Background: Current clinical guidelines recommend broad-spectrum antibiotics (abs) like anti-pseudomonal beta-lactams should be reserved for "higher risk" community-acquired (CA) cIAI patients. Fluoroquinolone (FQ) use is also discouraged in geographic areas with a high frequency of FQ-resistance. Compliance with these recommendations are unclear as there are limited data on empiric treatment (tx) patterns for adult patients with cIAI across US hospitals. This study sought to evaluate empiric tx patterns for patients with CA lower-risk (LR) cIAI and assess compliance with cIAI guideline recommendations.

Methods: A retrospective multi-center study using data from the Premier Research Database (10/2015-12/2017) was performed. Inclusion criteria age ≥ 18 yrs; primary cIAI diagnosis and a cIAI surgical procedure or a secondary cIAI diagnosis and cIAI surgical procedure within 5 days of admission; and received an ab within first 4 hospital days. For patients with multiple cIAI admissions, only the first cIAI was considered. A patient was classified as high-risk (HR) if they met any one of the following: sepsis, severe sepsis, septic shock; ≥ 3 components of sepsis; or ≥ 2 physiologic risk factors (age ≥ 70 yrs, malignancy, kidney dysfunction, and significant cardiovascular compromise). Empiric tx was assessed during the first 4 hospital days. Incidence of empiric tx regimen including one of the following was assessed among LR patients: piperacillin/tazobactam (TZP), meropenem (MEM), cefepime (CFP), and FQ.

Results: Over 46,722 (46%) of 70,663 patients meeting the definition of a cIAI were LR. Among LR CA cIAI patients, the mean (SD) age was 63.3 (18.2), 52% were male, and the median (IQR) for Charlson Comorbidity Index (CCI) was 1 (0-4.1). 71% had a CCI of 0. The most common diagnosis among LR patients was acute appendicitis with perforation (39.4%). Among LR patients, 54% received TZP, 31% received MEM, 3% received CFP and 20% received a FQ, 8% received 2 of these agents.

Conclusion: Overuse of non-guideline concordant broad-spectrum antibiotics was commonplace among CA cIAI patients classified as LR. These findings can serve as the basis for an antimicrobial stewardship initiative in hospitals aspiring to reduce the use of broad-spectrum antibiotics.

Introduction

Current to complicated intra-abdominal infection (cIAI) guidelines provide specific antibiotic treatment recommendations based on patient location prior to cIAI and background medical conditions, severity of infection, antibiotic site of infection, and antibiotic resistance rates at the local healthcare institution.

Broad spectrum antibiotics like anti-pseudomonal beta-lactams should be reserved for "higher risk" community-acquired cIAI patients. Fluoroquinolone (FQ) use is also discouraged in geographic areas with a high frequency of FQ-resistance.

Compliance with these recommendations are unclear as there are limited data on empiric treatment patterns for adult patients with cIAI across US hospitals.

Objective

This study sought to evaluate empiric treatment patterns for patients with community-onset "lower-risk" cIAI and assess compliance with cIAI guideline recommendations.

Study Design and Population

A retrospective multi-center study using data from the Premier Research Database was performed.

The Premier Healthcare Database is a large, U.S. hospital-based, service-level, teaching hospitals and health systems from rural and urban areas.

Methods

Hospital length of stay

For patients with multiple cIAI admissions, only the first cIAI was considered.

Hospitals/healthcare systems submit administrative, healthcare utilization, and financial data from patient encounters. Inpatient admissions include over 88 million visits with more than 6 million per year since 2012, representing approximately twenty percent of annual United States inpatient discharges.

Inclusion criteria

- An inpatient hospitalization for patients ages 18 years or older, discharged between 10/2015-12/2017.
- The first qualifying hospitalization with evidence of a cIAI will be flagged as the index hospitalization.

Exclusion criteria

- For patients with multiple cIAI admissions, only the first cIAI will be considered.
- Evidence of cIAI defined by algorithms based on diagnosis or procedure codes.
- Primary cIAI diagnosis and a cIAI surgical procedure or a secondary cIAI diagnosis and cIAI surgical procedure within 5 days of admission.
- Received an antibiotic within first 4 hospital days.

Baseline features

- Patients’ demographic and clinical characteristics were based on available information during the qualifying admission and the prior 6-month period.
- Patient-level covariates included in the analysis were demographics, comorbidities, and Charlson Comorbidity Index (CCI).
- A diagnosis was determined designation.
- Microbiologic data included all positive cultures from culture sites consistent with cIAI.

Treatment

- Patients were assigned into non-mutually exclusive cohorts based on antibiotics received during the first four days of hospitalization.
- Incidence of empiric tx regimen including one of the following abs was determined among LR patients: piperacillin/tazobactam (TZP), meropenem (MEM), cefepime (CFP), and FQ.

Outcomes

- Duration of all antibiotic therapy in hospital
- Hospital length of stay
- Discharge destination

References

- Premier Healthcare Database White Paper: Data that informs and performs; February 13, 2018. Premier Applied Research Partners; Poster 2264: Figure 3. Proportion of Patients that Received an Empiric Antibiotic Regimen that Included Pipercillin/Tazobactam, Meropenem, or a Fluoroquinolone (N=47,432)