Disclosures

The authors declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.

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8 October 2020
15 October 2020

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https://doi.org/10.1016/j.amjcard.2020.10.032

Safety and Effectiveness of Long-Term Anticoagulation for Atrial Fibrillation Among Nonagenarians: A Real-World Analysis

The prevalence of atrial fibrillation (AF) increases with age, reaching 10% among those over 80 years old.[1] Long-term anticoagulation (AC) is effective in reducing strokes among patients with AF at increased risk of thromboembolic events.[2] The safety and effectiveness of AC among nonagenarians are poorly understood, since these patients were underrepresented in the pivotal trials of AC.[1] Although age is an independent risk factor for stroke in patients with AF, the net clinical benefit of AC may be mitigated by an increased risk of bleeding.[3,4] We sought to explore the real-world safety and effectiveness of AC among nonagenarians using a large national administrative database.

Data from the Nationwide Readmission Database (NRD) 2010 to 2015 were used. The NRD is a de-identified publicly available all-payer database accounting for 58.2% of U.S. hospitalizations.[5] We used ICD-9-CM codes to identify patients with AF (427.31) and on long-term current use of AC (V58.61) then stratified according to age: ≥90 versus <90 years. We excluded patients: (1) <18 years old, (2) died during the index admission, (3) other indications for AC (i.e., pulmonary embolism, deep vein thrombosis, hepatic vein thrombosis, or prosthetic valve), and (4) index hospitalization occurred from July through December to ensure 6-month follow-up since the NRD data do not cross over the calendar year. The primary outcome was the 6-month all-cause readmission rate. Secondary outcomes were 6-month readmission rates for gastrointestinal bleeding, acute ischemic stroke (AIS)/transient ischemic attack (TIA), and intracranial hemorrhage. A sensitivity analysis was performed for 11-month readmission rates by including only index admissions in January of each calendar year. Chi-Square test was used to compare readmission rates between groups and a linear trend test was used to analyze the annual readmission trend. Propensity score matching in a 1:1 pattern was conducted using relevant variables (Table 1). A p value <0.05 was considered statistically significant. This study was exempted by the institutional review board due to the de-identified nature of the database.

A final cohort of 841,495 patients were identified, of whom 77,451 (9.2%) were ≥90 years old. The 6-month readmission rates among ≥90 versus <90 years old were: all-cause − 34.1% versus 34.8% (p < 0.001), gastrointestinal bleeding − 0.9% versus 0.8% (p = 0.003), AIS/TIA − 4.7% versus 2.5% (p < 0.001), and intracranial hemorrhage − 0.2% versus 0.2% (p = 0.19). After propensity score matching, 6-month readmission rates were: all-cause − 34.1% versus 35.0% (p < 0.001), gastrointestinal bleeding − 0.9% 0.8% (p = 0.04), AIS/TIA − 1.6% versus 1.0% (p < 0.001), and intracranial hemorrhage − 0.2% versus 0.2% (p = 0.233). In the sensitivity analysis with 11-month follow up (151,765 patients with 9.8% nonagenarians), the readmission rates were: all-cause − 43.1% versus 44.5% (p = 0.001), gastrointestinal bleeding − 1.1% versus 1.0% (p = 0.24), AIS/TIA − 2.1% versus 1.1% (p < 0.001), and intracranial hemorrhage 0.3% versus 0.3% (p = 0.55). The trend of 6-month all-cause readmission rates from 2010 to 2015 was marginally stable in both groups: ≥90 years old − 35.0% in 2010 versus 34.7% in 2015 (p-trend < 0.001), and <90 years old − 34.8% in 2010 versus 34.9% in 2015 (p-trend = 0.03).

In this nationwide observational analysis of >77,000 nonagenarians with AF on long-term AC, we found that the 6-month all-cause readmission rate was lower, and AIS/TIA was higher compared with those <90 years old. However, rates of gastrointestinal bleeding were only slightly higher, and there was no difference in rates of intracranial hemorrhage. These findings are reassuring about the safety profile−−particularly bleeding complications−−of using long-term AC among selected nonagenarians with AF to prevent stroke.

The results of this study should be interpreted in the context of several limitations. We were unable to ascertain the compliance with AC or if it was stopped after the index admission. There are no data regarding the AC agent or out-of-hospital mortality rates which may lead to misleadingly lower readmission rates. The NRD is an inpatient database and does not capture outpatient encounters. Finally, these results likely apply to relatively healthy nonagenarians who may be more likely to be prescribed AC.

Disclosure: The authors have nothing to disclose, and no relationship with industry.
Funding: Self-funded.

Table 1.
Baseline characteristics for patients with atrial fibrillation and on long-term anticoagulation among nonagenarians vs patients <90 years old

	Unmatched			Propensity matched		
	Nonagenarians(77,451)	Age < 90(764,044)	P. value	Nonagenarians (77,451)	Age < 90 (77,451)	P. value
Women	63.7	46.2	<0.001	63.7	62.9	=0.001
Iron deficiency anemia	20.2	17.2	<0.001	20.2	20.3	=0.61
Heart failure	27.3	20.0	<0.001	27.3	28.1	=0.001
Chronic lung disease	17.8	23.0	<0.001	17.8	18.4	=0.004
Coagulopathy	5.6	5.4	=0.03	5.6	5.7	=0.23
Depression	7.3	8.6	<0.001	7.3	7.7	=0.001
Diabetes mellitus	14.5	24.4	<0.001	14.5	15.0	=0.008
Hypertension	66.3	64.8	<0.001	66.3	67.2	=0.001
Chronic liver disease	0.5	1.7	<0.001	0.5	0.5	=0.48
Metastatic cancer	0.7	1.3	<0.001	0.7	0.8	=0.38
Obesity, BMI ≥30	2.2	14.3	<0.001	2.2	2.3	=0.16
Peripheral vascular disease	10.4	10.4	=0.94	10.4	10.7	=0.04
Psychiatric disorder	1.8	2.4	<0.001	1.8	1.9	=0.22
Pulmonary hypertension	5.8	4.4	<0.001	5.8	5.9	=0.52
Chronic kidney disease	24.9	20.8	<0.001	24.9	24.6	=0.17
Solid tumor without metastasis	1.7	1.9	<0.001	1.7	1.9	=0.02
Valvular heart disease	12.2	7.7	<0.001	12.2	12.5	=0.13

Values presented in %, or (#). Chi-Square test was used to compare between groups.

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27 October 2020

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https://doi.org/10.1016/j.amjcard.2020.11.001

Single Anti-platelet Versus Dual Anti-platelet Therapy After Transcatheter Aortic Valve Implantation: A Meta-Analysis of Randomized Trials

Transcatheter aortic valve replacement (TAVR) has revolutionized the management of patients with severe symptomatic aortic stenosis and has been expanded to low surgical risk patients.[1] Dual antiplatelet therapy (DAPT) with aspirin and clopidogrel for 6 months is recommended after TAVR in patients without an indication for chronic anticoagulation. This recommendation is based on observational studies and consensus opinion.[2] A recent multicenter randomized controlled trial (RCT) has challenged these recommendations.[3] The aim of this meta-analysis of RCTs was to evaluate the efficacy and safety of single antiplatelet therapy (SAPT) versus DAPT after TAVR.

A computerized search of MEDLINE, SCOPUS, and Cochrane databases was performed without language restrictions through October 1, 2020 for RCTs comparing SAPT versus DAPT after TAVR. A protocol for this meta-analysis was prospectively registered at PROSPERO (CRD42019143329). The study design, baseline characteristics, intervention strategies, and clinical outcomes were extracted by 2 independent investigators (A.E and R.T). Discrepancies between investigators were resolved by consensus. The safety outcomes included life-threatening or major bleeding, and any bleeding. The efficacy outcomes included all-cause mortality, myocardial infarction (MI), and major stroke. Outcomes were reported at the longest follow-up. The quality of the included trials was assessed using the RoB2 tool. Data were pooled using random-effects model using inverse variance methods. Heterogeneity across trials was assessed by I^2 statistics. Publication bias was not assessed due to the small