

## President's Page

# Acute Coronary Syndromes and Atrial Fibrillation

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**A**trial fibrillation (AF) is the most common sustained cardiac arrhythmia, affecting 1.5-2% of the general population. More than 6 million Europeans suffer from AF and cases are expected to double in the next 50 years. The incidence of AF increases with age, from >0.5% at age 40-50 years up to 5-15% at age 80 years. Men are more likely to suffer from AF than women. It is estimated that by 2050 more than 8 million patients aged over 80 years will be affected by AF. AF is associated with an increased risk of stroke, heart failure, and death, as well as a deterioration in the quality of life.<sup>1</sup>

AF, permanent or paroxysmal, is common in patients with acute coronary syndromes. The mechanisms involved in the development of AF in these patients include ischaemia and reduced atrial blood flow, an increase in left ventricular end-diastolic pressure and left atrial pressure, diastolic dysfunction, and disorders of the autonomic nervous system. Recent evidence suggests that inflammation and activation of neurohormonal mechanisms are involved in the development of AF in patients with acute myocardial infarction. The incidence of AF in acute coronary syndromes ranges from 2% to 23%. In recent years, there has been a downward trend in the incidence of AF in patients with acute coronary syndromes, which can be explained by the widespread use of thrombolysis and percutaneous coronary interventions. The main clinical prognostic markers of risk for AF in patients with acute coronary syndromes are advanced age, tachycardia on admission, and advanced heart failure.<sup>2</sup>

AF increases the risk of worsening ischaemia, heart failure, and thromboembolic complications. Patients with acute coronary syndromes who develop AF have higher in-hospital and long-term mor-

tality. In a large meta-analysis that included 278,854 patients with myocardial infarction from 43 trials, AF was associated with a 40% increase in the risk of death, compared with patients in sinus rhythm. Moreover, AF was associated with worse in-hospital and long-term mortality, regardless of the time of occurrence, i.e. whether it was new-onset or pre-existing.<sup>3</sup> However, in another meta-analysis, new-onset AF in patients with acute myocardial infarction was associated with 87% higher in-hospital mortality, compared to patients with pre-existing AF.<sup>4</sup> AF leads to a number of haemodynamic changes, such as loss of atrial contraction, rapid ventricular rate, and the loss of atrioventricular synchrony. These changes cause a decrease in cardiac output, which may explain the increased risk of death.<sup>5</sup>

Patients who exhibit AF with a rapid ventricular response may experience retrosternal discomfort and elevated troponin levels, complicating the differential diagnosis of acute coronary syndrome. In a large retrospective observational study of patients with AF, 9.2% of patients had elevated levels of high-sensitivity troponin I, while this percentage may be even greater in AF of acute onset.<sup>6</sup> Troponin changes in patients with AF and a rapid ventricular response may mimic type 1 myocardial infarction. In the case of very high troponin levels, the probability of type 1 myocardial infarction is high and coronary angiography is warranted. Conversely, in most cases of AF and increased troponin an ischaemia detection test should be carried out first.<sup>7</sup>

The treatment of AF in patients with acute coronary syndromes depends on the duration of the arrhythmia, the heart rate, and the patient's haemodynamic and functional status. Based on the above criteria, different therapeutic approaches are needed,

such as the administration of antiarrhythmic drugs for rate control, pharmaceutical cardioversion, or electrical direct current cardioversion in patients with haemodynamic instability.<sup>8</sup>

Patients with acute coronary syndromes require dual antiplatelet therapy with aspirin and a second agent, such as clopidogrel, and optionally (depending on the CHA<sub>2</sub>DS<sub>2</sub>-VASc score) the addition of vitamin K antagonists or newer oral anticoagulants when AF is present (triple antithrombotic therapy). Triple antithrombotic therapy increases the risk of bleeding complications and its duration should be kept as short as possible, depending on the haemorrhagic and ischaemic risk, and on whether or not angioplasty is performed. The use of ticagrelor or prasugrel as a part of triple antithrombotic therapy is not recommended, since there are no data regarding their safety and effectiveness.<sup>9</sup>

For patients who require long-term oral anticoagulant therapy and who are to undergo angioplasty, there are insufficient data regarding the choice of the appropriate type of stent. When the haemorrhagic risk is low (HAS-BLED score  $\leq 2$ ) the use of new-generation drug-eluting stents (DES) is recommended, while for patients with a high bleeding risk (HAS-BLED score  $\geq 3$ ) the choice between a bare-metal stent and new-generation DES should be individualised. In patients with acute coronary syndromes treated with oral anticoagulants (vitamin K antagonists or newer) because of AF, angioplasty should be performed without interruption of anticoagulant therapy and radial access should be preferred. Patients who are being treated with vitamin K antagonists and have an international normalised ratio above 2.5 should not be given heparin. However, if they are taking the newer anticoagulants, an additional small dose of intravenous heparin should be administered.<sup>7</sup>

AF is a common comorbidity in patients with acute coronary syndromes and is an independent prognostic risk factor for adverse cardiovascular events. Oral anticoagulants are superior to antiplatelet therapy for preventing stroke in AF, and dual antiplatelet therapy is indicated for acute coronary syndromes. Triple antithrombotic therapy with anticoagulant, aspirin, and clopidogrel is recommended in patients with acute coronary syndromes and AF, although there are insufficient data from randomised clinical trials. Therefore,

both the ischaemic and the haemorrhagic risk should be taken into account and treatment should be selected in order to achieve the optimal balance between benefit and risk.

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