Two-fold Higher Odds of Coronary Artery Perforation in Females Undergoing Coronary Atherectomy: A National Inpatient Outlook

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Background

Coronary artery perforation following percutaneous coronary intervention (PCI) with atherectomy is one of the dreadful complications. However, sex-based differences in atherectomy outcomes are unclear.

Methods

We sought the Nationwide Inpatient Sample Database (NIS) from 2012-2014 for ≥ 18-year-old patients undergoing coronary atherectomy using appropriate International Classification of Diseases, Ninth Revision, Clinical Modification (ICD-9 CM) codes. Chi-square test and T-test were employed to assess categorical and continuous data respectively. After adjusting confounders, logistic regression test was performed to analyze the predictors.

Results

In total, 46,095 weighted coronary atherectomy procedures were performed. Out of these, males had undergone 32,220 and females 13,875. The mean age (69±13 vs. 65±13), length of stay (days) (5±6 vs. 4±6), and total hospital charges ($108,108 (±105,305) vs. $109,866 (±96,914)) were higher in females as compared to males (p<0.001). Female patients had overall higher coronary perforations (1.4% vs. 0.6%, p<0.001), comorbidities, and mortality (4% vs. 3.1%, p<0.001) (Table 1A). In addition to female gender (OR 2.08, CI 1.7-2.6 p<0.001), other predictors of coronary perforation were comorbidities as per Table 1B and atherectomy done in urban non-teaching hospitals.

Conclusions

Coronary atherectomy has two-fold higher odds of coronary perforation in female patients along with higher cardiovascular complications and mortality.

****THERE ARE NO DISCLOSURES****

Table 1A. Demographics and Outcomes of Coronary Atherectomy in Males versus Females

Variables	Male (32,220)		Female (13,875)		P-value*
	Count	N %	Count	N %	
Age (years) Mean(±SD)	65 (±13)		69 (±13)		<0.001
Primary expected payer					<0.001
Medicare	16280	50.6%	9425	68.1%	
Medicaid	2030	6.3%	945	6.8%	
Private including HMO	10625	33.0%	2640	19.1%	
Self - Pay	1875	5.8%	580	4.2%	
Race					<0.001
White	22900	76.4%	9710	73.7%	
Black	2075	6.9%	1510	11.5%	
Hispanic	2500	8.3%	970	7.4%	
Median household income national quartile for patient ZIP Code					<0.001
0-25th	7690	24.4%	4065	29.9%	
26-50th	7900	25.1%	3470	25.5%	
51-75th	7785	24.7%	3280	24.1%	
76-100th	8080	25.7%	2790	20.5%	
Length of Stay (Days) Mean(±SD)	4 (±6)		5 (±6)		
Total Charges (USD) Mean(±SD)	108,108 (±105305)		109,866 (±96914)		<0.001
Region of hospital					<0.001
Northeast	6550	20.3%	2895	20.9%	
Midwest	6985	21.7%	3015	21.7%	
South	11120	34.5%	5115	36.9%	
West	7565	23.5%	2850	20.5%	
Comorbidities					
Coronary Atherosclerosis	30180	93.7%	12775	92.1%	<0.001
Congestive heart failure	395	1.2%	250	**1.8%**	<0.001
Chronic pulmonary disease	4825	15.0%	3225	**23.2%**	<0.001
Coagulopathy	1510	4.7%	490	3.5%	<0.001
Diabetes, uncomplicated	9490	29.5%	4595	**33.1%**	<0.001
Diabetes with chronic complications	1970	6.1%	1235	**8.9%**	<0.001
Hypertension	22945	71.2%	10665	**76.9%**	<0.001
Hypothyroidism	2115	6.6%	2555	**18.4%**	<0.001
Fluid and electrolyte disorders	4430	13.7%	2770	**20.0%**	<0.001
Dyslipidemia	23090	71.7%	9515	68.6%	<0.001
Obesity	4495	14.0%	2525	**18.2%**	<0.001
Peripheral vascular disorders	4100	12.7%	2315	**16.7%**	<0.001
Pulmonary circulation disorders	90	0.3%	65	**.5%**	0.001
Renal failure	5160	16.0%	2650	**19.1%**	<0.001
Valvular disease	130	0.4%	75	**.5%**	0.042
Aortic Stenosis	1305	4.1%	625	**4.5%**	<0.001
Outcomes					
Overall mortality	955	3.0%	570	**4.1%**	<0.001
Cardiac tamponade	75	0.2%	95	**.7%**	<0.001
Coronary artery rupture	190	0.6%	195	**1.4%**	<0.001
Iatrogenic cardiac complications	1235	3.8%	620	**4.5%**	0.001
Postop hemorrhage requiring transfusion	0	0	5	**0.04%**	0.001

*P-value significant at <0.05

Table 1B. Multivariate Predictors of Coronary Artery Perforation in Coronary Atherectomy

Variables	Adjusted OR	95% Confidence Interval		P-value
		Lower Limit	Upper Limit	
Age	1.050	1.040	1.061	<0.001
Female vs. Male	2.077	1.681	2.567	<0.001
Median household income category (percentile)				0.002
0-25th vs. 76-100th	1.680	1.209	2.334	0.002
26-50th vs. 76-100th	1.796	1.312	2.458	<0.001
51-75th vs. 76-100th	1.517	1.105	2.083	0.010
Urban Non-teaching vs. Rural	0.333	0.198	0.559	<.001
South vs. West Region	0.735	0.544	0.994	0.046
Comorbidities				
Chronic Pulmonary Disorders	0.682	0.512	0.907	0.009
Coagulopathy	2.926	2.131	4.017	<0.001
Diabetes Mellitus	0.635	0.499	0.809	<0.001
Fluid and Electrolytes Disorder	1.875	1.480	2.375	<0.001
Pulmonary Circulatory Disorder	3.082	1.089	8.722	<0.034
Renal Failure	1.531	1.202	1.949	<0.001
Coronary Atherosclerosis	1.912	1.125	3.249	<0.017
Dyslipidemia	0.792	0.637	0.985	<0.036