



PRESIDENT'S PAGE

Acute coronary syndromes and diabetes mellitus



Diabetes mellitus (DM) is a rapidly growing pandemic disease affecting more than 350 million patients all over the world.¹ In addition is one of the major risk factors for coronary artery disease and more than 40% of patients with acute coronary syndrome (ACS) have DM.^{2,3} Additionally, mortality in patients with ACS is 2–3 fold elevated in diabetic patients compared with non diabetic ones⁴ while in ACS both subdiagnosed diabetic patients and patients newly diagnosed with impaired glucose tolerance have increased 30-day mortality in comparison with non diabetic ones.⁵ Long lasting studies in diabetic patients with ACS have shown an increase of 1.8 fold the incidence of cardiovascular death and 1.4-fold increase in myocardial infarctions after 2 years than non diabetic ones.⁶

Specifically on patients after acute myocardial infarction with ST segment elevation (STEMI), compared to non-diabetics, diabetic patients present more slowly in the emergency department more often present hemodynamic instability and target organs damage and usually receive late reperfusion. Additional meta-analysis of 19 studies that included 6000 patients with STEMI showed similar benefit between thrombolysis and primary angioplasty (PCI) in diabetic and nondiabetic patients.⁷ In the same study, however the rates of recurrence myocardial infarction and stroke was lower in patients after primary angioplasty and additional patients with DM showed delayed onset of reperfusion and longer ischemic time and they have a significant delay in starting treatment due to atypical symptoms.

In Europe, 20–30% of patients with myocardial infarction without ST segment elevation (NSTEMACS) have known DM while a similar percentage is either undiagnosed diabetic patients or they have impaired glucose tolerance.^{5,8} An analysis of 15,000 patients with NSTEMACS diabetic patients was independently associated with increased 30-day and annual mortality.⁹ In addition diabetic NSTEMACS patients, usually are older, more often have pre-existing

cardiovascular disease, hypertension, and renal failure and have more often atypical symptoms.¹⁰ During hospitalization patients with DM are more likely to develop complications such as heart failure, stroke, recurrent myocardial infarction, renal failure and major bleeding.^{10,11}

From therapeutic view diabetic patients compared with nondiabetic patients, show decreased antiplatelet response to clopidogrel and aspirin and less favorable results after interventional (PCI) and surgical revascularization (CABG).^{12,13}

Specifically reperfusion therapy in diabetic patients with multivessel disease and NSTEMACS remains unclear due to lack of randomized studies comparing different strategies. The best results were obtained by comparing PCI and CABG in patients with multivessel stable coronary disease.^{14–16} Selection of reperfusion strategy in diabetic patients would be based on many factors such as clinical status evaluation (hemodynamic/electrical instability, ongoing ischemia), complex coronary artery disease, suitability of lesions for PCI and distal anastomoses in CABG, ischemic load, echocardiographic assessment of left ventricular function and any other comorbidities. Furthermore various scores of coronary lesions evaluation and predicting surgical mortality as SYNTAX, EuroSCORE II, STS should be taking in mind for decision making.¹⁷ The Heart Team is really important and all patients with DM and multivessel complex coronary artery disease should be evaluated.¹⁸ Overall the surgical reperfusion threshold compared with PCI in diabetic patients should be lower compared to non-diabetic patients and low-risk patients with multivessel coronary artery disease.^{14–16} In diabetic patients with ongoing ischemia or hemodynamic instability direct coronary angiography is appropriate and adequate reperfusion therapy must be selected individually and after discussion with the Heart Team understanding the increased risk of surgical reperfusion in continuing ischemia. Finally DES stents have dramatically reduced the need for repeat revascularization in diabetic patients and are suggested as first choice.¹⁹

Regarding antiplatelet therapy both diabetic and non-diabetic patients should be treated with the same drugs

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and the same dosages. Newer P2Y12 inhibitors prasugrel and ticagrelor seem superior compared with clopidogrel in diabetic patients with ACS in the TRITON-TIMI 38 studies and PLATO.^{20,21} Corresponding GPIIb/IIIa inhibitors shown reduced mortality in diabetic patients with NSTEMI in pre clopidogrel time but their role now should be more elucidated.²² Despite the increased risk, antiplatelets such as thienopyridines are used less often in patients with diabetes than non-diabetic ones with an adverse effect on both the hospital and the long lasting mortality.^{6,23,24}

Important is the close follow up for contrast nephropathy of diabetic patients after PCI. Insufficient data exist to discontinue metformin 24–48 hours before angiography or PCI as the risk of lactic acidosis is negligible. Renal function should however be monitored after angioplasty in these patients.²⁵ In addition, as a general rule, less strict glucose control should be applied in patients with more advanced cardiovascular disease, older age, longer diabetes and more co-morbidities in acute phase and ACS follow up.

In conclusion DM increases the mortality of patients with ACS with many ways while the implementation of the appropriate therapeutic reperfusion intervention to whom and when require more randomized trials.

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