Treatment disparities in patients with acute coronary syndromes and kidney disease

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This editorial refers to 'Temporal management patterns and outcomes of non-ST elevation acute coronary syndromes in patients with kidney dysfunction', by J.A. Wong et al. on page 549

Management of acute coronary syndromes (ACS) has been considerably refined over the past several decades, with the advances in diagnostics including prompt electrocardiography, use of cardiac biomarkers including cardiac troponin, antiplatelet and antithrombotic agents, β-adrenergic blockers, statins, and targeted utilization of invasive management with coronary angiography and revascularization with percutaneous coronary intervention (PCI) in the majority, with amenable anatomy and coronary artery bypass surgery in a minority of patients with multivessel disease and critical stenoses in one or more vessels. In the optimal care of a patient with ACS, each of these advances has contributed to relative risk reductions in clinical outcomes including recurrent myocardial infarction (MI), rehospitalization for ACS, and cardiac death. Because the use of early invasive management depends on hospital facilities, the willingness of the physician, and consent from the patient, this component of treatment is particularly susceptible to treatment bias. Therefore, a previous meta-analysis of seven randomized trials (n = 9212 ACS patients) is important as it demonstrated that death or MI was reduced from 14.4 to 12.2% in the routine invasive group (relative 18% risk reduction) with a non-significant trend toward fewer deaths (6.0% vs. 5.5%). If a subgroup could be identified where this 8% relative mortality reduction was amplified 4-fold, most would agree this subset should be considered a priority for invasive management.

In the analysis by Wong et al., patients with stage 4 and higher chronic kidney disease (CKD) denoted by an estimated glomerular filtration rate (eGFR) < 30 mL/min/1.73 m² who were selected for an early invasive management approach for ACS enjoyed a 33.7% relative risk reduction in mortality compared with those managed conservatively who ultimately had a 41.5% all-cause mortality. This is in contrast to the subgroup who had the worst health in the three registries summarized. In the 639 (5.6%) with an eGFR < 30 mL/min/1.73 m² [serum creatinine (Cr) ~ 3.7 mg/dL (238 mmol/L)] the median age was ~76 years (interquartile range 68–84), ~50% had diabetes, ~75% demonstrated positive biomarkers indicating acute MI, ~55% had a history of previous MI, and ~36% suffered from prior heart failure. Hence, the eGFR < 30 mL/min/1.73 m² or Cr ~2.7 mg/dL (238 mmol/L) served as a proxy for a clinical ‘package’ containing elderly patients with the highest risk for mortality in ACS. So why was an invasive approach used in fewer than a third of patients in this group despite low rates of patient/family refusal? The answer appears to be in the response of ‘not high enough risk or not supported by evidence’ which is frankly disturbing. The evidence-based risk predictors in the eGFR < 30 mL/min/1.73 m² suggest clinicians are failing to recognize risk. While this trend is slowly improving over the time course of these registries, these data point to much room for improvement in estimation of mortality risk in elderly ACS patients. The indicators from treating physicians highlight for the first time that concern over contrast-induced acute kidney injury, bleeding, and co-morbidities does not account for intentional ‘therapeutic nihilism’ in patients with CKD.

In summary, there appears to be a perceived risk mismatch between the clinical impression and the real mortality risk of ACS in patients with eGFR < 30 mL/min/1.73 m². Educational efforts should be directed towards understanding how traditional risk predictors including positive biomarkers, age, diabetes, and histories of MI and heart failure aggregate in patients with significant CKD. If managed conservatively, the study of Wong et al. and a study by Keeley et al. suggest this ACS population has disastrous outcomes with a nearly 50% case fatality rate at 1 year. This rate can be cut in half with an invasive management approach in appropriate patients. Giving the ageing population structures of developed countries, we can and should expect considerable improvement in treatment outcomes for this important group of ACS patients.

The opinions expressed in this article are not necessarily those of the Editors of the European Heart Journal or of the European Society of Cardiology.

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References

Aortic penetrating ulcers associated with intramural haematoma: detection and evaluation by multislice computed tomography

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A 76-year-old woman was admitted to the Cardiology ward because of chest pain. She had a history of poor controlled arterial hypertension. Two-dimensional echocardiography showed a dilated ascending aorta without signs of intimal tears. The aortic valve showed normal function. There were no signs of pericardial effusion, and wall motion of the left ventricle was normal. Laboratory tests did not show abnormalities. To evaluate the coronary arterial tree and the ascending aorta, a 64-multislice computed tomography (MSCT) scan was performed within few hours using a low-dose X-ray protocol during prospective acquisition (SnapShot Pulse, GE Healthcare). The pre-contrast scan showed the presence of a crescent-shaped high-attenuation material within the wall of the ascending aorta on unenhanced images (Panel A, arrows), which is a typical sign of intramural haematoma (IMH). After contrast, a thickening of the aortic wall from the aortic valve to the middle portion of the arch was noted (Panel B, arrows). Careful examination of the aortic lumen showed the presence of two small indentations of the otherwise smooth aortic wall lumen located in the inferior wall of the aortic arch (Panels C and D dark arrows), suggesting the presence of two penetrating ulcers (PAU). No intimal flap was documented. The coronary arterial tree did not show any significant lesion. The patient underwent immediate surgery and the ascending aorta replaced with a dacron graft and the native aortic valve spared. She experienced an uneventful recovery and is doing well.

Penetrating ulcers, a condition in which ulceration of an aortic atherosclerotic lesion penetrates the internal elastic lamina into the media, usually involves the descending thoracic aorta. Although IMH and PAU are considered two different and distinct entities, they may co-exist and PAU has been suggested to be a cause of IMH. Their combination has been associated with a progressive and unfavourable clinical course. As a definite diagnosis is relevant for the outcome and a clinical separation of the two entities is not possible, the differentiation is based on the appropriate use of the imaging methods. The complete, high-resolution assessment of the aorta and coronary arteries that can be obtained with the current MSCT technology at present favours this method compared with other imaging modalities in the suspicion of an acute aortic syndrome.

Supplementary material is available at European Heart Journal online.

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