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Is the Routine Empiric Use of Vancomycin in Non-Critically Ill Urology Inpatients Justified?

Background: Vancomycin is frequently used to add empiric coverage for Methicillin-resistant *Staphylococcus aureus* (MRSA) and *Enterococcus faecium* (EF) in urology patients suspected of non-soft tissue infections, though both are considered rare in this population. However, vancomycin is associated with significant potential morbidity and costs including frequent lab draws, nephrotoxicity, and antibiotic resistance. This study examines whether the actual rates of MRSA and EF infection justify the routine empiric use of vancomycin in non-critically ill urology inpatients in a large tertiary care center.

Methods: We performed a retrospective chart review of 4078 admissions for any cause to the urology service at our institution from July 1, 2014-July 1, 2018. We collected demographic, microbiology culture, and pharmacy data on all patients. MRSA or EF culture positive patients were identified and assessed for potential risk factors including: prior positive cultures, chronic urine colonization, recent procedural history, and clinical factors at presentation. Descriptive statistics including sensitivity/specificity testing were performed using Excel and Stata v.14. Expedited IRB approval was obtained.

Results: During 4078 Urology admissions, non-soft tissue (urine, blood, or body fluid) microbial cultures were sent on 813 patients suspected of infection. Of these, just 17 (2.1%) were MRSA positive and 8 (1%) were EF positive. On review of MRSA and EF positive patients, the most common risk factor identified was a history of chronically colonized urine (kidney/bladder catheter or ileal conduit) in 76%.

Only 32% (8/25) had a history of MRSA/EF within the prior 6 months. There were no trends in the type of prior surgery in either group. The majority (76%) of the patients in each group were febrile but less than half had other inflammatory symptoms and only 3 (12%) had sepsis. From 2014-2017, vancomycin was administered to 59% (303) of cultured patients indicating significant over-utilization.

Conclusions: Despite its potential morbidity and costs, vancomycin is frequently administered to urologic patients suspected of infection for coverage of MRSA and EF. We found very low rates of MRSA (2.1%) or EF (1%) non-soft tissue infection over 4 years in a large tertiary care center. The main risk factor identified was chronic colonization with a catheter or ileal conduit. The empiric use of vancomycin in non-critically ill urology inpatients does not appear to be justified and may represent unnecessary low-value care in this population.

Limitations of this study are that it is retrospective and uses some billing data which has the potential to under-capture the number of cultures sent. However, if this was true it would only decrease the infection rates further, strengthening our conclusions. External validity is limited to patients with high enough acuity to be admitted to the urology inpatient service. Despite this, we believe this research has broad impact as the over use of vancomycin is a widespread practice not just in urology but in many other surgical services.