

## Sickle Cell Disease in Priapism: Disparity in Care?



Gregory A. Joice, Max Kates, Nikolai A. Sopko, Johanna L. Hannan, and Trinity J. Bivalacqua

|                              |   |
|------------------------------|---|
| <b>OBJECTIVE</b>             | To determine the effect of sickle cell disease (SCD) on hospital resource use among patients admitted for priapism.   |
| <b>MATERIALS AND METHODS</b> | Using the Nationwide Inpatient Sample, a weighted sample of 12,547 patients was selected with a primary diagnosis of priapism from 2002 to 2011. Baseline differences for patient demographics and hospital characteristics were compared between SCD and non-SCD patients. Multivariate analysis was performed to identify the effect of SCD on length of stay, use of penile operations, blood transfusion, and cost.   |
| <b>RESULTS</b>               | The proportion of SCD patients was 21.5%. SCD patients were younger, more often black, more likely to have Medicaid insurance, and treated more frequently in Southern urban teaching hospitals. SCD was a significant predictor of having a blood transfusion (odds ratio [OR], 16.3; $P < .001$ ), and an elongated length of stay (OR, 1.42; $P < .001$ ). SCD was associated with less penile operations (OR, 0.40; $P < .001$ ). When SCD patients did have an operation, it was performed later in the admission (mean, 0.87 vs 0.47 days; $P < .001$ ). SCD was not a significant predictor of increased cost (OR, 1.02; $P = .869$ ). |
| <b>CONCLUSION</b>            | SCD patients represent a demographically distinct subgroup of priapism patients with different patterns of resource use manifested by longer hospital stays and more blood transfusions. Moreover, despite evidence that immediate treatment of priapism results in improved erectile function outcomes, SCD patients had less surgical procedures for alleviation of acute priapism events. UROLOGY 86: 72–79, 2015. © 2015 Elsevier Inc.  |

Priapism represents one of the most common acute emergencies in urology, affecting nearly 10,000 men annually with nearly 30% of these patients going on to be admitted to the hospital.<sup>1</sup> However, the hospital course and inpatient costs of treating priapism are unknown. Approximately 1 in 5 patients presenting to an emergency room in the United States with priapism have sickle cell disease (SCD).<sup>1,2</sup> Immediate nonsurgical and surgical interventions are necessary to preserve erectile function.

Ischemic priapism is a well-known complication of SCD and has been reported to have a lifetime prevalence of approximately 28%–35%.<sup>3,4</sup> Historically, SCD patients were treated conservatively with oxygenation, hydration, and blood transfusions; however, we now have a better understanding of the pathophysiology of SCD-associated priapism, and new guidelines recommend immediate interventions to preserve erectile function.<sup>5</sup> Patients with

SCD encounter the health care system frequently, with 68 admissions per 100 patients annually and an estimated \$1.5 million in annual inpatient charges per 100 patients.<sup>6</sup> Prior studies have demonstrated that among patients presenting to emergency departments with priapism, SCD is an independent predictor of hospital admission.<sup>2</sup> We hypothesize that SCD and non-SCD patients with priapism are distinct with regard to their hospital resource use and may represent a disparity in care.

The present study compares patient demographics, hospital characteristics, and inpatient outcomes between SCD and non-SCD patients. The primary purpose of the study is to assess associations between SCD and inpatient costs and treatment patterns of patients admitted with priapism in the United States.

### MATERIALS AND METHODS

#### Data Sources and Patient Selection

The Nationwide Inpatient Sample (NIS) is the largest all-payer inpatient database in the United States, consisting of an annual 20% stratified sample of community and academic hospitals. The NIS contains data elements for each discharge including diagnoses and procedures along with patient demographics and hospital characteristics. The recent update of the NIS through

**Financial Disclosure:** The authors declare that they have no relevant financial interests.

From the James Buchanan Brady Urological Institute and Department of Urology, Johns Hopkins School of Medicine, Baltimore, MD

Address correspondence to: Gregory A. Joice, M.D., James Buchanan Brady Urological Institute and Department of Urology, Johns Hopkins School of Medicine, 1800 Orleans Street, Marburg 134, Baltimore, MD 21287. E-mail: gjoyce1@jhmi.edu

Submitted: October 17, 2014, accepted (with revisions): January 23, 2015

2011 includes data from approximately 1000 hospitals over 45 states.<sup>7</sup>

Patients were selected from the 2002-2011 NIS with a primary diagnosis of priapism ("International Classification of Disease, Ninth Revision, Clinical Modification [ICD-9-CM] diagnosis code 607.3). A subset of patients was identified who had a concomitant diagnosis of SCD (ICD-9-CM codes 282.6x). The data were weighted using the NIS' weighting methodology to create national estimates.<sup>7</sup>

### Independent Variables

Patient demographics included age, sex, race, payer, median household income, and comorbidities. Patient comorbidities were represented by the Charlson comorbidity index (CCI) and calculated using the Charlson-Deyo adaption for administrative data to create the CCI within the data set.<sup>8,9</sup> To account for missing values in the multivariate analysis, the race variable was simplified into white, black, Hispanic, other, and missing. For demographic comparisons, the missing values were excluded when reporting percentages. Hospital characteristics included the number of hospital beds, teaching status, hospital location, and hospital region.

### Main Outcome Measures

The primary outcomes were penile operation, transfusion, length of stay (LOS), and total hospitalization cost. Penile operation included penile incision, placement of cavernosal shunts, and insertion of prostheses (ICD-9-CM procedure codes 64.92, 64.95, 64.97, and 64.98). Patients who received a transfusion were similarly identified (ICD-9-CM procedure codes 99.0x). The number of days from admission that the patient received either a transfusion or operation was also analyzed. LOS was dichotomized into a new variable, elongated LOS, defined as the top 90th percentile of LOS within the sample. The NIS includes data on total charges for each hospitalization. However, this variable represents the amount the hospitals billed for the service rather than the actual cost spent during hospitalization.<sup>10</sup> Supplemental files can be requested that include a cost-to-charge ratio for each hospital allowing conversion of total charges to total cost. The cost-to-charge ratio was used to create a total cost variable for each patient and was further dichotomized to a new variable, increased total cost, defined as the top 90th percentile.

### Statistical Analysis

Baseline differences in demographics and outcomes were compared using the chi-square test for categorical variables and the Mann-Whitney *U* test for continuous variables. The effects of independent variables and SCD were assessed using multivariate logistic regression models to produce odds ratios (ORs). Penile operation was included as an independent variable in the transfusion model, and both penile operation and transfusion were included in the LOS and total cost models. All multivariate regression analyses were adjusted for clustering using the generalizing estimating equations method.<sup>11-14</sup> All analyses were performed using SAS (version 9.2; SAS Institute, Cary, NC) with a 2-sided significance level of  $P < .05$ .

## RESULTS

Overall, a nationally weighted sample of 12,547 patients with a primary diagnosis of priapism was identified within

the NIS from 2002 to 2011. The patient demographics and hospital characteristics are listed in [Table 1](#). Overall, among patients admitted to the hospital for priapism, 21.5% had a concomitant diagnosis of SCD. Patients with SCD compared to those without SCD were younger (20 years median age vs 42 years;  $P < .001$ ), more often black (96.0% vs 36.7%;  $P < .001$ ), in low median income brackets (47.0% vs 35.8%;  $P < .001$ ), with Medicaid insurance (49.8% vs 18.0%;  $P < .001$ ), and healthier (CCI of 0: 83.5% vs 77.0%;  $P < .001$ ). SCD patients were more likely to receive their care at urban (97.5% vs 92.6%;  $P < .001$ ), teaching (74.8% vs 58.0%;  $P < .001$ ) hospitals in the Southern region (51.3% vs 42.5%;  $P < .001$ ).

The outcome variables are listed in [Table 2](#). The overall rate of penile operations in the sample was 68.3%, but SCD patients were significantly less likely to receive operations (42.4% vs 75.4%;  $P < .001$ ). In addition, SCD patients on average had their operations performed later during their admission (0.87 days vs 0.47 days;  $P = .01$ ). SCD patients were more likely to receive a blood transfusion during their hospitalization (37.6% vs 2.8%;  $P < .001$ ) and on average had their transfusions earlier (0.9 days vs 1.77 days;  $P < .001$ ). In addition, SCD patients had a longer mean LOS (3.38 vs 2.69 days;  $P < .001$ ), but there was no statistically significant difference between mean total cost (\$5899 vs \$5698;  $P = .89$ ). Similar analysis comparing African American patients to non-African American patients (See [Supplementary Table](#)) revealed fewer operations (72.1% vs 79.1%;  $P < .001$ ) and more transfusions (2.2% vs 4.7%;  $P < .001$ ). However, African American patients did not experience any difference in time to operation, time to transfusion, or increased LOS.

On multivariate analysis, SCD patients were less likely to receive a penile operation (OR, 0.40;  $P < .001$ ) after controlling for independent variables ([Table 3](#)). These patients were also more likely to receive a blood transfusion (OR, 16.3;  $P < .001$ ) and have an elongated LOS (OR, 1.42;  $P = .001$ ). However, there was no significant difference in increased total cost between SCD and non-SCD patients (OR, 1.02;  $P = .869$ ). The largest relative differences between these patient populations were penile operation and transfusion rates, where SCD patients were 33% less likely to undergo a penile procedure while being 35% more likely to have a blood transfusion ([Fig. 1A](#)).

In patients who did not undergo any penile procedure, SCD patients had a higher average total cost by \$882, whereas those who underwent a penile procedure had an average increase of \$1479 ([Fig. 1B](#)). However, neither of these differences was statistically significant in multivariate models including only those patients either with or without a penile operation.

## COMMENT

The current analysis demonstrates that priapism is a costly disease with significant disparity in management of patients with SCD. Patients with SCD experience far

Download English Version:

<https://daneshyari.com/en/article/3898495>

Download Persian Version:

<https://daneshyari.com/article/3898495>

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