

## President's Page

# Acute Coronary Syndromes and Comorbidities

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**C**ardiovascular diseases are currently the leading cause of death in developed countries and are expected to achieve the same status in developing countries by 2020. Over seven million people die each year from coronary heart disease, accounting for 12.8% of all deaths. Acute coronary syndromes are responsible for about 1.3 million hospitalisations in the US.

The term “acute coronary syndrome” has developed into a convenient and practical tool to describe any symptoms compatible with acute myocardial ischaemia. Acute coronary syndromes include unstable angina, myocardial infarction with or without ST elevation, and sudden cardiac death. In recent years, significant progress has been made in both the diagnosis and the treatment of acute coronary syndromes. Patients with acute coronary syndromes have short- and long-term risks; 20% of them experience a major cardiovascular event within three years of the initial diagnosis, even after successful treatment of the initial episode. Moreover, the coexistence of other diseases, such as anaemia, diabetes mellitus, chronic renal failure, heart failure, advanced age, obesity, cachexia and atrial fibrillation, are a common problem in the treatment of acute coronary syndromes and are associated with an unfavourable prognosis.<sup>1</sup>

Anaemia is associated with a worse prognosis (death, myocardial infarction, or recurrent ischaemia) in acute coronary syndromes. Potential adverse effects of severe anaemia include decreased oxygen supply to the myocardium and increased oxygen consumption due to the maintenance of a high cardiac output. In addition, anaemia is associated with other comorbidities, such as diabetes and heart failure. It is important to determine the causes of anaemia, especially if these are not obvious. The use of drug-eluting

stents should be limited, because of the need for long-term dual antiplatelet therapy. Bleeding associated with primary angioplasty increases mortality and morbidity in the long term. The initial haemoglobin level is an independent index of bleeding risk. Furthermore, an increased risk of bleeding is found in the elderly, women, and patients with a low body weight, a history of haemorrhage, or chronic kidney disease. Bleeding is associated with an unfavourable prognosis in acute coronary syndromes and efforts must be made to reduce it whenever possible. The etiology of anaemia in heart failure is multifactorial and may involve chronic inflammation, renal failure, medication, low cardiac output, and malnutrition.<sup>2</sup>

Approximately 20-30% of patients with acute coronary syndromes are diabetic. Diabetic patients are older, more often women, have more comorbidities such as hypertension and renal failure, have atypical symptoms, and have frequent complications, particularly heart failure and haemorrhage. Diabetic patients have more extensive coronary atherosclerosis, may experience silent ischaemia or myocardial infarction, and have a worse prognosis even after revascularisation. Diabetes mellitus is accompanied by disturbance of the haemostatic and fibrinolytic mechanism, increased metabolism of free fatty acids, and autonomic neuropathy and cardiomyopathy. Diabetics are high-risk patients and therefore require aggressive pharmacological interventions and invasive treatment. Coronary artery bypass grafting provides better results than angioplasty in diabetic patients. However, most studies have involved patients with stable coronary heart disease, and it is not clear whether these data can be extrapolated to patients with acute coronary syndromes.<sup>3</sup>

Renal dysfunction is present in 30-40% of pa-

tients who have acute coronary syndromes without ST segment elevation. Chronic kidney failure (CKF) is associated with a worse prognosis and is an independent prognostic factor for mortality and major bleeding. Patients with CKF often present with symptoms of heart failure and without typical anginal pain. Patients with acute coronary syndromes and CKF are usually treated on the basis of guidelines. Despite the fact that patients with acute coronary syndromes and CKF are often underrepresented in clinical trials, there is no particular reason not to treat them in the same way as patients without renal impairment. However, the use of antithrombotic drugs requires caution, and their dosage should be adjusted according to renal function.<sup>4</sup>

Heart failure is one of the most common and fatal complications of acute coronary syndromes and is an independent predictor of mortality. Of patients with acute coronary syndromes, 10-20% suffer from concomitant heart failure, while up to 10% of patients exhibit heart failure during hospitalisation. Heart failure is more common in elderly patients and is associated with a worse prognosis, whether present on admission or appearing during hospitalisation. In patients who present with heart failure without chest pain, an acute coronary syndrome is difficult to diagnose, because of the increase in troponin that is associated with acute heart failure. In these patients it is often difficult to make the differential diagnosis between acute heart failure and non ST-elevation myocardial infarction complicated by heart failure, so that coronary angiography is required. Patients with acute coronary syndromes and heart failure less often receive the standard treatment, whether pharmaceutical or invasive. Patients with acute heart failure need immediate reperfusion. However, patients with chronic heart failure form a special group and treatment decisions are based on many factors, with one essential requirement being viability.<sup>5</sup>

Age is one of the most important prognostic risk factors for acute coronary syndromes. The term “elderly” is used arbitrarily to describe different age groups. Although 65 years is the standard limit, with the ageing of the population elderly patients are considered to be those aged >75 or even >80 years. Elderly patients are less likely to undergo invasive treatment after an acute coronary syndrome. Elderly patients often have comorbidities and complications, such as heart failure, strokes, infections, and kidney failure. The clinical presentation of ACS in the elderly is frequently atypical, with the predominant symp-

tom being breathlessness, but they may also present with syncope, malaise and confusion. Patients aged >75 years have at least twice the mortality rate compared with those <75 years old. Reperfusion is more effective than drug therapy in patients aged 85 and over. The type of reperfusion is based on availability, symptoms and times, but in general primary angioplasty is safer and more effective. Decisions on how to manage elderly patients should be based on consideration of the benefit, the risk of bleeding, the patient’s life expectancy, comorbidities, quality of life, and the patient’s wishes.<sup>5</sup>

The low body weight in patients with acute coronary syndromes is associated with an increased risk of death, particularly from haemorrhage, often due to an inappropriate dosage of antithrombotic drugs. Normal creatinine levels in patients with low body weight may indicate kidney failure, particularly in elderly patients, which may increase the risk of toxicity or side effects of drugs with renal clearance. Although obesity is associated with a higher risk of coronary heart disease in the general population, obese patients who have an acute coronary syndrome without ST elevation have lower annual mortality and a lower risk of bleeding (obesity paradox). Obese patients have more risk factors, but are younger. In general, these patients are more likely to take action based on the guidelines, which could explain their better outcomes.<sup>3</sup>

The overall incidence of atrial fibrillation in patients with myocardial infarction ranges between 2% and 22%. Atrial fibrillation can be caused by excessive stimulation of the sympathetic nervous system, atrial stimulation due to volume overload, atrial infarction, pericarditis, electrolytic disorders or hypoxia. Atrial fibrillation is associated with heart failure, shock, stroke and increased mortality. In patients who have concomitant atrial fibrillation, the most important problem is the need for triple antithrombotic therapy and the selection of the most appropriate stent. Therefore, great care is needed in this category of patients and the benefit should be weighed against the risk of bleeding.<sup>6</sup>

These comorbidities are a common problem in the treatment of acute coronary syndromes. Patients with comorbidities are underrepresented in studies and often undertreated. The concomitant disease affects the prognosis of acute coronary syndromes and determines the treatment options. Therefore, it is necessary to identify the comorbidities and to select an appropriate therapeutic strategy for the benefit of the patient.

**References**

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