A multi-center retrospective cohort study of adult patients (aged ≥ 18 years) admitted to 140 US hospitals with pneumonia and/or sepsis from 2010–2015, included in the Premier Research database. Patients with community-onset infection, antibiotic treatment beginning within the first 2 hospital days, and continued for at least 3 consecutive days were included. Patients were excluded if they had been transferred from another acute care facility, had cystic fibrosis, had a hospital length of stay of 1 day or less, co-existent urinary tract infection, gastrointestinal/ intra-abdominal infection, or simultaneous presence of other CAP pathogens. Pneumonia and sepsis were identified by ICD-9 codes.

Results. A total of 13,165 patients met the inclusion criteria, of which 2,247 had E. coli CAP. Majority of patients with E. coli were nonnursing home residents (90.2%), 1,125/1,247 (69.3%) patients with E. coli presented with sepsis syndrome compared with only 48.1% in other Gram-negative CAP and 62.5% in P. CAP. Pneumonia was diagnosed in 5.9% (731/1,247) with E. CAP, Blood cultures were positive in 59.9% (748/1,247) of patients with E. CAP with 84.8% positivity in patients with sepsis syndrome. Patients with E. coli CAP compared with P. were more likely to require ICU-level care (42.6% vs. 38.2%), mechanical ventilation (19.3% vs. 15.7%), and require vasopressors (21% vs. 13.8%). In-hospital mortality was 14.8% in E. CAP compared with 7.4% in P. CAP. The median cost of hospitalization was great in E. CAP than P. ($12,420.1 vs. $9,857.5) Re-admission within 30 days was greater among patients with E. CAP than P. (5.4% vs. 4%). 36.8% of isolates were resistant to fluoroquinolones, 10.4% to ceftriaxone and 18.1% to aminoglycosides. Only 10/1,247 (0.8%) were multi-drug-resistant.

Conclusion. E. coli is an important cause of severe CAP with higher mortality, greater need for ICU-level care, and higher re-admission rates than patients with pneumococcal pneumonia. The rate of fluoroquinolone resistance was high and empiric quinolones should be used with caution for patients who are critically ill due to E. CAP.

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