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Antithrombotic management in patients with atrial fibrillation undergoing coronary stent implantation: What is the impact of guideline adherence?

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ABSTRACT

Aims: Patients with atrial fibrillation (AF) who undergo percutaneous coronary intervention (PCI) and stenting require triple antithrombotic therapy according to current ESC guidelines. The purpose of this study was to assess guideline implementation and predictive factors of the prognosis related to ESC guideline adherence.
Methods and results: We enrolled consecutive AF patients referred for PCI with stent from 2011 to 2014. Among 371 patients (72% male; mean age 76 ± 11) followed up for 505 ± 372 days (median 391, interquartile range 550 days), 118 (45%) undergoing elective coronary stenting and 41 (31%) among those with acute coronary syndrome were guideline adherent. Oral anticoagulation (OAC) before hospitalization was the only factor independently associated with guideline adherence (OR, 0.45; 95% CI 0.26–0.77; p = 0.003). OAC underuse and antiplatelet therapy (APT) underuse were independently associated with increased risks of death (OR 5.55; 95% CI 2.42–13.47; p < 0.0001 and OR 5.56; 95% CI, 2.17–14.65; p = 0.0004, respectively) and major adverse cardiac events (MACE) (OR 4.18; 95% CI 2.05–8.79; p < 0.0001 and OR 4.81; 95% CI, 2.09–11.18; p = 0.0002, respectively).
Conclusion: Guidelines for antithrombotic therapy in patients with AF who undergo PCI and stent implantation are still poorly followed in clinical practice. OAC and APT underuse were both associated with an increased risk of death and MACE in this population.

1. Introduction

Several studies have showed that oral anticoagulation (OAC) improves outcome in patients experiencing atrial fibrillation (AF) although bleeding risk increases [1]. Current ESC guidelines [2,3] recommend OAC for this indication to reduce the risk of stroke and mortality. However, 20–30% of these AF patients will undergo coronary artery disease involving percutaneous coronary intervention (PCI) with stent implantation [4]. Antiplatelet therapy (APT) is administrated with the aim to reduce the risk of stent thrombosis. Clinicians need to balance the risks of ischaemic stroke and thrombo-embolism, recurrent cardiac ischaemia or MI and/or stent thrombosis, and bleeding. The ESC guidelines 2010 and its focused update in 2012 addressed the management aspects and proposed approaches in this complex clinical scenario [2,5]. Numerous studies assessing antithrombotic treatment in AF patients revealed that OAC is underused in real world populations [6]. Only limited data are available concerning evaluation of guideline adherence with antithrombotic therapy management in AF patients who undergo PCI and stent implantation. The purpose of this study was to assess adherence to antithrombotic therapy (ATT) recommended by the ESC guidelines in patients with history of AF undergoing PCI and intra-coronary stent placement [2].

2. Methods

We retrospectively included patients with history of AF referred to the cardiology department in our institution between the years 2011 and 2014, if they were admitted for elective PCI, non-ST-elevation myocardial infarction (NSTEMI) or ST-elevation myocardial infarction (STEMI) requiring stent implantation. AF must have been recorded on ECG or Holter during the qualifying admission or in the preceding 12 months. The Centre Hospitalier Régional et Universitaire at Tours serves

Abbreviations: ACS, acute coronary syndrome; AF, atrial fibrillation; APT, antiplatelet therapy; ATT, antithrombotic therapy; BMS, bare metal stent; CI, confidence interval; CABG, coronary artery bypass graft; CSS, clinical SYNTAX score; DES, drug-eluting stent; ESC, European Society of Cardiology; MACE, major adverse cardiac event; NSTEMI, non-ST-elevation myocardial infarction; OAC, oral anticoagulation; OR, odds ratio; PCI, percutaneous coronary intervention; STEMI, ST-elevation myocardial infarction; SYNTAX score, SYNergy between PCI with TAXUS™ and cardiac surgery; TE, thromboembolic event.

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approximately 400,000 inhabitants and is the only public institution in an area of around 4000 km^2. Individual patient management decisions, such as the type of revascularization performed, type of stent implanted, as well as the regimen of OAC and/or antiplatelet drugs at discharge were decided by the interventional cardiologist and/or the responsible clinical cardiologist. Patients with atrial flutter were excluded. Patients who died during the initial hospitalization after stent implantation were also excluded.

2.1. Assessment of stroke risk, bleeding risk and coronary artery disease severity

We calculated the CHA_2DS_2-VASC score to assess stroke risk. We also calculated the HAS-BLED bleeding risk score, where a score of ≥3 indicates high risk [2]. Coronary disease severity was assessed using the SYNTAX score, which informed on severity of coronary lesion during PCI according to the interventional cardiologist evaluation [7].

2.2. ESC guideline adherence

We defined 'antiplatelet therapy overuse' for patients in whom double antiplatelet therapy was given but single APT was indicated or if single APT was prescribed although VKA alone lifelong was recommended. We defined 'APT underuse' for patients not prescribed double antiplatelet therapy although it was required or if no antiplatelet therapy was given whilst it was indicated. We defined 'OAC underuse' in patients who did not receive OAC whilst they had at least one stroke risk factor according to the CHA_2DS_2-VASc score.

2.3. Data collection and follow-up

We obtained general characteristics, antithrombotic therapy before PCI, indication and procedural characteristics at admission, treatment before hospitalization and at discharge by screening hospitalization reports. Information concerning antithrombotic management strategy during follow-up at the first month (M1), M2–M3, M4–M6, M7–M12 and >M12 were obtained both by screening hospitalization reports and by phone calls to patients with standardized questions. We recorded antithrombotic therapy given during these periods and documented thromboembolism (TE) and bleeding events, death, target lesion revascularization and ischemic events.

Non-fatal myocardial infarction was defined as ischemic symptoms and an elevation of creatine kinase-MB >2× the upper limit of normal, with or without ST-segment elevation or development of Q waves. We also considered major bleedings, using the BARC (Bleeding Academic Research Consortium) bleeding definitions: intracranial haemorrhage, intra-ocular compromising vision, overt bleeding plus haemoglobin drop >5 g/dL, tamponade, bleeding requiring surgical or percutaneous intervention for control (excluding dental/nose/skin/haemorrhoids) or inotropes (BARC type 3A), any transfusion with overt bleeding, overt bleeding plus haemoglobin drop 3 to 5 g/dL (BARC type 3B) or fatal bleeding. Target lesion revascularization definition used was the consensus of the Academic Research Consortium. 'Major adverse cardiac events' (MACE) were defined as the occurrence of any episode including death, acute myocardial infarction and stent thrombosis or target lesion revascularization.

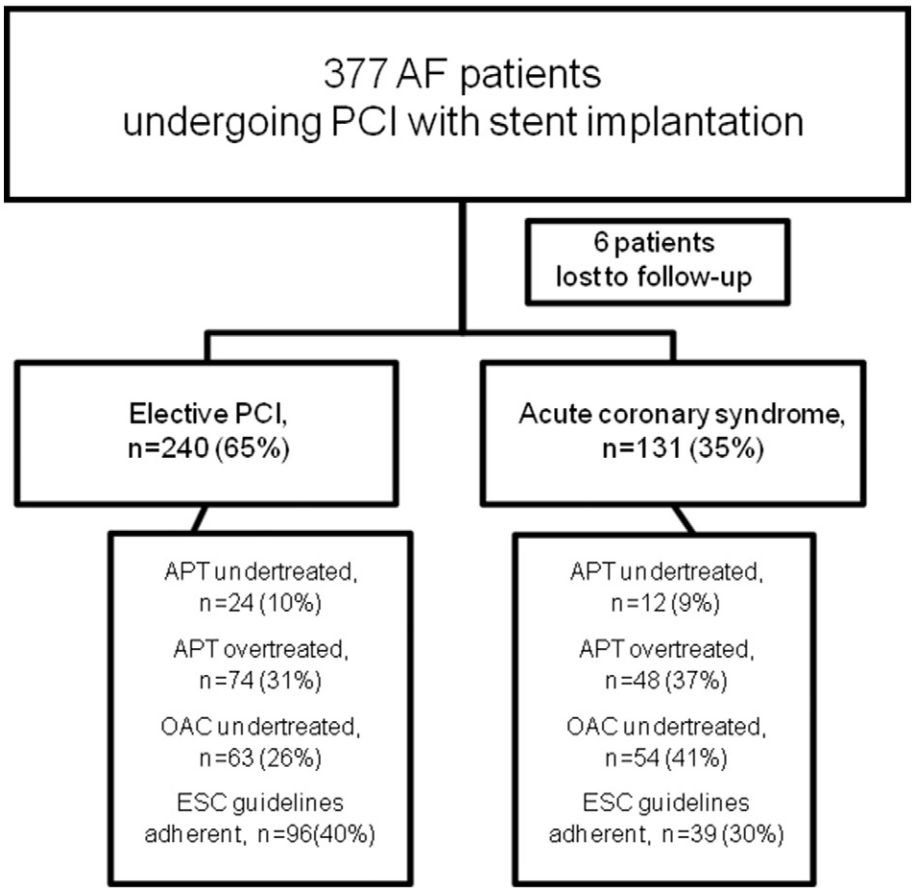

Fig. 1. Flow chart for categorizing antithrombotic ESC guideline adherence according to coronary disease pattern. PCI, percutaneous coronary intervention; APT, antiplatelet therapy; OAC, oral anticoagulation.