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CARDIOPULSE

Global Spotlights

Antithrombotic therapy in patients undergoing transcatheter aortic valve replacement

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Editor-in-Chief, reviews two of the most remarkable papers published in The Chinese Journal of Cardiology (CJC). Transcatheter aortic valve replacement (TAVR) has become an established and increasingly used approach for the management of severe symptomatic aortic stenosis (AS) or regurgitation throughout the surgical risk spectrum, showing similar, or even superior outcomes compared with standard surgical aortic valve replacement.[1,2] Despite an iteration in TAVR device technologies and improved patient selection and management through the multidisciplinary heart teams, challenges, and controversies exist regarding the balancing of ischaemic and bleeding risks in these patients and the optimal antithrombotic regimens to adopt after TAVR are still unclear.[3–6]

This was recently reported in the CJC with a contribution entitled 'One-year follow-up results of atrial fibrillation (AF) patients who undergoing transcatheter aortic valve implantation' by Prof. Yaling Han and colleagues from General Hospital of Northern Theater Command.[7] This is a single-centre retrospective study. A total of 115 patients with severe AS who were admitted to the hospital from May 2016 to November 2020 and successfully received TAVR were included. According to the absence or presence of AF pre-TAVR, they were divided into the AF group ($n = 21$) and the non-AF group ($n = 94$). The patients were followed up for postoperative antithrombotic treatment and the occurrence of the net adverse clinical and cerebrovascular events (NACCEs) at 12 months post-TAVR, including cardiac death, readmission to hospital for heart failure, non-fatal myocardial infarction, ischaemic stroke, and major bleeding [Bleeding Academic Research Consortium (BARC) levels 3–5].

Among the 115 selected patients, age was (73.8 ± 6.9) years, there were 63 males. In terms of postoperative antithrombotic therapy, 48.9% (46/94) of the patients in the non-AF group received monotherapy and 47.9% (45/94) received dual antiplatelet therapy (DAPT). In the AF group, 47.6% (10/21) received anticoagulants and 33.3% (7/21) received DAPT. The proportion of patients in the AF group taking non-vitamin K antagonist oral anticoagulants (NOACs) was higher than that in the non-AF group [38.1% (8/21) vs. 2.1% (2/94), $P < 0.001$]. During the 12 months follow-up, the incidence of NACCE after TAVR was 14.3% (3/21) in the AF group, which was numerically higher than that in the non-AF group [6.4% (6/94)], while the difference was not statistically significant ($P = 0.441$, *Table 1*). The incidence of major bleeding was significantly higher in the AF group than in the non-AF group [9.5% (2/21) vs. 0.0%, $P = 0.032$, Table 1]. Univariate logistic regression analysis showed that hypertension was associated with the risk of NACCE (OR = 8.308, $P = 0.050$), while AF was not associated with the risk of NACCE ($P = 0.235$). Therefore, the incidence of severe bleeding after TAVR is higher in

Table 1 Clinical outcomes at 12 months

Clinical outcomes	Non-AF group ($n = 94$)	AF group ($n = 21$)	*P*-value
NACCE	6 (6.4)	3 (14.3)	0.441
Cardiac death	1 (1.1)	0	1.000
Readmission to hospital for heart failure	2 (2.1)	1 (4.8)	0.457
Non-fatal myocardial infarction	2 (2.1)	1 (4.8)	0.457
Major bleeding	0	2 (9.5)	0.032
Ischaemic stroke	2 (2.1)	0	1.000

Data are presented as *n* (%).
AF, atrial fibrillation; NACCEs, net adverse clinical and cerebral events.

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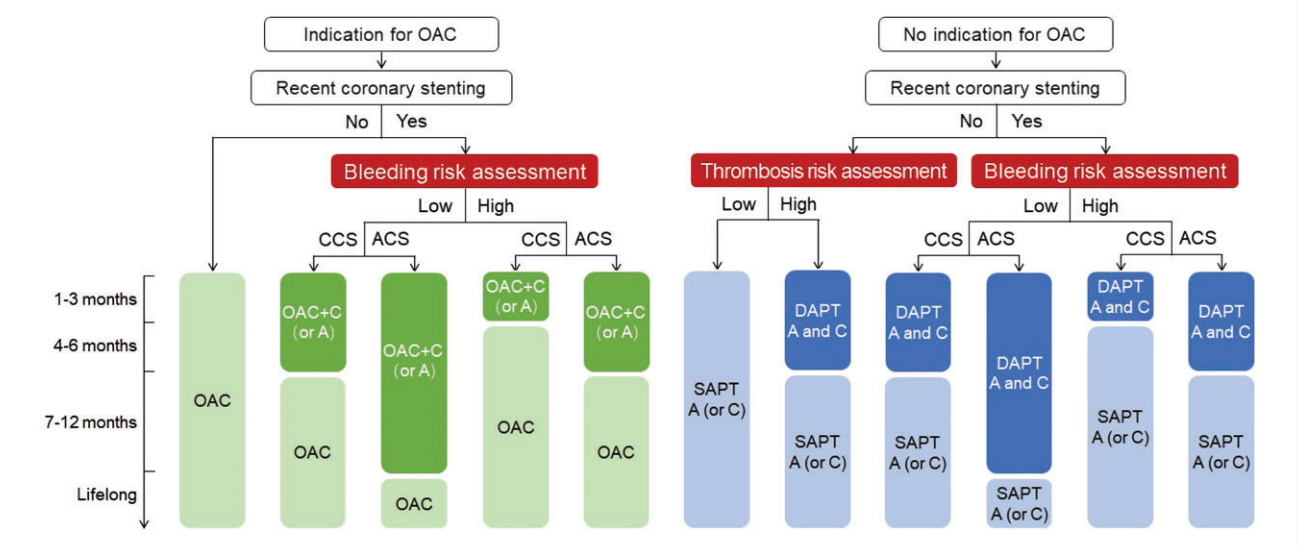

Figure 1 Antithrombotic treatment after transcatheter aortic valve replacement. The figure summarizes the recommendation for treating patients who are candidate for transcatheter aortic valve replacement, according to the presence or absence of oral anticoagulation indications, recent coronary stenting, bleeding and thrombosis risk, and clinical presentation. A, aspirin; ACS, acute coronary syndrome; C, clopidogrel; CCS, chronic coronary syndrome; DAPT, dual antiplatelet therapy; OAC, oral anticoagulation; SAPT, single antiplatelet therapy.

patients with AF than in patients without AF prior TAVR, and there is a trend of increased risk of NACCE post-TAVR in AF patients.

Another recent publication 'Chinese expert consensus on antithrombotic therapy after transcatheter aortic valve implantation' by the Chinese Society of Cardiology.[8] Based on recent studies and randomized controlled trials, this expert consensus provides updated therapeutic insights into antithrombotic treatment post-TAVR. Of note, no risk prediction models have been established to guide antithrombotic therapy after TAVR. The risk assessment of ischaemia and bleeding is still carried out according to the relevant risk factors of patients. As shown in *Figure 1*, in patients without oral anticoagulation (OAC) indication after TAVR, oral antiplatelet drugs are recommended (I, A). Single antiplatelet therapy (SAPT) is recommended after TAVR in patients with no baseline indication for OAC (I, A). In patients with high risk of thrombosis, DAPT for 3–6 months post-transcatheter aortic valve implantation, followed by lifelong SAPT after TAVR should be considered (IIa, C). In patients with AF and other OAC indication after TAVR, oral anticoagulants are recommended for lifelong (I, B). In patients with the acute coronary syndrome (ACS) or planning percutaneous coronary intervention (PCI) who need to require antiplatelet therapy in the presence of OAC indication, the risk of thrombosis and bleeding should be fully evaluated. If the bleeding risk is low, dual therapy with OAC and a $P2Y_{12}$ inhibitor (preferably clopidogrel) for up to 6 months in case of the chronic coronary syndrome (CCS) or up to 12 months in ACS is recommended. If the bleeding risk is high, clopidogrel should be shortened to 1–3 months in case of CCS and to 3–6 months in case of ACS (IIa, C). In patients with ACS or planning PCI who need to require antiplatelet therapy in the absence of OAC indication, the risk of thrombosis and bleeding should also be fully evaluated. If the bleeding risk is low, DAPT for up to 6 months in case of CCS or up to 12 months in ACS, followed by lifelong aspirin is recommended. If the bleeding risk is high, DAPT should be shortened to 1–3 months in case of CCS and to 3–6 months in case of ACS (IIa, C). Overall, evidence for optimal antithrombotic therapy after TAVR remains rather scarce. Ongoing clinical trials will provide better understanding to guide antithrombotic therapy.

Conflict of interest: none declared.

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