Impact of Psychiatric Diagnosis in Cervical Myelopathy Surgical Procedures

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Introduction

• The impact of psychiatric disorders on outcomes following surgery for cervical myelopathy (CM) is not well understood.

Objective

• We examine the impact of a psychiatric comorbidity on mortality, complications, non-home discharge, length of hospital stay, and total charges following surgery for CM.

Methods

• This was a retrospective cohort analysis of the Healthcare Cost and Utilization Project (HCUP) National Inpatient Sample (NIS) database 2013 -2014.

• CM cases were identified based on ICD-9-CM code 721.1.

• Psychiatric comorbidities include schizophrenic, episodic, and delusion mood disorders, other psychoses and pervasive developmental disorders.

• Table 3: Model 1 controls for age, sex, and psychoses. Model 2 controls for age, sex, psychoses, race, income quartile, payer, elective admission, census division, APRDRG Risk Mortality and Severity scores, n diagnoses, n chronic conditions, n procedures, and multiple comorbidities. Length of stay was only controlled for in Model 2 for Total Charges.

• All statistical analyses were performed using Statistical Analysis

Results

Table 1: Characteristics of cases

Characteristic	No psychiatric comorbidity	Psychiatric comorbidity	P-value
Total (N, %)	17,687 (96.5)	648 (3.5)	-
Sex (female)	44.00%	56.02%	<0.0001
Age (mean, years)	61.05	57.75	<0.0001
Length of stay (mean, days)	3.47	5.32	<0.0001
Number of diagnosis (mean)	8.68	12.84	<0.0001
Number of procedures (mean)	4.65	4.9	0.006
Elective admission	84.75%	76.71%	<0.0001
Number of chronic conditions (mean)	5.17	7.81	<0.0001
Procedure			
ACDF	59.32%	53.09%	0.012
PCDF	19.56%	24.54%	
Front-back	3.91%	4.17%	
Microdiscectomy	5.76%	6.94%	
Other spinal decompression	11.44%	11.27%	
Race/Ethnicity			
White	75.55%	75.21%	-
Black	14.10%	13.64%	
Hispanic	5.54%	6.99%	
Asian or Pacific Islander	1.86%	2.16%	
Native American	0.5%	0%	
Other	2.43%	2.00%	
Comorbidities			
Alcoholism	2.65%	7.10%	<0.0001
Deficiency Anemia	6.41%	10.80%	<0.0001
Congestive Heart Failure	3.07%	5.25%	0.003
Chronic Pulmonary Disease	18.35%	29.94%	<0.0001
Depression	16.42%	6.48%	<0.0001
Diabetes	25.67%	32.25%	0.0001
Diabetes w chronic complications	3.47%	8.64%	<0.0001
Drug abuse	1.90%	8.18%	<0.0001
Hypertension	59.08%	63.58%	0.02
Liver disease	1.62%	5.56%	<0.0001
Other Neurological disorders	5.86%	13.58%	<0.0001
Obesity	14.21%	20.52%	<0.0001
Paralysis	5.07%	7.72%	0.003
Renal Failure	5.07%	7.72%	0.004
Chronic Kidney Disease	5.38%	8.02%	0.005

Table 2: Outcomes and complications

Outcome	No psychiatric comorbidity	Psychiatric comorbidity	P-value
Disposition on discharge			
Home	79.62%	64.97%	<0.0001
Short term care	0.8%	1.08%	
Skilled nursing facility	0%	0%	
Died	0.2%	0.5%	
Intermediate care; rehab	19.32%	33.49%	
Died during hospitalization	0.2%	0.5%	0.2
Length of Stay (mean, days)	3.47	5.32	<0.0001
Total charges, dollars (mean)	$85,383	$106,301	<0.0001
Any complication	11.07%	16.20%	<0.0001
Cardiac Arrest	0.5%	1.23%	0.007
Acute Respiratory Failure	1.17%	2.78%	0.0003
PE	0.3%	0.6%	0.1
Pulmonary complication (ARDS, ARF, RespComp, PE)	1.70%	3.70%	0.0001
Post-op anemia req. transfusion	3.88%	5.56%	0.04
Acute Renal Fail	1.92%	3.09%	0.04
Dehiscence	0.02%	0.2%	0.02
Wound Infection	0.2%	0.5%	0.07
Severe Sepsis	0.3%	0.9%	0.003
UTI	3.08%	5.25%	0.002
Infection	4.49%	7.56%	0.0002
Death or cardiac arrest	0.7%	1.70%	0.003

Results

Table 3: Multivariate analysis

	Model 1		Model 2	
Outcome	**Odds Ratio**	**95% CI**	**Odds Ratio**	**95% CI**
Non-home discharge	2.97	(2.48, 3.56)	1.81	(1.43, 2.30)
Complication	1.75	(1.41, 2.18)	0.79	(0.6, 1.07)
Death	3.00	(0.9, 9.79)	0.93	(0.2, 4.22)
	Reg. Coefficient		**Reg. Coefficient**	
Length of stay (days)	2.07	(1.56, 2.58)	0.52	(0.4, 0.6)
Total hospital charges	$22,771	($15,070, $30,471)	$1,992	(–$917, $4,902)

Discussion

• NIS cases with a psychiatric comorbidity:

• Have increased odds of non-home discharge and a longer length of stay.

• Do not have increased odds of mortality, complications, or total hospital charges.

• Difficulties in discharge planning for psychiatric patients may explain the increased risk of non-home discharge for this group seen in the NIS data.

• Inadequate care planning for patients with mental health disorders has been discussed previously [1,2].

• This is concerning given that comprehensive discharge planning can be beneficial, especially for patients with severe or chronic illnesses [3].

• Additional research is necessary to define how quality improvement can be implemented for this patient group.

• Long-term functional outcomes for psychiatric CM patients were not examined because the NIS lacks longitudinal data.

Conclusion

• Many outcomes are similar for psychiatric and mentally healthy patients receiving spine surgery for CM.

• However, guidelines drawn from the NIS data and supported by literature might advise that psychiatric patients require more effective discharge planning compared to patients without this comorbidity.

References

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