

Institutional Characteristics Associated with Receipt of Emergency Care for Obstructive Pyelonephritis at Community Hospitals

Michael S. Borofsky, Dawn Walter, Huilin Li, Ojas Shah,* David S. Goldfarb,† R. Ernest Sosa and Danil V. Makarov‡,§

From the Department of Urology (MSB, OS, RES, DVM), Nephrology Division (DSG) and Divisions of Comparative Effectiveness and Decision Science (DW, DVM) and Biostatistics (HL), Department of Population Health, New York University Langone Medical Center and Section of Urology (OS, RES, DVM) and Nephrology Section (DSG), New York Harbor Veterans Affairs Healthcare System, New York, New York

Purpose: Delivering the recommended care is an important quality measure that has been insufficiently studied in urology. Obstructive pyelonephritis is a suitable case study for this focus because many patients do not receive such care, although guidelines advocate decompression. We determined the influence of hospital factors, particularly familiarity with urolithiasis, on the likelihood of decompression in such patients.

Materials and Methods: We used the NIS from 2002 to 2011 to retrospectively identify patients admitted to community hospitals with severe infection and ureteral calculi. Hospital familiarity with nephrolithiasis was estimated by calculating hospital stone volume (divided into quartiles) and hospital treatment intensity (the decompression rate in patients with ureteral calculi and no infection). After calculating national estimates we performed logistic regression to determine the association between the receipt of decompression and hospital stone volume, controlling for treatment intensity and other covariates thought to be associated with receiving recommended care.

Results: Of an estimated 107,848 patients with obstructive pyelonephritis 27.4% failed to undergo decompression. Discrepancies were greatest between hospitals with the highest and lowest stone volumes (76% vs 25%, OR 2.77, 95% CI 1.94–3.96, $p < 0.01$) as well as high and low treatment intensity (78% vs 37%, $p < 0.01$).

Conclusions: High hospital stone volume and treatment intensity were associated with an increased likelihood of receiving decompression. Such findings might be useful to identify hospitals and regions where access to quality urological care should be augmented.

Key Words: ureteral calculi; nephrolithiasis; pyelonephritis; sepsis; hospitals, community

In the United States the delivery of recommended care is essential to health care quality. Previous studies demonstrated that only 56% to 76% of patients receive the recommended care for acute medical conditions.^{1,2}

One would expect higher rates in the setting of surgical emergencies but there is a paucity of data to support this hypothesis.

Obstructive pyelonephritis is an emergency that serves as a good case

Abbreviations and Acronyms

NIS = Nationwide Inpatient Sample

Accepted for publication September 5, 2014. Study received institutional review board approval.

Supported by the Louis Feil Charitable Lead Trust, United States Department of Veterans Affairs Veterans Health Administration Health Services Research and Development Service (HSR&D) and a HSR&D Career Development Award at Manhattan Veterans Affairs (DVM).

The views expressed in this article are those of the author(s) and do not necessarily represent the views of the Department of Veterans Affairs. The interpretation and reporting of these HCUP NIS and AHRF data are the sole responsibility of the authors.

* Financial interest and/or other relationship with Covidien, Boston Scientific of Veterans Urological Association Guidelines.

† Financial interest and/or other relationship with the National Institute for Diabetes and Digestive and Kidney Diseases, Office of Rare Disease Research, Hospira, Takeda, Amgen, Keryx and Quintiles.

‡ Correspondence and requests for reprints: Department of Urology, New York University School of Medicine, 150 East 32nd St., 2nd Floor, New York, New York 10016 (telephone: 646-825-6300; e-mail: daniel.makarov@nyumc.org).

§ Financial interest and/or other relationship with Castlight Health.

Presented at annual meeting of American Urological Association, Orlando, Florida, May 17, 2014.

study for this purpose. This potentially fatal emergency is associated with a 20% mortality rate when treated conservatively.³ Guidelines published by the AUA (American Urological Association) and EAU (European Association of Urology) clearly recommend urgent decompression by nephrostomy tube or ureteral stent placement.⁴ Despite the clarity of these guidelines we previously found that recommended care for patients with obstructive pyelonephritis occurs with the same frequency as for other acute nonsurgical medical conditions, that is only three-quarters of the time.³ This is especially concerning when considering that adherence to such guidelines is associated with a decrease in mortality from 20% to 8%.³ Further insight is needed into the reasons for this deficiency.

The Donabedian conceptual model of the determinants of physician behavior suggests that health system factors influence quality of care.⁵⁻⁷ We sought to better characterize the influence of hospital and patient factors on the delivery of recommended care in patients with obstructive pyelonephritis admitted to community hospitals. In particular we hypothesized that guideline concordant care would be highest where staff at hospitals was most familiar with urolithiasis. Therefore, we determined the association between the number of hospital level, stone related admissions and decompression rates in patients with obstructive pyelonephritis. We also determined the association between the baseline decompression rate at a hospital for obstructing stones in the absence of infection (treatment intensity) and the likelihood of performing decompression in the event of obstructive pyelonephritis.

To address these questions we used the HCUP (Healthcare Cost and Utilization Project) NIS, a population level database of community hospital admissions in the United States that includes patient, hospital and environmental level data on approximately 8 million hospital discharges per year.⁸ If an association could be found between the number of stone related admissions or other hospital level variables and the likelihood of receiving decompression, it might help guide public health policy decision makers in improving the delivery of emergent urological care nationally.

MATERIAL AND METHODS

We performed a retrospective, patient level study to assess the association of hospital and patient characteristics with the likelihood of decompression in patients with obstructive pyelonephritis. Weighted estimates were calculated at the national level. Our institutional review board determined that this study was exempt from review.

Data Source

Patient demographic and hospital data were obtained from the 2002 to 2011 NIS. The NIS is the largest all-payer database in the United States with inpatient data from an approximately 20% sample of community hospitals in the United States.⁸ Additional data on physician density were obtained from the AHRF (Area Health Resource File) assembled through the HRSA (Health Services Research Administration) of the United States DHHS (Department of Health and Human Services).⁹

Patient Population

Included in analysis were 27,532 patients older than 18 years with combined diagnoses of ureteral stones and sepsis. We defined sepsis using ICD-9 diagnostic codes 020.0 (septicemia), 785.52 (septic shock), 790.7 (bacteremia), 995.91 (sepsis) and 995.92 (severe sepsis). Ureteral stones were defined using ICD-9 code 592.1. Our study inclusion criteria were particularly strict to minimize possible sources of selection bias. We excluded 5,506 patients with post-procedural iatrogenic infection by excluding ICD-9 codes for lithotripsy and/or stone manipulation with therapeutic intent.³ Our final cohort included 22,026 patients, who represented 107,848 patients when weighted.

We also created 2 cohorts to validate our analysis. A cohort using broader inclusion criteria for infection (supplementary appendix, <http://jurology.com/>)¹⁰ was used to perform sensitivity analysis and determine whether our outcomes depended on our definition of infection. Another cohort including all patients with ureteral stones and no infection was created to determine treatment intensity at a hospital.

Variable Definition

Our primary independent variable of interest was hospital stone volume, determined by the total number of stone related admissions at a given hospital regardless of infection. Our primary dependent variable of interest was the receipt of recommended care (decompression vs no decompression). Decompression was defined using ICD-9 codes for insertion of a nephrostomy tube or ureteral stent.³

Additional covariates potentially associated with undergoing decompression were analyzed, including patient age, race, gender, Elixhauser comorbidity score,¹¹ median income, insurance, hospital location and bed size, urologist density, region and admission year. We also created a variable of hospital treatment intensity meant to characterize the likelihood of receiving decompression at a particular hospital in the absence of infection. To accomplish this we determined the number of patients with ureteral stones and no evidence of infection who were seen at a particular hospital, excluding any patient with an ICD-9 code for infection using our strict or broad definition. We then calculated the proportion of such patients treated with decompression at the hospital level and categorized hospitals by increasing decompression rates.

Statistical Analysis

All analyses accounted for NIS sampling weights and design. On analysis patients at the same hospital were

Download English Version:

<https://daneshyari.com/en/article/3859435>

Download Persian Version:

<https://daneshyari.com/article/3859435>

[Daneshyari.com](https://daneshyari.com)