NONALCOHOLIC STEATOHEPATITIS AND ATRIAL FIBRILLATION: BASELINE CHARACTERISTICS AND OUTCOMES: A PROPENSITY-MATCHED ANALYSIS FROM NATIONAL INPATIENT SAMPLE DATABASE

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INTRODUCTION

- Non-alcoholic steatohepatitis (NASH) affects at least 3 to 5% of Americans, which imposes a higher risk of concurrent cardiovascular diseases including arrhythmias, of which atrial fibrillation (Afib) is the most prevalent.
- Nonetheless, data on the burden of concurrent Afib in NASH patients is still lacking. Our aim is to define baseline characteristics of NASH patients with and without Afib and related in-hospital outcomes such as mortality, length of stay (LOS), and total hospital costs.

METHODS

- Using the National Inpatient Sample database, we analyzed all NASH-related adult hospitalizations with or without Afib from September 2015 to December 2020.
- We applied propensity score matching to the 2 groups to balance baseline characteristics.
- SAS 9.4 software was used for statistical analysis.

RESULTS

- Out of 435,845 NASH hospitalizations, 62,335 (14.3 %) had concurrent Afib. The NASH with Afib cohort consisted of older patients (mean age, 69.4 vs. 60.6 years) compared to those without Afib (p< 0.001). NASH with the Afib cohort had more females (54.5%) and Caucasians (82.5%).
- NASH patients with Afib had an almost 3-times higher prevalence of congestive heart failure (52.5% vs. 17.1%)(p< 0.001) and almost 2-times higher prevalence of coronary artery disease (40.2% vs. 20.2%), Peripheral vascular disease (7.5% vs 4.1%),and Renal failure (42.6% vs 24.7%) (p< 0.001). Moreover, NASH patients with Afib had higher prevalence of hypertension (65.7% 61.9%), Diabetes mellitus (64% vs 60.9%), COPD (28.5% vs 21.2%), and obesity (39.3% vs36.3%).
- Compared to the NASH without Afib cohort, the NASH with Afib cohort had higher mortality (6.5% vs.4.1%) with a mortality-adjusted odds ratio of 1.63 (95% CI: 1.55-1.71) (p< 0.001).
- In addition, the mean LOS(6.8 vs. 5.9), and mean hospital cost ($ 18701 vs. $16,220) were also higher (p< 0.001).

TABLES

Table 1. Baseline characteristics of Nonalcoholic Steatohepatitis with Atrial Fibrillation and without Atrial Fibrillation

Variables	NASH with Afib N=62,335(14.3%)	NASH without Afib N=373,510(85.7%)	P- Value
Age, in years (Mean ± SD)	69.4 ± 10.2	60.6 ± 13.2	<0.001
Age groups, %			<0.001
18 - 34 years	0.4%	4.6%	
35 – 49 years	3.3%	14.1%	
50 – 64 years	24.5%	38.6%	
65 – 79	56.0%	37.5%	
>79 years	15.8%	5.1%	
Gender, %			<0.001
Male	45.5%	36.8%	
Female	54.5%	63.2%	
Race, %			<0.001
Caucasians	82.0%	73.5%	
African Americans	3.5%	4.3%	
Others	14.5%	22.2%	
Comorbidities, %			
Hypertension	65.7%	61.9%	<0.001
Diabetes mellitus	64%	60.9%	<0.001
Congestive heart failure	52.2%	17.1%	<0.001
CAD	40.2%	20.2%	<0.001
Peripheral vascular disease	7.5%	4.1%	<0.001
COPD	28.5%	21.2%	<0.001
Renal failure	42.6%	24.7%	<0.001
Coagulopathy	32%	32.5%	0.01
Obesity	39.3%	36.3%	<0.001
Drug abuse	1.5%	2.5%	<0.001
Alcohol abuse	2.3%	3.9%	<0.001
Smoking	30.5%	32.1%	<0.001
Insurance type, %			<0.001
Medicare	75.2%	53.6%	
Medicaid	5.4%	13%	
Private	16.4%	27.8%	
Other	3%	5.5%	
Location/Teaching status of the hospital, %			<0.001
Rural	7.7%	7.6%	
Urban nonteaching	19.5%	18.1%	
Urban teaching	72.8%	74.3%	

Table 2. Propensity Matched Outcomes of Nonalcoholic Steatohepatitis with Atrial Fibrillation and without Atrial Fibrillation

Propensity-Matched Outcomes	NASH with Afib N=62175	NASH without Afib N= 62190	P-value
In-hospital mortality, %	6.5%	4.1%	<0.001
Mortality adjusted odds ratio	1.63 (1.55 – 1.71)		<0.001
Length of stay, in days (mean ± SD)	6.8 ± 7.5	5.9 ± 6.3	<0.001
Total hospitalization cost, in US $ (mean ± SD)	18701 ± 28527	16220 ± 26589	<0.001
Disposition, %			<0.001
Discharge to home	40.3%	45.3%	
Transfer other: includes Skilled Nursing Facility, Intermediate Care Facility, or another type of facility	26.5%	23.6%	
Home health care	23%	23.7%	
Against medical advice	0.4%	0.4%	

CONCLUSION

Our results indicate a higher burden imposed by the presence of Afib in NASH patients. The NASH with Afib cohort had significantly higher in-hospital mortality, mean length of stay, and hospitalization cost. This conclusion supports the need for further studies to better illustrate the pathogenesis, early diagnosis, possible preventive measures, and treatment modalities tailored towards NASH-associated Afib.