main or three-vessel coronary artery disease, angina at rest and severe ischaemia on stress testing. The primary end point was a composite of death, myocardial re-infarction or NYHA class IV heart failure. The 4-year cumulative primary event rate was 17.2% in the PCI group and 15.6% in the medical treatment group (hazard ratio (HR) for death, reinfarction or heart failure in the PCI group as compared with the medical treatment group 1.16, 95% CI 0.92 to 1.45, $p=0.20$). Rates of myocardial re-infarction (both fatal and non-fatal) were 7.0% and 5.3%, respectively (HR 1.36, 95% CI 0.92 to 2.00, $p=0.13$). Only 6 re-infarctions (0.6%) were related to the assigned PCI procedure. Rates of NYHA class IV heart failure (4.4% vs 4.5%) and death (9.1% vs 9.4%) were similar. There was no interaction between treatment effect and any of the subgroup variables (age, sex, race, infarct-related artery, ejection fraction, diabetes mellitus, Killip class and the time from myocardial infarction to randomisation). Although this study demonstrated a high procedural success rate with PCI and sustained vessel patency, it failed to demonstrate clinical benefit over an approximately 3 year follow-up period with respect to death, reinfarction or heart failure. In other words, a patient whose artery was opened mechanically >12 h after an infarct did not have an improved outcome when compared with the individual treated with medical therapy alone.

▲ Hochman JS, Lamas GA, Buller CE, *et al.* Coronary intervention for persistent occlusion after myocardial infarction. *N Engl J Med* 2006;355:2395–407.

▲ Hills LD, Lange RA, eds. Myocardial infarction and the open-artery hypothesis. *N Engl J Med* 2006;355:2475–7.

Statistical bias may influence outcome of MI trials ► When examining prognosis in post-myocardial infarction (MI) trials, what is the significance of the statistical analytical method used? Stukel and colleagues from Canada reanalysed data from a cohort of 122 124 elderly patients aged 65–84 years, all of whom were hospitalised

between 1994 and 1995 and were candidates for cardiac catheterisation. Patients were then followed up for 7 years to assess the association between long-term survival and cardiac catheterisation within 30 days of hospital admission. Four main analytical methods were compared: multivariable model risk adjustment, propensity score risk adjustment, propensity-based matching and instrumental variable analysis. After adjustment for prognostic factors using standard statistical adjustment methods, cardiac catheterisation was associated with a 50% relative decrease in mortality, giving an adjusted relative risk (RR) of 0.51. By contrast, instrumental variable analysis—which controls for hidden as well as overt bias—suggested a 16% relative decrease in mortality (RR 0.84). Therefore, in this study, estimates of the observational association of cardiac catheterisation with long-term mortality from MI were highly sensitive to the analytical method used. Instrumental variable analysis may produce less biased estimates of treatment effects, but is more suited to answering policy questions rather than specific clinical questions.

▲ Stukel TA, Fisher ES, Wennberg DE, *et al.* Analysis of observational studies in the presence of treatment selection bias: effects of invasive cardiac management on AMI survival using propensity score and instrumental variable methods. *JAMA* 2007;297:278–85.

Journals scanned

American Journal of Medicine; American Journal of Physiology; Heart and Circulatory Physiology; Annals of Emergency Medicine; Annals of Thoracic Surgery; Archives of Internal Medicine; BMJ; Chest; European Journal of Cardiothoracic Surgery; Lancet; JAMA; Journal of Clinical Investigation; Journal of Diabetes and its Complications; Journal of Immunology; Journal of Thoracic and Cardiovascular Surgery; Nature Medicine; New England Journal of Medicine; Pharmacoeconomics; Thorax

Reviewers

Dr Alistair Lindsay, Dr Katie Qureshi

IMAGES IN CARDIOLOGY

Ventricular non-compaction in the setting of double-outlet right ventricle (tetralogy of Fallot type) with doubly committed subarterial ventricular septal defect

CT image showing the heavily trabeculated apical region of the right ventricle and the foreshortened view of the left ventricle with a prominent trabeculated pattern. The ventricular septal defect with the overriding aorta is also seen.

A term infant with antenatal diagnosis of trisomy 21 and double-outlet right ventricle (tetralogy of Fallot type) developed progressive biventricular dysfunction. Echocardiogram showed an overriding aorta with aortic-to-mitral valve discontinuity but good ventricular function. The ventricular septal defect (VSD) showed a doubly committed subarterial position. Subsequent echocardiogram revealed depressed biventricular function with a honeycombed appearance of the apex and posterior wall of the left ventricle and the apex of the right ventricle. Non-compacted to compacted ratios were 3:1 in the left ventricle with flow seen into the deep trabeculations on a colour flow Doppler. Multi-slice CT angiography of the heart confirmed marked trabeculations in the apical portions of both ventricles with a globally depressed biventricular function (see panel).

Ventricular non-compaction and double-outlet right ventricle of the tetralogy of Fallot type with doubly committed subarterial VSD are rare conditions in isolation, and this is the first case in the literature describing both in the same patient. Definitive surgical repair is challenging with depressed ventricular function. Furthermore, palliative systemic-to-pulmonary artery shunting may lead to volume loading of a poorly functioning left ventricle. Anecdotal reports suggest an improvement in global ventricular function in isolated cases of ventricular non-compaction in infants with the use of carvedilol. However, its use in this setting may theoretically increase right-to-left shunting. On the other hand, this might be the only intervention available at this time to improve ventricular function.

Damien Kenny, Dominic Hares, Orhan Uzun
orhan.uzun@cardiffandvale.wales.nhs.uk

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