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Real-life Experience with Antithrombotic Use in Patients with Atrial Fibrillation after Transcatheter Aortic Valve Replacement

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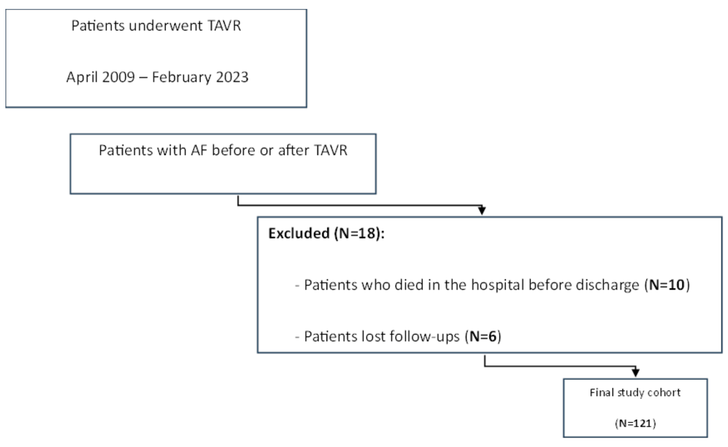
INTRODUCTION

Atrial fibrillation (AF) is common in patients who are receiving transcatheter aortic valve replacement (TAVR). However, the optimal antithrombotic strategy for those patients is still unclear.

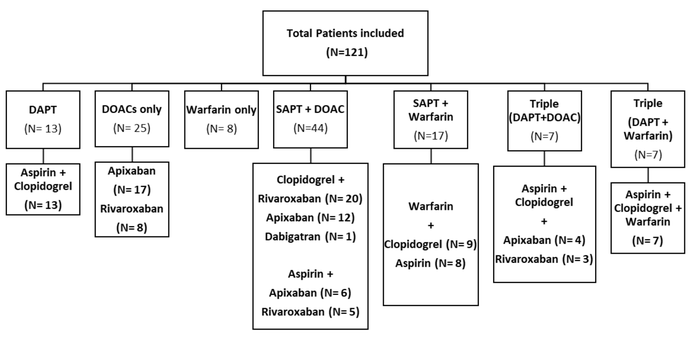
AIM

There is a gap between evidence and clinical practice regarding optimal antithrombotic therapy in patients with AF and TAVR. Given the risk of bleeding, stroke rates, and high mortality in these patients, this study evaluated the use of different antithrombotic regimens in patients who underwent TAVR with preexisting or new-onset AF.

The Study Flowchart



Patients groups



Patients were categorized into seven groups on the basis of their discharge antithrombotic regimen: single antiplatelet (SAPT) plus direct oral anticoagulant (DOAC) (n=44, 36.3%), direct oral anticoagulation (DOAC) only (n=25, 20.6%), SAPT plus warfarin (n=17, 14%), dual antiplatelet (DAPT) (n=13, 10.7%), warfarin only (n=8, 6.6%), DAPT plus warfarin (n=7, 5.8%), and DAPT plus DOAC (n=7, 5.8%).

METHODS

This retrospective observational cohort study was conducted at Prince Sultan Cardiac Center, Riyadh, Saudi Arabia. All AF patients or those who developed new-onset AF after TAVR (n=121) and were discharged on antithrombotic therapy from April 2009 to February 2023 were included. Patients were categorized into seven groups on the basis of their discharge antithrombotic regimen

Table or graph title

	DAPT N= 13	DOAC ONLY N= 25	WARFARIN ONLY N= 8	SAPT + DOAC N= 44	SAPT + WARFARIN N= 17	TRIPLE (DAPT + DOAC) N= 7	TRIPLE (DAPT + WARFARIN) N= 7
AGE (YEARS)	81 (72-87)	76 (70-81)	75 (68-78.5)	75 (69-81)	72 (68-79)	72 (68-89)	74 (68-80)
MALE	9 (69.23%)	11 (44%)	4 (50%)	22 (50%)	6 (35.29%)	5 (71.43%)	4 (57.14%)
BODY MASS INDEX (KG/M2)	30.82 (26.6-33.7)	30.08 (27.5 - 35.1)	28.55 (27.5-29.5)	30.565 (26.1-36.5)	32.88 (28.4-35.6)	28.05 (25 - 33.6)	26.54 (22.5-34.6)
HYPERTENSION	10 (76.92%)	22 (88%)	6 (75%)	35 (79.55%)	14 (82.35%)	7 (100%)	5 (71.43%)
DIABETES	9 (69.23%)	18 (72%)	5 (62.50%)	26 (59.09%)	11 (64.71%)	5 (71.43%)	4 (57.14%)
DYSLIPIDEMIA	6 (46.15%)	16 (64%)	4 (50%)	18 (40.91%)	5 (29.41%)	4 (57.14%)	2 (28.57%)
HYPOTHYROIDISM	1 (7.69%)	9 (36%)	1 (12.50%)	5 (11.36%)	1 (5.88%)	0	1 (14.29%)
ANEMIA	4 (30.77%)	4 (16%)	2 (25%)	14 (31.82%)	4 (23.53%)	1 (14.29%)	1 (14.29%)
DIALYSIS	1 (7.69%)	0	0	1 (2.27%)	1 (5.88%)	0	0
CHRONIC LIVER DISEASE	1 (7.69%)	1 (4%)	1 (12.50%)	0	1 (5.88%)	0	0
CHRONIC LUNG DISEASE	3 (23.08%)	6 (24%)	2 (25%)	8 (18.18%)	5 (29.41%)	1 (14.29%)	3 (42.86%)
CANCER WITHIN 5 YEARS	1 (7.69%)	1 (4%)	0	4 (9.09%)	1 (5.88%)	0	0
CEREBROVASCULAR DISEASE (CVD)	2 (15.38%)	0	1 (12.50%)	6 (13.64%)	3 (17.65%)	0	1 (14.29%)
CORONARY ARTERY DISEASES (CAD)	9 (69.23%)	7 (28%)	0	17 (38.64%)	9 (52.94%)	4 (57.14%)	7 (100%)
PRIOR PERCUTANEOUS CORONARY INTERVENTION (PCI)	6 (46.15%)	3 (12%)	0	6 (13.64%)	3 (17.65%)	1 (14.29%)	4 (57.14%)
PRIOR CORONARY ARTERY BYPASS GRAFT (CABG)	1 (7.69%)	2 (8%)	0	4 (9.09%)	2 (11.76%)	1 (14.29%)	1 (14.29%)

**NYHA = New York Heart Association Functional Class; **CHA2DS2-VASc: congestive heart failure, hypertension, age >_75 years (2 points), diabetes, history of stroke/transient ischemic attack/systemic arterial thromboembolism (2 points), vascular disease, age 65–74 years, and female sex. ; ***HAS-BLED: hypertension, abnormal renal/liver function, history of stroke, history of bleeding, labile international normalized ratio (due to missing data), age > 65 years, and drug consumption with antiplatelet agents, nonsteroidal anti-inflammatory drugs, or alcohol abuse. DAPT= Dual antiplatelet; SAPT= Single antiplatelet; DOACs = Direct oral anticoagulants*

Hospital outcomes

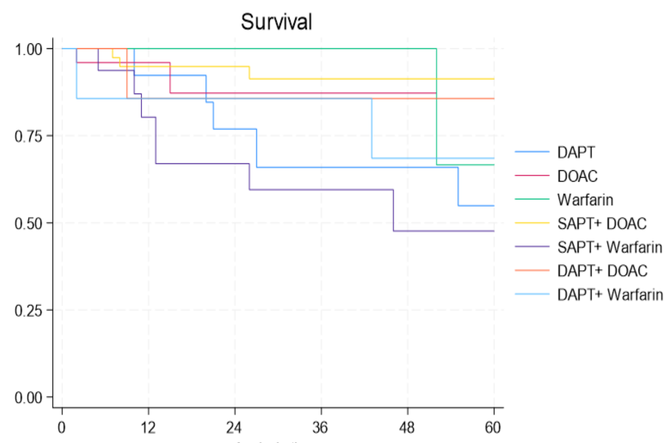
	DAPT N= 13	DOAC ONLY N= 25	WARFARIN ONLY N= 8	SAPT + DOAC N= 44	SAPT + WARFARIN N= 17	TRIPLE (DAPT + DOAC) N= 7	TRIPLE (DAPT + WARFARIN) N= 7
EARLY MI	0	0	0	0	0	0	0
CONDUCTION DISTURBANCES REQUIRING PPM	5 (38.46%)	3 (12%)	1 (12.5%)	4 (9.09%)	4 (23.53$)	0	1 (14.29%)
REQUIRING ICD	0	0	0	0	1 (5.88%)	0	0
EARLY STROKE	0	0	1 (12.5%)	1 (2.3%)	0	0	0
RETROPERITONEAL BLEEDING	1 (7.69%)	0	0	0	0	0	0
GASTROINTESTINAL BLEEDING	0	0	0	1 (2.27%)	0	0	0
GENITOURINARY BLEEDING	1 (7.69%)	0	0	1 (2.27%)	0	0	0
OTHER BLEEDING	0	0	0	0	2 (11.76%)	0	0

MI= Myocardial infarction; ICD = implantable cardioverter defibrillator
PPM= Permanent pacemaker
DAPT= Dual antiplatelet; SAPT= Single antiplatelet; DOACs = Direct oral anticoagulants

RESULTS

Hospital outcomes
Hospital outcomes were compared between patients with different antithrombotic regimens, with no significant differences in early myocardial infarction, permanent pacemaker insertion, stroke, or bleeding .

Follow-up outcomes
In terms of the primary outcomes, the incidence of stroke was greater with the triple regimen containing warfarin (28.6%); however, there was no significant difference in the incidence of stroke among the seven groups (P= 0.484). Major bleeding was not significantly different among the groups (P=0.253), with the highest rate in the warfarin-only group (25%). Mortality during follow-up occurred in 24 patients, and mortality was not significantly greater in the triple therapy (DAPT+ warfarin) group (57.14%) (P=0.115) (Table 4).
Survival analysis revealed that the triple therapy groups, DAPT + DOACs and DAPT + warfarin, had the greatest decline in survival over 5 years, with the DAPT + warfarin group having the poorest overall survival. In unadjusted analyses, there were nonsignificant differences in survival for patients discharged on the different antithrombotic regimens



Strength and limitations

Our study offers valuable insights into the long-term cardiovascular effects of different antithrombotic regimens from a clinically relevant perspective. However, the observational study design has several limitations. On the positive side, this design enabled the study to reflect real-world practice. Unfortunately, the small sample size in each group limits the ability to extensively extrapolate our results and limits their generalizability. The study covers data from 2009-2023, which means that it takes into account the evolution of antithrombotic treatments and the growing adoption of DOACs. Notably, our study uniquely focused on patients with preexisting AF and those who developed new-onset AF within 30 days of undergoing TAVR.

CONCLUSIONS

This study revealed various outcomes related to stroke, major bleeding, and mortality across different antithrombotic regimens, although no statistically significant differences were observed, which could be attributed to the small patients number in each group. However, further large studies are needed to define the optimal antithrombotic strategies.

BIBLIOGRAPHY

The authors declare that there is no conflict of interest.

ACKNOWLEDGEMENTS
None