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905.OUTCOMES RESEARCH-LYMPHOID MALIGNANCIES

Nationwide Trends in Hospitalizations with Heart Failure Preserved Ejection Fraction and Subsequent Cardiovascular Outcomes in Elderly Patients with Leukemia [2016-2019]

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Background:
Leukemia and the therapeutic treatments for leukemia are both associated with cardiovascular side effects. Heart failure is one of the most identified side effects related to cancer or cancer-related therapies. Evidence suggests a higher risk of HFrEF (heart failure with reduced ejection fraction) and its consequences, there is limited data on the trends of HFpEF admissions in Leukemia patients. In this study, we are using a nationally representative population to study the trends in HFpEF-related admissions and outcomes in elderly Leukemia patients.
Methods:
A retrospective analysis was conducted using the National Inpatient Sample from the 2016-2019 dataset. Elderly patients older than 65 years with leukemia were selected and the trends of HFpEF were studied over these 4 years. In this study, we used both univariable and multivariable regression analysis to adjust the odds ratio and compared and followed the trends over 4 years. Co-primary outcomes were major adverse cardiac and cerebrovascular events [MACCE - all-cause mortality, acute myocardial infarction (AMI), acute ischemic stroke (AIS), and cardiac arrest] in HFpEF patients among the leukemia cohort.
Results:
There was a significantly higher prevalence and increasing trends of HFpEF admissions in cohort with leukemia vs non-leukemia between 2016 to 2019 (from 11.6% to 14.4% in leukemia vs. from 10.3% to 13.0%, p trend <0.001). A total of 66,345 admissions with HFpEF in leukemia patients were studied over a period of 4 years, with a median age of 81 [Table 1]. The majority of the patients studied were whites (87%), Medicare patients (93.6%), and urban teaching locations (66.5%). The base-line characteristics trends were matched in all the cohorts and significant comorbidities observed over a period of 2016-2019 were hypertension (75.8% and 70.2%), diabetes (35.8% and 38.7%), hyperlipidemia (46% and 52.1%), prior MI (9.5% and 9.9%), prior PCI (8.3% and 9.7%), prior CABG (10.8% and 9.5%%), alcohol use (0.9% and 1.4%), drug use (0.3% and 0.9%), chronic pulmonary disease (35.5% and 37.9%), obesity (14.5% and 18.1%), prior chemotherapy (4.4.% and 5.1%), prior radiotherapy (1.9% and 2.7%), and CKD (44.6% and 47.8%). On following the trends from 2016 to 2019 we established that Leukemia patients with HFpEF had no significant improvement in in-hospital outcomes of MACCE including all-cause mortality, myocardial Ischemia, acute ischemic stroke, and cardiac arrest between 2016 and 2019 when potential confounders were adjusted. The univariate and multivariable-adjusted odds ratios for all-cause mortality, AMI, cardiac arrest, AIS, and MACCE were 0.97 and 1.04, 1.16 and 1.21, 0.99 and 1.00, 1.49 and 1.49, and 1.06 and 1.12, respectively when compared for Leukemia-HFpEF cohort of 2019 vs. 2016 (p>0.05). Median hospital stay and cost were stable during the study duration without any significantly increasing or decreasing trends.
Conclusion:

There were significantly increasing trends in hospitalizations with HFpEF in elderly leukemia patients without any substantial improvement in acute cardiovascular events between 2016 and 2019. It has been established that cardiovascular outcomes are closely associated with leukemia and related chemotherapy, there is no standardized risk stratification or assessment tool to assess the management of MACEE in Leukemia patients. Furthermore, prospective studies are required to better understand and address the association of leukemia-related treatments and their impact on HFpEF risk and MACCE in the long term.

Disclosures No relevant conflicts of interest to declare.

Table 1. Nationwide Trends in HFpEF related admissions in Leukemia patients aged 65 or older-2016-1019 National Inpatient Sample

Variables		Total Admissions with HFpEF in Leukemia patients (n=66345)				P value
		2016	2017	2018	2019	
Age (years) at admission	Median	81	81	80	81	<0.001
Sex	Male	50.6%	50.9%	51.5%	52.3%	0.008
	Female	49.4%	49.1%	48.5%	47.7%	
Race	White	87.0%	86.4%	85.8%	86.0%	<0.001
	Black	7.5%	8.6%	7.9%	8.1%	
	Hispanic	3.9%	3.4%	4.8%	4.1%	
	Asian or Pacific Islander	1.5%	1.4%	1.3%	1.6%	
	Native American	0.1%	0.1%	0.3%	0.2%	
Median Household income national quartile for patient	0-25th	20.9%	20.7%	20.3%	22.2%	<0.001
	26th-50th	24.6%	26.1%	25.5%	24.3%	
	50th-75th	27.0%	25.9%	28.2%	28.1%	
	76th-100th	27.6%	27.4%	25.9%	25.3%	
Payer Type	Medicare	93.6%	93.6%	94.4%	93.5%	<0.001
	Medicaid	0.7%	0.6%	1.2%	0.8%	
	Private	5.7%	5.9%	4.4%	5.7%	
Co-morbidities						
Hypertension		75.8%	70.0%	69.2%	70.2%	<0.001
Diabetes		35.8%	38.4%	36.2%	38.7%	<0.001
Hyperlipidemia		46.0%	49.3%	50.9%	52.1%	<0.001
Prior MI		9.5%	10.6%	9.1%	9.9%	<0.001
Prior PCI		8.3%	10.4%	10.0%	9.7%	<0.001
Prior CABG		10.8%	11.4%	10.1%	9.5%	<0.001
Smoking		32.8%	31.8%	32.3%	31.5%	0.065
Depression		11.8%	12.4%	12.3%	12.0%	0.303
Alcohol Abuse		0.9%	1.0%	0.8%	1.4%	<0.001
Drug Abuse		0.3%	0.8%	0.8%	0.9%	<0.001
Chronic pulmonary embolism		35.5%	34.2%	37.4%	37.9%	<0.001
Obesity		14.5%	15.6%	15.9%	18.1%	<0.001
Peripheral vascular disease		11.9%	12.1%	12.2%	11.6%	0.313
Hypothyroidism		22.8%	22.9%	23.2%	23.6%	0.265
Prior Chemotherapy		4.4%	4.8%	5.3%	5.1%	0.003
Prior Radiotherapy		1.9%	2.1%	2.6%	2.7%	<0.001
CKD		44.6%	46.7%	46.0%	47.8%	<0.001
In-Hospital Outcomes						
MACCE		13.9%	14.0%	13.1%	14.7%	<0.001
All-cause In-Hospital Mortality		7.7%	6.8%	6.1%	7.5%	<0.001
Acute Myocardial Infarction		5.7%	6.4%	5.9%	6.6%	0.003
Acute Ischemic stroke		1.3%	1.6%	1.8%	2.0%	<0.001
Cardiac Arrest		0.8%	1.3%	0.9%	0.8%	<0.001
Disposition of patient	Routine	35.8%	34.8%	35.6%	36.5%	<0.001
	Transfer to Short-Term Hospital	2.8%	3.2%	2.3%	2.9%	
	Other transfers SNF, ICF	32.5%	32.2%	32.8%	31.9%	
	Home healthcare	28.9%	29.7%	29.3%	28.7%	
Length of stay, Median		5	5	5	5	<0.001
Cost (USD)		$49341	$48612	$49071	$51717	<0.001

HFpEF-Heart Failure with preserved Ejection Fraction; SNF-Skilled Nursing Facility; ICF- Intermediate Care Facility

Multivariable regression models were adjusted for baseline demographics, hospital level characteristics and relevant cardiac and extra cardiac comorbidities.

MACCE= major adverse cardiac and cerebrovascular events [all-cause mortality, acute myocardial infarction, acute ischemic stroke, and cardiac arrest)

P<0.05 indicates statistical significance

Figure 1