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Does Aortic Stenosis Impact the Prevalence and Outcomes of Gastric Antral Vascular Ectasia? A Retrospective Study of 85,000 Patients

Mohammad Aldiabat, MD; Yazan Aljabiri, MBBS; Ali Horoub, MD; Yassine Kilani, MD; Fnu Farukhuddin, MD; Mubarak Yusuf, MD;
NYU Langone Health-Long Island, Mineola, NY; Lincoln Medical Center, Bronx, NY

Background

While Aortic stenosis (AS) is associated with gastrointestinal arteriovenous malformations, it's association with Gastric Antral Vascular Ectasia (GAVE), as a rare cause of upper gastrointestinal bleeding (UGIB), remain unknown. Therefore, authors aim to investigate outcomes of hospitalized GAVE patients in the setting of AS, in terms of mortality and in-hospital complications.

Methods and Materials

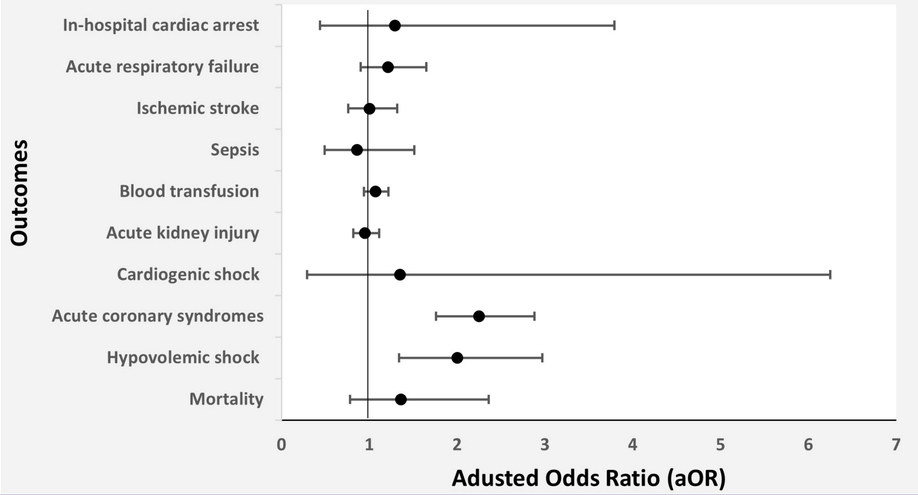
Using International Classification of Diseases Tenth Revision (ICD-10) codes, the National Inpatient Sample database of the years 2016 through 2019 was searched for patients admitted with a primary diagnosis of GAVE, with and without history of AS. Univariate and Multivariate logistic regression analysis was performed to determine the risk of mortality and in-hospital complications in GAVE/AS group compared to GAVE-only group. Patients and facilities characteristics, as well as comorbidities, were incorporated into the analysis.

Results

Among 85,090 adults' patients were hospitalized with a primary diagnosis of GAVE from 2016 - 2019, 5315 (6.2%) had a secondary diagnosis of AS. Patients baseline characteristics are listed in Table 1. Patients with AS had a 2-folds increase in risk of GAVE (OR 2.08, 95% CI 1.94 – 2.22, p< 0.001), with no difference in inpatient mortality between the study groups (OR 1.36, 95% CI 0.78 – 2.36, p=0.268). GAVE-AS patients had higher risk of hypovolemic shock (OR 2.00, 95% CI 1.34 – 2.97, p= 0.001), acute coronary syndromes (OR 2.25, 95% CI 1.76 – 2.88, p< 0.001) with no difference in risk of cardiogenic shock (OR 1.35, 95% CI 0.29 – 6.25, p= 0.695), acute kidney injury (OR 0.95, 95% CI 0.82 – 1.11, p= 0.550), blood transfusion (OR 1.07, 95% CI 0.94 – 1.22, p= 0.270), sepsis (OR 0.86, 95% CI 0.49 – 1.51, p= 0.598), ischemic stroke (OR 1.00, 95% CI 0.76 – 1.32, p=0.981), respiratory failure (OR 1.21, 95% CI 0.90 – 1.65, p= 0.200) or in-hospital cardiac arrest (OR 1.29, 95% CI 0.44 – 3.79, p= 0.638). Cost of care in GAVE-AS patients was increased by a mean of 4729$ (95% CI 694– 8764, p= 0.022), with no increase in length of stay (95% CI -0.13 – 0.42, p=0.320) when compared to GAVE-only patients.

VARIABLE	GAVE %, NO.	WITHOUT AS %, NO.	WITH AS %, NO.	P value
	(100.0) 85,090	(93.8) 79,775	(6.2) 5315	
PATIENT'S CHARACTERISTICS				
AGE, MEAN YEARS	73.0	72.6	78.0	< 0.001
FEMALE	52.0 (44247)	52.0 (41483)	51.0 (2711)	0.652
RACIAL DISTRIBUTION				< 0.001
WHITE	70.0 (59563)	69.0 (55045)	81.0 (4305)	
BLACK	18.0 (15316)	19.0 (15157)	18.0 (957)	
HISPANIC	7.00 (5956)	8.00 (6382)	8.00 (425)	
OTHERS	2.00 (1702)	2.00 (1596)	2.00 (106)	
INSURANCE TYPE				< 0.001
MEDICAID	81.0 (68923)	81.0 (64618)	91.0 (4837)	
MEDICARE	6.00 (5105)	6.00 (4787)	2.00 (106)	
PRIVATE	12.0 (10211)	12.0 (9573)	6.00 (319)	
UNINSURED	1.00 (851)	1.00 (798)	1.00 (53)	
CHARLSON COMORBIDITY INDEX SCORE				0.036
1	13.0 (11062)	13.0 (10371)	12.0 (638)	
2	15.0 (12764)	15.0 (11966)	16.0 (850)	
≥3	65.0 (55309)	65.0 (51854)	67.0 (3561)	
MEDIAN ANNUAL INCOME, US$				< 0.001
1–43,999	30.0 (25527)	31.0 (24730)	25.0 (1329)	
44,000–55,999	26.0 (22123)	26.0 (20742)	26.0 (1382)	
56,000–73,999	24.0 (20422)	24.0 (19146)	27.0 (1435)	
≥74,000	19.0 (16167)	19.0 (15157)	23.0 (1222)	
HOSPITAL CHARACTERISTICS				
HOSPITAL REGION				< 0.001
NORTHEAST	21.0 (17869)	21.0 (16753)	25.0 (1329)	
MIDWEST	26.0 (22123)	26.0 (20742)	26.0 (1382)	
SOUTH	39.0 (33185)	40.0 (31910)	33.0 (1754)	
WEST	14.0 (11913)	14.0 (11169)	17.0 (904)	
HOSPITAL BED SIZE				0.001
SMALL	17.0 (14465)	17.0 (13562)	20.0 (1063)	
MEDIUM	29.0 (24676)	29.0 (23135)	32.0 (1701)	
LARGE	53.0 (45098)	54.0 (43079)	48.0 (2551)	
HOSPITAL LOCATION				0.282
RURAL LOCATION	5.00 (4255)	5.00 (3989)	4.00 (213)	
URBAN LOCATION	22.0 (18720)	22.0 (17551)	20.0 (1063)	
TEACHING HOSPITAL	74.0 (62967)	73.0 (58236)	76.0 (4039)	0.039
COMORBIDITIES				
HYPERTENSION	31.0 (26378)	31.0 (24730)	28.0 (1488)	0.033
DIABETES MELLITUS	44.0 (37440)	44.0 (35101)	47.0 (2498)	0.074
SMOKING HISTORY	50.0 (42545)	49.0 (39090)	54.0 (2870)	0.002
HYPERLIPIDEMIA	52.0 (44247)	52.0 (41483)	63.0 (3348)	< 0.001
OBESITY	15.0 (12764)	15.0 (11966)	16.0 (850)	0.280
CHRONIC KIDNEY DISEASE	44.0 (37440)	44.0 (35101)	46.0 (2445)	0.162
CORONARY ARTERY DISEASE	45.0 (38291)	44.0 (35101)	59.0 (2445)	< 0.001
CHRONIC OBSTRUCTIVE LUNG DISEASE	30.0 (25527)	30.0 (23933)	34.0 (1807)	0.004
CHRONIC LIVER DISEASE	20.0 (17018)	21.0 (16753)	14.0 (744)	< 0.001

Forest plot of study outcomes



Conclusion

Our study is a first to demonstrate that patients with history of AS have 2-fold increase in risk of development of GAVE. Admitted GAVE-AS patients are at increased risk of hypovolemic shock, acute coronary syndrome and higher resources utilization when compared to GAVE-only patients.

Contact

Mohammad Aldiabat, MD
Clinical Fellow, Division of Geriatrics
NYU Langone Health– Long Island
NYU Long Island School of Medicine
222 Station Plaza North, Suite 518
Mineola, NY 11501
Tel: 516-663-2588
Email: Mohammad.Aldiabat@nyulangone.org