with increased hospital mortality rates and prolonged lengths of stay. The pathogens associated with NP were similar for both groups. This may be due, in part, to the prior hospitalization and use of antibiotics in many patients developing early-onset NP. These data suggest that *P aeruginosa* and ORSA can be important pathogens associated with early-onset NP in the ICU setting. Additionally, clinicians should be aware of the common microorganisms associated with both early-onset NP and late-onset NP in their hospitals in order to avoid the administration of inadequate antimicrobial treatment.

FROM: Ibrahim EH, Ward S, Sherman G. Kollef MH. A comparative analysis of patients with early-onset and late-onset nosocomial pneumonia in the ICU setting. *Chest* 2000;17:1434-1442.