Is There a “July Effect” for Head and Neck Cancer Surgery?

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INTRODUCTION

Many medical professionals and members of the public believe that receiving care in a teaching hospital in the month of July is more dangerous than receiving care at other times of the year. This belief is due to the relative inexperience of house staff who all have assumed new roles at the start of the academic year. Each July the media reports this “July effect” as fact.1-2 Despite the “July effect” being accepted by many as a fact, there are conflicting reports in the literature about whether the quality of patient care at academic medical centers declines during the annual resident transition. To date, no studies have evaluated the effect of a July admission on outcomes for Head and Neck Surgery patients. We sought to investigate whether there is a difference in postoperative complication rates and outcomes for HNCA patients undergoing surgery in academic medical centers depending on the time of year they received treatment using the Nationwide Inpatient Sample (NIS). We confined our study to patients treated in 2005 to 2008 to avoid confounding of the effect of changes in work hour restrictions and resident coverage resulting from implementation of the Accreditation Council for Graduate Medical Education (ACGME) mandated resident work hour restrictions in 2003, which were fully implemented by 2005.

METHODS

A cross-sectional analysis of patients undergoing surgery for oral cavity, laryngeal, hypopharyngeal, or oropharyngeal cancer was performed using discharge data from the Nationwide Inpatient Sample (NIS), the largest all-payer inpatient care database in the United States, containing data from approximately 8 million hospital stays each year from a stratified sample of 20% of non-federal U.S. hospitals from participating states. Acute medical complications were derived from codes for acute cardiac events, acute pulmonary edema or failure, acute renal failure, acute hepatic failure, acute cerebrovascular events, sepsis, pneumonia, and UTI assigned at the time of hospital discharge, and surgical complications were derived from codes for complications directly resulting from surgical procedures assigned at the time of hospital discharge. Analyses were performed comparing patients admitted in July to those admitted in August through June. Discharge quarter of the academic year (July through September, October through December, January through March, and April through June) were also examined to test the hypothesis that inexperience extends beyond the first month of July. Data were analyzed using Stata 12 (StataCorp, College Station, TX). Associations between variables were analyzed using cross-tabulations, multivariate logistic regression, and multinomial logistic regression modeling. Variance estimation was performed using procedures for survey data analysis with replacement. The primary clinical endpoints were evaluated using multiple logistic regression analysis in a model that including interactions between admission month or discharge quarter and hospital teaching status. Generalized linear regression modeling with a log link was used to analyze costs and length of stay because these variables were not normally distributed.

RESULTS

There were 60,999 cases recorded in 2005-2008 with admission month known for 48,263 cases. 3,812 cases (8%) were admitted in July. There were no significant differences between patients based on July versus non-July admission with respect to primary site, age, race, sex, payer status, comorbidity, urgent/emergent admission, hospital characteristics including teaching status, postoperative complications, disposition, discharge disposition, or death. No significant association was found between July admission and patient or hospital demographic characteristics. Teaching hospital status was significantly associated with a higher incidence of major surgical procedures, prior radiation, urban location, and home discharge, and a decreased odds of urgent/emergent admission, age greater than 80 years, oropharyngeal cancer primary site disease, geographic location in the south or west, and private hospital status. A July admission was not significantly associated with in-hospital death, postoperative surgical complications, or acute medical complications (Table 1). After controlling for the effects of all variables, hospital characteristics and July admission were not associated with an increased risk of in-hospital death, postoperative surgical complications, and acute medical complications on multivariate analysis. Multivariate generalized linear regression analyses of independent variables predictive of length of hospital stay did not show any differences based on month of admission. No significant interaction was found between July admission and hospital teaching status.

CONCLUSIONS

This study found no association between HNCA outcomes and the month that surgery was performed, or whether surgery was performed in a teaching hospital. Despite widespread media attention to the potential dangers of hospital admission in July because of the influx of new and inexperienced trainees and newly minted physicians fresh out of training, and the old adage “don’t get sick in July” the study found no evidence to support an increase in morbidity, mortality, length of stay, or hospital-related costs for HNCA patients treated in July compared to all other months. Based on these results, there is no evidence that a “July effect” occurs for HNCA surgical patients treated in academic medical centers.

A recent analysis of 39 studies investigating the “July effect” was widely reported in the news media as evidence for the existence of this phenomenon.3 This study concluded that “mortality and efficiency of care tend to worsen” in July; however, the authors found that only 22% of reviewed studies that evaluated mortality as an outcome, 17% of studies reporting morbidity as an outcome, and 37% of studies showing decreased efficiency as an outcome showed evidence for a “July effect,” and few controlled for clinical characteristics of patients. Overall, only one-third of studies reviewed were rated as good or higher quality and the authors cautioned that methodological limitations and marked study heterogeneity limited the conclusions that could be drawn.4

Despite the relative paucity of evidence for a “July effect,” a majority of physicians believe that the annual resident transition results in worse outcomes and diminished patient care.4 A recent study of 259,748 medical, surgical, and obstetric patient encounters found no increased rate of patient mortality after the annual resident transition in July,5 which supports the contention that sufficient resident supervision is being provided in both medical and surgical training programs to prevent adverse outcomes resulting from trainee inexperience.

Although the annual resident changeover in July may be a source of anxiety for healthcare professionals and patients, this study, and the many previously conducted studies, do not support the widely held belief that there is a “July effect” for surgical patients receiving care at academic medical centers.

REFERENCES

1) Park KA. The July Effect: Why Summer is the Most Dangerous Time to Go to the Hospital. Time Magazine. July 12, 2011.


