

THROMBOEMBOLISM IN PATIENTS WITH NONALCOHOLIC STEATOHEPATITIS: BASELINE CHARACTERISTICS AND IN-HOSPITAL OUTCOMES

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INTRODUCTION

- At least 3% to 5% of Americans suffer from Non-alcoholic steatohepatitis (NASH). Several studies suggest a status of hypercoagulability in patients with NASH, and its resultant thromboembolism (TE) complications. Nonetheless, further studies to identify the burden of concurrent TE in NASH patients are needed. The TE complications we have looked at include pulmonary embolism and deep venous thrombosis only.
- We aim to establish the baseline characteristics of NASH patients with and without TE and the hospitalization outcomes such as mortality, length of stay (LOS), and total hospital costs for both strata.

METHODS

- We analyzed and compared all NASH-related adult hospitalizations with or without TE from September 2015 to December 2019 using the National Inpatient Sample database.
- The primary outcome was to determine the burden of TE in NASH hospitalization. Secondary outcomes included all-cause in-hospital mortality, length of stay (LOS), and total hospital costs.
- SAS 9.4 software was used for statistical analysis.

RESULTS

- A total of 6820 (1.6%) out of 435,845 NASH hospitalizations suffered from TE. Compared to the NASH without TE arm, the NASH with TE arm tended to occur more in patients older than 60 years (62% vs 59.7%) (p<0.001). Within the NASH with the TE, Females (55.2%) and Caucasians (77.3%) were affected more (p<0.001). Patients in the TE arm had a higher prevalence (p<0.01) of obesity (39.4% vs 36.6%), coagulopathy (33.9% vs 32.4%), cancer (12.1% vs 6.2%), and PAD (5.6% vs 4.6%) than in the non-TE arm.
- However, the non-TE arm had a higher prevalence (p<0.001) of diabetes (61.5% vs 51.2%), CAD (23.1% vs 19.8%), COPD (22.2% vs 20.2%), Renal failure (27.4% vs 23.9%), smoking (31.9% vs 29.8%).
- The NASH with TE arm had higher mortality (8.5% vs 3.6%) with a mortality-adjusted odds ratio of 2.19 (95% CI: 2.00-2.40) (p<0.001) in comparison to the non-TE arm.
- The mean LOS (8.7 vs 5.7), and mean hospital cost (\$ 25385 vs \$16496) were also higher in the TE arm (p<0.001).

TABLES

Table 1. Baseline characteristics of NASH with TE and NASH without TE.

Variables	NASH* with Thromboembolism* N=6,820(1.6%)	NASH without Thromboembolism* N=429,025(98.4%)	P- Value
Age (Mean ± SD*)	62.5 ± 13.3	61.8 ± 13.1	0.08
Age groups, %			<0.001
18 - 40 years	6.5%	7.3%	
41 - 60 years	31.4%	33%	
61 - 80 years	55.2%	54.2%	
>80 years	6.8%	5.5%	
Gender, %			<.0001
Male	44.5%	37.9%	
Female	55.5%	62.1%	
Race, %			<0.001
Caucasians	77.3%	74.7%	
African Americans	6.4%	4.2%	
Others	16.3%	21.1%	
Comorbidities, %			
Hypertension	62.9%	62.5%	0.40
Diabetes mellitus	51.2%	61.5%	<.001
Congestive heart failure	22.5%	22.1%	0.44
CAD*	19.8%	23.1%	<0.001
Peripheral vascular disease	5.6%	4.6%	<0.001
COPD*	20.2%	22.2%	<0.001
Renal failure	23.9%	27.4%	<0.001
Coagulopathy	33.9%	32.4%	0.01
Obesity	39.4%	36.6%	<0.001
Drug abuse	2.3%	2.4%	0.82
Alcohol abuse	3.2%	3.7%	0.04
Smoking	29.8%	31.9%	0.0002
Cancers	12.1%	6.2%	<0.001
Insurance type, %			0.0002
Medicare	56.5%	56.7%	
Medicaid	10.6%	11.9%	
Private	27.1%	26.2%	
Other	5.8%	5.1%	
Location/Teaching status of the hospital, %			0.06
Rural	7%	7.6%	
Urban nonteaching	17.7%	18.3%	
Urban teaching	75.2%	74.1%	

Table 2: Outcomes of NASH with TE and NASH without TE

Outcomes	NASH with Thromboembolism N=6,820(1.6%)	NASH without Thromboembolism N=429,025(98.4%)	p-value
In-hospital mortality, %	8.2%	3.6%	<0.001
Mortality adjusted odds ratio	2.19(2.00 – 2.40)		<0.001
Length of stay, in days (mean ± SD)	8.7 ± 9.1	5.7 ± 6.7	<0.001
Total hospitalization cost, in US \$ (mean ± SD)	25385 ± 38161	16496 ± 27531	<0.001
Disposition, %			<0.001
Discharge to home	41.1%	56.4%	
Transfer other: includes Skilled Nursing Facility, Intermediate Care Facility, or another type of facility	26.1%	17.1%	
Home health care	20.4%	19.1%	
Against medical advice	0.6%	0.7%	

CONCLUSION

Our study demonstrated higher burden of TE in NASH patients. Study also showed significantly higher in-hospital mortality, mean length of stay, and hospitalization cost in NASH with TE patient subgroup. Further studies are needed to better understand the pathogenesis, early diagnosis and preventive measures for TE associated with NASH.