2003-2012 Inpatient Mortality and Cost of Transjugular Intrahepatic Portosystemic Shunt in Budd-Chiari Syndrome in the US.

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Published In/Presented At

Lu, S. Lee, E. W. (2017, March). *2003-2012 Inpatient Mortality and Cost of Transjugular Intrahepatic Portosystemic Shunt in Budd-Chiari Syndrome in the US.* Poster Presented at: 2017 SELECT Capstone Posters and Presentations Day. Kasych Family Pavilon, Lehigh Valley Health Network, Allentown, PA.

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Introduction

- In 2009, the American Association for the Study of Liver Diseases deemed Budd-Chiari Syndrome (BCS) an indication for Transjugular Intrahepatic Portosystemic Shunt (TIPS) procedures.
- Studies on BCS patients who have undergone TIPS have been limited by sample size due to a low incidence of 0.13 - 0.36 per million.
- Our study seeks to better understand the value of TIPS procedures provided to BCS patients.

Methods

- National estimates of inpatient mortality in the US are available through the National Inpatient Sample (NIS) from the Health Cost and Utilization Project (HCUP).
- A discharge-weighted national estimate of 605 TIPS procedures performed in BCS patients NIS from 2003 – 2012 using International Classification of Diseases-9 (ICD-9) procedural code 39.1 and diagnostic code 453.1.
- Multivariate analysis, bivariate logistic regression, analysis of variance (ANOVA), post-hoc Tukey tests, and independent sample T-tests were used for statistical analyses in SPSS.

Results

- Demographics
  - Age: 45.1 ± 17.1 years
    - Younger than general TIPS[1]
  - 54.8% female
- Mortality: 6.3% overall
  - Lower than general TIPS[1,2]

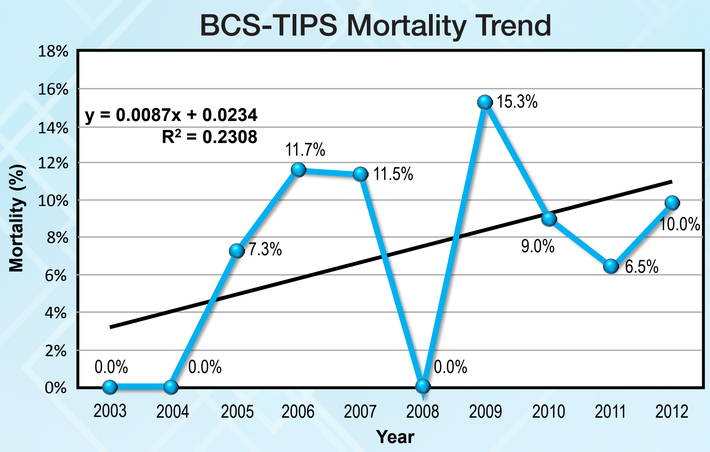

Figure 1. Inpatient mortality had a slightly positive trend (m=0.0087) with a poor fit ($R^2 = 0.2308$), with a peak of 15.3% in 2009.

Table 1. Top 3 Diagnoses and Comorbidities with the Highest Odds of Inpatient Mortality

Category	Factor	OR	P-value
Dx (Reference: No Dx)	Acute necrosis of liver (570)	12.261	<0.0005
	Complications of transplanted liver (Begin 1987) (996.82)	5.700	0.003
	Ascites NEC (Begin 2007) (789.59)	2.885	0.002
Comorbidites (Reference: No comorbidity)	Drug abuse	16.912	<0.0005
	Peripheral vascular disorder	16.001	<0.0005
	Coagulopathy	7.443	<0.0005

- Cost: ~$4.5 million annually
  - Mean: $75,039 ± $93,579

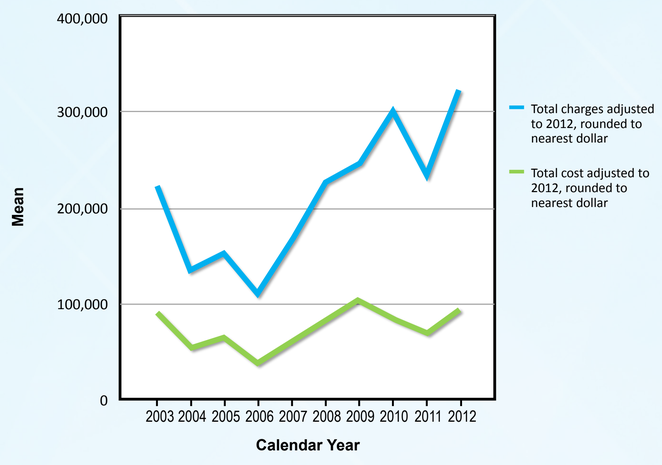

Figure 2. Inpatient costs and charges increased over time.

Table 2. Top 3 Diagnoses and Comorbidities with the Highest Costs.

Category	Factor	Cost Increase ($)	P-value
Dx (Reference: BCS) ANOVA p <0.0005	Complications of transplanted liver (Begin 1987) (996.82)	$120,456	<0.0005
	TB of limb bones - unspec (0.15.50)	$104,866	0.005
	Erythema infectiosum (0.57.0)	$97,186	0.002
Comorbidites (Reference: No comorbidity)	Peripheral vascular disorders	$175,507	<0.0005
	Pulmonary circulation disorders	$141,543	<0.0005
	Weight loss	$86,882	0.001

Discussion

- Demographics with higher odds of mortality include age > 70 years old, male, Asian and Pacific Islander, and Medicare & self-pay.
- Teaching hospitals had a lower odds of mortality.
- Transfers from acute care hospitals had a higher mortality and cost.
- Though liver transplant is ultimately the cure for BCS3, patients continue to have poor outcomes from complications at a high cost.

Conclusions

- Overall, there is a significantly lower inpatient mortality for TIPS in BCS patients when compared to general TIPS procedures (high value).
- Both inpatient mortality and cost have increased over time, decreasing the value of TIPS for BCS patients; special precaution should be given to patients with the highest risks.

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