Opinion

Patients with severe mental disorder who underwent vascular surgery and their results

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ABSTRACT

Given the high frequency of cardiovascular disease, vascular surgery may be frequent among individuals with Serious Mental Illness (SMI). Unfortunately, there hasn't been much research done on the postoperative results of vascular surgery, especially in a subgroup of SMI. We used data from the South London and Maudsley NHS Foundation Trust (SLaM) using its Clinical Record Interactive Search (CRIS) platform and linkage with Hospital Episode Statistic to conduct a retrospective observational analysis (HES). OPCS version codes were used to identify patients who had undergone vascular surgery. For patients with SMI compared to the general population, the length of stay (LOS) was simulated using Incidence Rate Ratios (IRRs) and a month's worth of emergency hospital readmissions (ORs).

Key Words: *surgical care; Cardiovascular disease; Neuro surgery; Vascular surgery*

INTRODUCTION

A person is predicted to encounter a mental health disorder every year, making mental illness the second most common source of disease burden in England. Severe Mental Illness (SMI), which includes bipolar disorder, schizophrenia, and schizoaffective disorder, is frequently crippling and impairs one's capacity to engage in functional and occupational tasks. Individuals with SMI had a year shorter life expectancy and more medical comorbidities than the general population, especially Cardiovascular Disease (CVD). This will be caused, at least in part, by modifiable risk factors such smoking, obesity, hypertension, high cholesterol, and insulin resistance or diabetes; however, the disparity in healthcare access needs to be further examined. Vascular surgery is commonly done, even if pharmacological therapies play a significant part in the management of CVD. Given the higher possibility of needing surgery and the known hazards involved in it, it is essential to understand the post-operative results of vascular surgery for patients with SMI. There is substantial evidence of an increased risk of emergency hospitalization, an increased length of stay following surgery, and an increased risk of 30-day readmission from studies looking at post-operative surgical outcomes in patients with SMI more generally.

The evidence for post-surgical mortality is less reliable. Poorer outcomes in SMI may be caused by a variety of causes, including delayed surgical disease manifestation, symptom articulation challenges, and higher pain thresholds An alternative explanation is poor treatment engagement; it has been previously reported that patients with SMI are less likely to receive preventative care and management of comorbid medication conditions like coronary artery disease and diabetes, leading to surgical outcomes that could have been avoided. Despite the fact that people with SMI need more surgeries and have worse post-operative results, the differences in post-operative health outcomes by type of SMI, remission status, type of health, and social functioning are not well understood. We are not aware of any study that has looked into post-operative outcomes among SMI patients by types of vascular surgery because vascular surgery is a diverse range of surgical procedures.

Consequently, taking use of data on mental healthcare co nnected to acute hospitalisation data from a large South London catc hment, we/ sconducted a study to estimate vascular surgery standardised admissions ratios for patients with SMI.

Also, we looked into factors including length of stay and inpatient m

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ortality as predictors of health outcomes following vascular surgery. Also, we looked into factors that could predict 30day emergency hosp ital readmission outcomes as well as the length of stay for readmission following vascular surgery.In accordance with NICE recommendatio ns, we also looked at a wide range of acute hospitalisation health outc omes by four surgical categories to compare results for such patients: aortic/visceral, endovascular, major vascular, peripheral endovascular, and other. Using information from the South London and Maudsley NHS Foundation Trust (SLaM) Biomedical Research Centre (BRC) Case Registry, we carried out a retrospective observational cohort research. SLaM is one of Europe's largest secondary mental healthcare providers, providing services to a geographic catchment of about a million people in four South London boroughs (Lambeth, Lewi- sham, Southwark, and Croydon). In order to provide researchers with access to de-identified electronic health records within a strong governance framework, the Clinical Record Interactive Search (CRIS) platform was developed with funding from the National Institute for Health Research (NIHR). Electronic health records have been widely used across all SLaM services. On CRIS, there are presently over cases that have been treated by a variety of SLaM providers. The CRIS database has full authorization for secondary analysis and has been integrated with data from a variety of sources. This database approval covered the investigation that was the subject of this article. Patients represented in the database, including study participants, did not give their explicit consent. National data governance law, which permits and regulates the use of anonymized healthcare data for research without specific consent, serves as a broader framework for research ethics approval. The CRIS-HES connection was specifically permitted and is protected by the same legal framework as the secure use of identifiable information for data linkages. Data are kept inside a healthcare firewall for analysis in accordance with the CRIS security model approved by the research ethics committee, and their use is supervised by a committee with patient input. CRIS and its output are actively promoted to patients and there is both a local and national structure permitting people to opt out of healthcare data used for research, both of which are adhered to in all data use. In order to support a variety of natural language processing applications to identify texts related to diagnosis, treatment, and other pertinent clinical information, CRIS enables the extraction of data from electronic health records' structured fields as well as unstructured "open text" fields (such as clinical notes, clinic letters). The SLaM BRC Case Registry has been previously discussed in detail and has been utilized to address a number of mental health research ideas.

All hospital admissions for patients living in the four South London boroughs of Croydon, Lambeth, Lewis ham, and Southward are included in the Hospital Episode Statistics (HES) data. The CRIS data linkage is available for patients with mental health issues who are in contact with SLaM and HES, and this has been authorized for secondary analysis. Furthermore, all HES data for inhabitants in the four South London boroughs is available for secondary study Data from the SLaM and the HES are used for administrative functions. Through an Electronic Patient Journey System (EPJS), which is mostly entered by clinicians, SLaM data is extracted. The ICD categorization system was used to make the diagnosis, and HoNOS, a UK-validated assessment measure, was used to determine the health and social functioning of those with severe mental illness. Data on patients' ages, genders, and ethnicities—information that is readily available for almost all patients—were extracted. Unfortunately, such information is not accessible through CRIS or data linkage when a patient transfers to another mental health trust or leaves the SLaM catchment area. size of the greatest pNET were analyzed in pancreatic specimens. The primary reporting or coding formats employed in this study have not changed over the course of the investigation. For instance, during the study period, CRIS employed the ICD to diagnose patients with SMI, and HoNOS was used to gauge the health and social functioning of SMI sufferers. Two co-authors evaluated the accuracy of data extraction and statistical analysis (MG and SK). Another co-author (MP) periodically performed CRIS data quality checks with the assistance of all other co-authors. All patients who underwent vascular surgery and resided in the SLaM geographic catchment area were evaluated using HES. The admission date of the hospitalization episode involving the relevant vascular procedure served as the index date for determining exposure and confounding variables. We collected data on a person's age at the time of the vascular procedure, gender, ethnicity (White vs. Non-White), living situation (alone or with a partner), and marital status (cohabiting or not) at the time of the index date. We calculated socioeconomic status using forecasts from the Index of Multiple Deprivation for each patient's neighborhood (the Lower Super Output Area, a typical national geographic unit with a mean population) at the index date. Natural language processing tools were used in open text fields in conjunction with structured medication fields to collect data on documented medication use one year prior to the index date. Medication classes retrieved included: antipsychotics, antidepressants, antihypertensive, analgesics, anxiolytics and hypnotics, beta-blockers, calcium channel blockers, angiotensin II receptor antagonists, antidiabetics, and anticoagulants. Only SLaM patients' medication information was available. Hence, in order to conduct subgroup analysis, we categorized people with SMI as follows: I received any psychiatric medication (antipsychotics, antidepressants, anxiolytics, and hypnotics); ii) received CVD medication (beta-blockers, calcium channel blockers, angiotensin II receptor antagonists, antidiabetics, and anticoagulant); iii) received both types of psychiatric and CVD medication. One year prior to the index date, we acquired data on hospital admissions due to cardiovascular disease and physical disability. For this study, there were no data on smoking or obesity. However, hospital admissions linked to smoking and obesity, including CVD hospital admissions, hospital admissions related to cholesterol, and hospital admissions related to physical handicap, were gathered one year before to hospital admission for vascular surgery. The following cardiovascular diseases and ICD-10 diagnosis data are used to characterize hospital admissions. First, we made a comparison between patients with SMI and patients who underwent vascular surgery without having any interaction with SLaM services.

Also, we examined sociodemographic data and mental health symptoms between SMI patients who received pharmacological therapies and vascular disease patients who underwent surgical procedures.

Then, for patients with SMI who were admitted via different emergency and elective admission routes, age and gender Standardized Admission Ratios (SARs) for vascular surgery were computed. The catchment resident population that underwent vascular surgery at the same time as the SMI cohort served as the reference population. The method of indirect age and gender standardization was employed. Additionally, logistic regression models were used when the dependent variable was binary. Results were corrected for sociodemographic factors, hospital admissions for CVD and disability-related conditions, and the emergency route of hospital admission was gradually added. Following that, the post-operative health outcomes of a subgroup of SMI patients, including those with affective and non-affective illnesses, were compared to those of the comparator cohort. Also, the comparator cohort's post-operative health outcomes were compared to those of a subgroup of SMI patients with different levels of remission (complete remission, partial remission, and patients with active symptoms). The post-operative health outcomes for patients with SMI and the comparison group were then examined by the presence of previous physical disability conditions, CVD conditions, and the presence of both CVD and physical disability conditions. Also, post-operative health outcomes for patients with SMI and the comparator cohort were determined after stratifying them according to the kind of vascular surgery. Next, factors associated with vascular surgical hospitalization outcomes such as duration of stay and inpatient mortality were studied for patients with SMI, using zero-inflated Poisson regression and logistic regression models, respectively. Each model's covariates were corrected for one another. In multiple testing of post-operative health outcomes, Bonferroni correction was applied. Finally, logistic regression models were used to explore characteristics related to vascular surgical hospitalization outcomes for emergency readmission within Months for patients with SMI. Patients with SMI who had at least one physical disability comorbidity were more likely to be readmitted within a month of having vascular surgery when compared to the control cohort when the data were stratified by physical disability comorbidities. For the hospitalization in the cohort with SMI, multivariate models of covariates connected to the length of stay and inpatient mortality were used. In the final model, the following remained independent predictors of duration of stay for the hospitalization: admission as an emergency, older age, HoNOS subscale self-injury and daily living issues, and past hospital admissions related to syncope/collapse and arrhythmia. Previous hospitalizations for arrhythmia or hypotension were independent risk factors for inpatient mortality. Variables (readmission probabilities and duration of stay) connected to emergency hospital readmissions within a month of the index discharge for patients with SMI.