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Original article

Antithrombotic therapy trends in non-valvular atrial fibrillation patients undergoing percutaneous coronary stent implantation: Results from a survey among fellows at the Japanese College of Cardiology

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ABSTRACT

Background: Antithrombotic therapy with oral anticoagulants (OAC) in patients with atrial fibrillation (AF) after stent implantation, where dual antiplatelet therapy (DAPT) is also recommended, is not established. Antithrombotic therapies prescribed vary widely among cardiologists and may change year by year, according to the accumulation of new evidence.

Methods: A questionnaire-based survey concerning the antithrombotic therapy prescribed for OAC-treated AF patients who underwent stent implantation was conducted from 2014 to 2016. The survey was completed by the Fellows of the Japanese College of Cardiology (FJCC).

Results: The questionnaire was sent to 1023 fellows in 2014, a total of 1057 fellows in 2015, and 1073 fellows in 2016; 268 (26%), 418 (40%), and 416 (39%) answers were obtained, respectively. The duration of DAPT did not change in patients with bare metal stents; however, it tended to become shorter with the use of the drug-eluting stent (DES). Significant shortening of DAPT duration was observed with DES for stable coronary artery disease from 2015 to 2016. A similar tendency was observed for acute coronary syndrome (ACS); however, this was not significant between 2015 and 2016. A shorter duration of DAPT is preferred by electrophysiologists rather than by interventionalists and general cardiologists. OAC monotherapy is not popular one year after stent implantation, although the prevalence of its use increased year by year. Aspirin and thienopyridines are used equally as a single antiplatelet in DAPT, and clopidogrel is also a popular agent. The prevalence of direct OAC use increased year by year.

Conclusions: The questionnaire showed variation in antithrombotic therapy used for OAC-treated AF patients after stenting, and how it changes year by year. Although the duration of DAPT tended to shorten, variations are still observed, i.e. the selection of a single antiplatelet or OAC.

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Introduction

Oral anticoagulant agent (OAC) is recommended for patients with atrial fibrillation (AF) who are at a moderate-to-high risk of stroke or embolic complications. Of these patients, 16% are reported to have coronary artery disease [1,2], which may

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necessitate percutaneous coronary intervention (PCI). Most patients who undergo PCI are treated with a drug-eluting stent (DES) or bare metal stent (BMS), and dual antiplatelet therapy (DAPT) is necessary for the prevention of coronary thrombotic events. As a result, patients with AF who undergo PCI require triple antithrombotic therapy including DAPT and a vitamin K antagonist (VKA); however, there is an associated increased risk of bleeding [3]. Several guidelines [4–6] recommend DAPT with a VKA followed by VKA plus clopidogrel, which are based on long-term studies. Direct oral anticoagulants (DOAC) were first used in 2009 [7], after which, other DOACs became available [8]; the European Society of Cardiology (ESC) 2016 guidelines [9] recommend the use of DOAC over VKA. With the increased use of DOAC, triple therapy for patients with AF after stenting became more complex and varied because of the little evidence available on antithrombotic therapy use in these patients.

In 2014 to 2016, the WOEST trial [10] and PIONEER AF-PCI [11] showed evidence of the safe use of OAC with clopidogrel and DOAC plus thienopyridine; the ESC guidelines [9] for the treatment of patients with AF accept the use of OAC with clopidogrel from the beginning in high bleeding risk patients.

Due to the remarkable changes in the treatment strategy, the optimal type of antithrombotic therapy for patients with AF after stenting is not clear and the results of clinical trials and published guidelines based on the practice of Japanese doctors in the clinical setting are unknown. Therefore, we conducted a questionnaire-based survey among the fellows of the Japanese College of Cardiology (FJCC) yearly from 2014 to 2016, and studied the results of each year as well as the trends year by year.

Methods

The questionnaire on the antithrombotic therapy used in patients with AF after stenting (Table 1) was sent electronically or via mail to the FJCC. This survey was conducted once a year for 3 years, from 2014 through to 2016.

Statistical analyses were performed using SPSS23 software (SPSS Inc., Chicago, IL, USA). For the statistical analysis, the duration of DAPT use was classified using a 6-month time point and analyzed; no more than 6 months vs. 12 months (over 6 months). Changes in the duration of DAPT use over 2–3 years were analyzed using the chi-square test. A value of $p < 0.05$ was considered statistically significant. The answers to the questionnaire were grouped by specialty of the FJCC: coronary interventionalist, electrophysiologist, and general cardiologist.

Table 1
Survey questionnaire.

1. How long is the duration of DAPT after DES implantation in AF patients with ACS or SCAD? Please choose from the following choices; 1 month, 3 months, 6 months, or 12 months.
2. How long is the duration of DAPT after BMS implantation in AF patients with ACS or SCAD? Please choose from the following choices; 1 month, 3 months, 6 months, or 12 months.
3. What anti-thrombotic therapy do you prefer to use in AF patients 1 year after stent implantation? Please choose from the following choices; 1. DAPT with OAC, 2. aspirin with OAC, 3. thienopyridine with OAC, 4. OAC monotherapy, 5. antiplatelet monotherapy.
- 3a. Which antiplatelet agent do you choose for SAPT? In the case of thienopyridine, which thienopyridine do you choose?
4. Which anticoagulant in the setting of triple antithrombotic treatment do you choose?

dual antiplatelet therapy (DAPT), single antiplatelet therapy (SAPT), atrial fibrillation (AF), acute coronary syndrome (ACS), drug-eluting stent (DES), stable coronary artery disease (SCAD), bare metal stent (BMS), oral anticoagulant (OAC).

Results

The questionnaire was sent to 1023 fellows in 2014, a total of 1057 fellows in 2015, and 1073 fellows in 2016; 268 (26%), 418 (40%), and 416 (39%) answers were obtained in these years, respectively. The FJCC specialties are shown in Fig. 1.

How long is the duration of DAPT use after DES implantation in AF patients with ACS or stable coronary artery disease (SCAD)?

(a) *The duration of DAPT use after DES implantation in patients with ACS (Fig. 2):* There were no significant changes in DAPT duration year by year; however, we did observe a trend decrease in the duration of DAPT. Over 12 months, DAPT use reduced from 79% in 2014 to 70% in 2016, but the difference was not significant ($p = 0.05$). This tendency was observed in the coronary interventionalist group; however, less than 6 months of DAPT was increasingly selected by electrophysiologists, where the prevalence of 12-month DAPT significantly decreased from in 2014 to in 2016 ($p = 0.002$). As a result, a significant change in the prevalence of DAPT duration was observed over the 3 years in the electrophysiologist group ($p < 0.001$). Furthermore, prevalence of less than 6 months DAPT increased from 2015 to 2016 in the general cardiologist group ($p = 0.02$).

(b) *The duration of DAPT after DES implantation in SCAD (Fig. 2):* The prevalence of 12-month DAPT use decreased year by year from 2014 (69%) to 2015 (64%; $p = 0.45$) and 2016 (55%; $p < 0.001$) among all cardiologists. This tendency was similar in other specialties, but occurred at a faster rate in the electrophysiologist group than in the other specialties.

(c) *Comparison of the duration of DAPT in patients with ACS and SCAD after DES implantation (Fig. 2):* The duration of DAPT was significantly shorter in patients with SCAD than in those with ACS. The prevalence of less than 6 months of DAPT in ACS and SCAD was significantly different in 2015 ($p < 0.005$) and in 2016 ($p < 0.005$), respectively. A similar trend was observed with the coronary interventionalists and general cardiologists each year. On the other hand, there were no significant yearly differences between ACS and SCAD in the electrophysiologist group. The prevalence of less than 6 months of DAPT use in ACS and SCAD was 12% and 20% in 2014 ($p = 0.42$), 58% and 54% in 2015 ($p = 0.69$), and 45% and 50% in 2016 ($p = 0.94$), respectively.

How long is the duration of DAPT after BMS implantation in ACS or SCAD?

The duration of DAPT after BMS implantation (Fig. 3): Less than 6 months of DAPT duration was selected after BMS implantation in patients with ACS (77%) and SCAD (86%) in 2014, which had a significantly higher prevalence than that in patients implanted with a DES in either type of coronary artery disease. The prevalence of less than 6 months of DAPT use after DES vs. BMS implantation in ACS was 21% vs. 86% in 2014 ($p < 0.05$), 25% vs. 85% in 2015 ($p < 0.05$), and 30% vs. 86% ($p < 0.05$), and in SCAD was 31% vs. 86% in 2014 ($p < 0.05$), 36% vs. 85% in 2015 ($p < 0.05$), and 45% vs. 86% in 2016 ($p < 0.05$). This trend was similar in all sub-specialties.

Fig. 4) "5,0,2,0,280pt,240pt,0mm,0mm">What anti-thrombotic therapy do you prefer to give patients with AF 1 year after stent implantation? (Fig. 4)

The prevalence of OAC with DAPT decreased from 15% (2014) to 2% (2015) and 5% (2016) year by year. By contrast, the prevalence of OAC monotherapy gradually increased from 6% (2014) to 15% (2015) and 19% (2016). Almost 80% of patients were treated with OAC plus a single antiplatelet (SAPT) during the three years, and

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