ABSTRACT

Background: Fluoroquinolone resistance (FO NS) and ESBL + rates in UTI are high with strains being most susceptible to intravenous (IV) carbapenems; however there is a lack of oral alternatives. We evaluated the epidemiology of IV to PO transition in ENT ESBL + and/or FO NS UTI admissions.

Material and Methods: We analyzed the first positive urine culture ≤3 days from admission in those with a discharge primary or secondary UTI ICD10 code from 68 US hospitals from October 1, 2015-2017 (BD Insights, Franklin Lakes, NJ). Patient characteristics and outcomes were categorized by ESBL and FO NS resistance. IV to PO was identified as PO therapy after 24 hours of IV. The Fisher’s exact test was used to test for significance.

Results: Of 16,022 adult inpatients (mean 69.5 years, 47% female) with culture positive UTI identified in the 2015-2017 included (BD Insights Research Database, Franklin Lakes, NJ USA; formerly CareFusion Research Database). Escherichia coli, Klebsiella pneumoniae, Klebsiella oxytoca, Enterobacter cloacae, Enterobacter aerogenes.2

We excluded other causes of infection and surgical procedures during index admission using the following ICD10 codes: any surgical procedure, concomitant skin and skin structure infection, pneumonia or intraabdominal infection.

Patients from 68 US acute care hospitals in the period between 2015-2017 were included (BD Insights Research Database, Franklin Lakes, NJ USA). Escherichia coli, Klebsiella pneumoniae, Klebsiella oxytoca, Enterobacter cloacae, Enterobacter aerogenes.2

Resistant phenotypes were identified for the following pathogens, where applicable:

- ESBL: confirmed as ESBL-positive per commercial panels or intermediate/resistant to extended spectrum cephalosporins (either ceftriaxone, cefotaxime, cefazoline or cefepime).
- Quinolone NS: intermediate or resistant to ciprofloxacin, levofloxacin or moxifloxin.
- IV to PO was identified as conversion to PO antibiotic that had a duration of at least 4 hours after PO conversion occurred between at least 24 hours of IV antibiotic therapy.
- Patient characteristics and outcomes were categorized by ESBL and FO NS resistance status (ESBL-, FO-, Other [ESBL + OR FO NS]).

Conclusions: Urinary tract infections with Enterobacteriaceae which are ESBL-, FO-, or both are associated with a trend toward increased mortality, increased hospital length of stay, increased cost of care, and a lower rate of transition from IV to PO antibiotic therapy.

RESULTS

Of 16,022 adult inpatients (mean 69.5 years; 77.7% female) with culture positive ENT UTI identified across 68 hospitals (Table 1); 11.0% (n=1763) were ESBL +, 31.3% (n=5017) were FO NS & 8.9% (n=1433) were both ESBL + and FO NS.

Over 80% of patients with ENT UTIs were able to tolerate oral medications as evidenced by receipt of a non-antibiotic oral medication for >24 hours within 3 days of admission (Table 2).

Overall, IV to PO conversion during hospitalization was more common in patients with susceptible vs. non-susceptible organisms across all three categories of comparison (Table 2).

ESBL-FO NS UTI admissions are associated with a trend toward higher hospital mortality, LOS & cost with other differences noted compared to ESBL-FO- S & Other (ESBL + or FO NS) admissions.

Admissions with ESBL-FO NS were significantly more likely to be male and admitted with HCA risk factors (Table 2).

CONCLUSIONS

- Approximately one-third of hospitalized patients with UTI (5238/16022) have urine cultures demonstrating resistance to cephalosporins (ESBL-), fluoroquinolones, or both classes of antibiotics. As compared to patients with antibiotic susceptible urethral strains, these patients are more likely to be male and have health care-associated infections.

- Urinary tract infections with Enterobacteriaceae which are ESBL-, FO-, or both are associated with a trend toward increased mortality, increased hospital length of stay, increased cost of care, and a lower rate of transition from IV to PO antibiotic therapy.

REFERENCES


3. https://www.qualityindicators.ahrq.gov/cid/10/