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Psychiatric disease in surgically treated colorectal cancer patients

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ABSTRACT

Background: Underlying psychiatric conditions may affect outcomes of surgical treatment for colorectal cancer (CRC) because of complex clinical presentation and treatment considerations. We hypothesized that patients with psychiatric illness (PSYCH) would have evidence of advanced disease at presentation, as manifested by higher rates of colorectal surgery performed in the presence of obstruction, perforation, and/or peritonitis (OPP-surgery).

Materials and methods: Using data from the 2007-2011 National Inpatient Sample, we identified patients with a diagnosis of CRC undergoing colorectal surgery. In addition to somatic comorbid conditions flagged in the National Inpatient Sample, we used the Clinical Classification Software to identify patients with PSYCH, including schizophrenia, delirium/dementia, developmental disorders, alcohol/substance abuse, and other psychiatric conditions. Our study outcome was OPP-surgery. In addition to descriptive analysis, we conducted multivariable logistic regression analysis to analyze the independent association between each of the PSYCH conditions and OPP-surgery, after adjusting for patient demographics and somatic comorbidities.

Results: Our study population included 591,561 patients with CRC and undergoing colorectal cancer surgery, of whom 60.6% were aged 65 years or older, 49.4% were women, and 6.3% had five or more comorbid conditions. Then, 17.9% presented with PSYCH. The percent of patients undergoing OPP-surgery was 13.9% in the study population but was significantly higher for patients with schizophrenia (19.3%), delirium and dementia (18.5%), developmental disorders (19.7%), and alcohol/substance abuse (19.5%). In multivariable analysis, schizophrenia, delirium/dementia, and alcohol/substance abuse were each independently associated with increased rates of OPP-surgery.

Conclusions: Patients with PSYCH may have obstacles in receiving optimal care for CRC. Those with PSYCH diagnoses had significantly higher rates of OPP-surgery. Additional

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evaluation is required to further characterize the clinical implications of advanced disease presentation for patients with PSYCH diagnoses and colorectal cancer.

Introduction

Colorectal cancer is the second leading cause of cancer-related deaths in the United States, which affects both men and women.[1] Complicated, locally advanced colon cancer occurs in up to 20% of new diagnoses and manifests as obstruction, perforation, and/or peritonitis.[2] These high-risk cases can present a diagnostic and therapeutic challenge as the emergent nature of the necessary surgery can outweigh surgical oncologic principles. As such, complicated presentations of colorectal cancer are associated with poorer short-term and long-term outcomes.[3]

Psychiatric and mental illness affects 18% of adults in a given year and is associated with a high rate of chronic conditions and early death.[4] Psychiatric and mental illness is also associated with worse outcomes in a variety of cancers, including colorectal, esophageal, lung, and breast cancer.[5-7] The discrepancy in oncologic outcomes in patients with mental illness is likely due to a combination of delays in diagnosis, disparities in access to care, differential treatment, and poor adherence to therapy.[6,8-10] Although poor outcomes in patients with psychiatric illness and colorectal cancer have been described, there are limited studies examining the mechanism by which mental illness impacts colorectal cancer mortality. Specifically, it is unknown whether patients with psychiatric conditions are more likely to present with high-risk disease.

The aim of our study was to examine the interaction between psychiatric conditions and colorectal resection in the setting of obstruction, perforation, or peritonitis in patients with colorectal cancer using the National Inpatient Sample (NIS).

Materials and methods

This is a cross-sectional study using 2007-2011 data from the NIS of the Healthcare Cost and Utilization Project[11] (to evaluate the association between defined psychiatric conditions and substance abuse and emergency colorectal resection in patients with colorectal cancer. This study was deemed exempt by the Case Western Reserve University Institutional Review Board.

Data source

We used NIS data spanning from 2007 to 2011. Developed by the Agency for Healthcare Research and Quality, the NIS is an all-payer database that includes discharge summary data for over 7 million inpatient stays every year, from a 20% stratified sample of nonfederal, short-term, and other specialty hospitals nationwide. In addition to patient demographics, the NIS record carries diagnosis and procedure codes in International Coding of Diseases, 9th Clinical Modification (ICD-9-CM), as well as comorbid conditions, coded according to the algorithm by Elixhauser *et al.*[11]

Study population

Our study population included all admissions for patients aged 18 years or older, carrying diagnosis codes for colorectal cancer (ICD-9-CM diagnosis codes 153.0-153.9, 154.0-154.9) and procedure codes indicating colorectal surgery (ICD-9-CM procedure codes 17.3, 17.41, 17.42, 17.44, 17.49, 45.7, 45.8, 45.90, 45.92, 45.93, 45.94, 45.95, 46.03, 46.04, 46.2, 48.40, 48.42, 48.43, 48.49, 48.5, 48.6).[12] These procedures included colorectal resection with anastomosis as well as diversion, performed in open or minimally invasive manner. Our analytic data set included 358,745 weighted admissions. No exclusion criteria were applied.

Variables of interest

Outcome variable

Our outcome variable was emergency colorectal surgery for colorectal cancer, defined as surgery, performed in the presence of the following diagnoses: obstruction (ICD-9-CM diagnosis codes 560.8 and 560.9); peritonitis (567.0, 567.2, and 567.9); or perforation (569.83).

Independent variables

Our main independent variables were psychiatric conditions, which were identified by using diagnosis codes grouped by Agency for Healthcare Research and Quality's Clinical Classification Software into distinct clinical categories (https://www.hcup-us.ahrq.gov/toolssoftware/ccs/AppendixASingleDX.txt), including adjustment disorders (Clinical Classification Software 650); anxiety disorders (651); attention-deficit, conduct, and disruptive behavior disorders (652); delirium, dementia, and amnestic and other cognitive disorders (653); developmental disorders (654); disorders usually diagnosed in infancy, childhood, or adolescence (655); impulse control disorders (656); mood disorders (657); personality disorders (658); schizophrenia and other psychotic disorders (659); alcohol-related disorders (660); and substance-related disorders (661). Schizophrenia, delirium/dementia, developmental disorders, and alcohol/substance-related disorders were each considered independently and the remaining diagnoses were grouped as "Other Psychiatric conditions." Because of significant coding and clinical overlap between delirium and dementia, these diagnoses could not be separated. The presence of a psychiatric condition was flagged as "Yes" in the presence of any of the aforementioned conditions.

Additional independent variables included age, which we grouped in the 18-64 and 65 and older categories; sex (male/female); race (white, black, Hispanic, other, missing); insurance (Medicaid, Medicare, Private, Self-Pay/Uninsured, other, missing), median household income at the zip code level, in