The Effect of Postoperative Urinary Tract Infection on Short-term Outcomes and Cost of Care After Head and Neck Cancer Surgery

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ABSTRACT

Introduction

Urinary tract infection (UTI) in the postoperative period is a nosocomial infection in the United States, accounting for over 30% of hospital-acquired infections.1,2 With urinary catheter insertion responsibility for 80% of cases.3,4 In 2008 the Centers for Medicare and Medicaid Services (CMS) began withholding reimbursement payments to pay for the cost of treating catheter-associated UTI, considering this a preventable hospital-acquired condition.

The use of prevention guidelines has been shown to reduce the incidence of catheter-associated UTI by more than 50%.5,6 However, perioperative urinary catheterization is common in patients undergoing major surgical procedures, and nearly universal in older surgical patients who frequently have predisposing conditions that justify catheterization, such as urinary retention, bladder outlet obstruction and prostate disease, which increase the risk of UTI.4,5 Head and neck cancer (HNCA) surgical patients may be at increased risk for catheter-associated UTI, as many of these patients have underlying comorbid conditions that increase the risk of postoperative UTI.6,7 Head and neck and cancer (HNCA) surgical patients may be at increased risk for catheter-associated UTI, as many of these patients have underlying comorbid conditions that increase the risk of postoperative UTI.

Methods

Discharge data from the Nationwide Inpatient Sample for 93,663 patients who underwent an ablative procedure for a malignant oral cavity, laryngeal, hypopharyngeal or oropharyngeal neoplasm in 2003-2008 was analyzed using cross-tabulations and multivariate regression modeling.

Results

UTI was diagnosed in 2% of patients, with catheter-associated UTI coded in 0.3% of patients. Patients with UTI were more likely to be over 80 years of age (OR=3.3, P<0.008), female (OR=1.9, 95% CI 1.0-3.2, P<0.001), undergoing major surgical procedures (OR=1.7, P<0.001), have predisposing bladder and prostate conditions (OR=3.3, P<0.001), undergone HNCA surgery (OR=2.3, P<0.001) and acute medical complications (OR=3.1, P<0.001). UTI was associated with significantly increased length of hospitalization and hospital-related costs after controlling for all other variables.

Conclusions

UTI is uncommon in HNCA surgical patients but is more common with extent of surgery and age, and is significantly associated with postoperative complications, length of hospitalization, and hospital-related costs. Catheter-associated UTI is likely underestimated because of difficulty in distinguishing between a catheter-associated UTI and postoperative UTI in patients undergoing major surgical procedures, who routinely undergo urinary catheterization at surgery and in the early perioperative period. HNCA patients are a high-risk group for this “never event”, particularly as the population ages.

INTRODUCTION

There were 93,663 cases in 2003-2008. Because there were only 20 cases coded as having a catheter-associated UTI, catheter-associated UTI was combined with UTI for analysis. Only 1,744 cases (2%) were diagnosed with a UTI. Urinary catheter placement was only recorded in 404 patients (0.4%). The majority of patients were male, with a mean age of 62.0 years (range, 18-1104). Patients who developed a UTI were more likely to be female, ≥55 years of age, have advanced comorbidity, be admitted urgently or emergently, more likely to undergo major surgical procedures, to have predisposing medical conditions associated with HNCA surgery such as prostate disease, among others. Bladder outlet obstruction, acute cardiac, pulmonary, infectious, or surgical complications, and were more likely to require medical care at another facility or at home after discharge.

Multiple logistic regression analysis of variables known at the time of admission showed that a diagnosis of UTI was significantly associated with an increased odds of urgent or emergent admission (OR 1.9, 95% CI 1.4-2.6, P<0.001), age greater than 80 years (OR 3.3, 95% CI 1.4-7.9, P<0.001), Medicare payer status (OR 3.1, 95% CI 2.1, 4.4, P<0.004), major surgical procedures (OR 1.7, 95% CI 1.2-2.3, P<0.001), advanced comorbidity (OR 1.8, 95% CI 1.1-2.8, P=0.012), and predisposing medical procedures (OR 3.8, 95% CI 2.8-5.1, P<0.001). Multivariate logistic regression analysis of variables associated with risk of in-hospital death and postoperative complications showed that the development of a UTI was not associated with an increased risk of in-hospital death. However, UTI was significantly associated with postoperative surgical complications (OR 2.3, 95% CI 1.7-3.1, P<0.001) and acute medical complications (OR 3.1, 95% CI 2.3-4.1, P<0.001), after controlling for all other variables.

Multivariate generalized linear regression analyses of independent variables predictive of length of hospital stay and hospital-related costs are shown in Table 1 with mean values representing the change in the length of stay or hospital-related costs associated with unit increases in the independent variable. Only variables significantly increased length of hospitalization and hospital-related costs and had the largest impact on length of hospitalization and the second largest impact on costs of care, after major surgical procedure.

CONCLUSIONS

UTI is uncommonly reported in HNCA surgical patients but is more common with extent of surgery and age, and is significantly associated with postoperative complications, length of hospitalization, and hospital-related costs. Catheter-associated UTI is likely underestimated because of difficulty in distinguishing between a catheter-associated UTI and postoperative UTI in patients undergoing major surgical procedures, who routinely undergo urinary catheterization at surgery and in the early perioperative period. HNCA patients are a high-risk group for this “never event”, particularly as the population ages.

DISCUSSION

In this study, UTI occurred in 2% of patients and was an independent predictor of acute medical and surgical complications, length of hospitalization and hospital costs. Advanced age, comorbidity, major surgical procedures, and predisposing conditions justifying urinary catheter placement were significantly associated with an increased risk of UTI. Major surgical procedures were performed in more than 50% of patients. In this high-risk population, catheter placement were documented in 6% of patients, but urinary catheter placement was documented in less than 1% of patients and catheter-associated UTI was rarely coded. Suggest that catheter-associated UTI is undercoded, as has been reported by others.3,8 Because the variables associated with UTI are also associated with urinary tract infections from Medicare claims: CONCLUSIONS

REFERENCES