European Heart Journal (2009) **30**, 1429–1430
doi:10.1093/eurheartj/ehp170

EDITORIAL

Are adapted guidelines required for patients with prior bypass surgeries and heart failure in acute myocardial infarction?

Aris Moschovitis and Bernhard Meier*

Swiss Cardiovascular Center, Bern University Hospital, Inselspital Bern, Switzerland

Online publish-ahead-of-print 2 May 2009

This editorial refers to 'Patients with prior coronary artery bypass grafting have a poor outcome after myocardial infarction: an analysis of the VALsartan in acute myocardial iNfarcTion trial (VALIANT)'†, by C. Berry *et al.*, on page 1450

Evidence-based medical treatment with antiplatelet therapy (acetylsalicylic acid or thienopyridine), statins, β-blockers, and angiotensin-converting enzyme (ACE) inhibitors has markedly improved prevention of coronary artery disease (CAD), slowed down disease progression, and improved prognosis.[1–3] Nonetheless cardiovascular diseases, particularly CAD, remain among the leading causes of death and morbidity in western countries. Due to the high prevalence of CAD, the increasing incidence of heart failure, and the demographic change with ageing of the population, the absolute number of patients with myocardial infarction, prior coronary artery bypass grafting (CABG), and heart failure, and their need for revascularization will increase in the coming years.

Left ventricular dysfunction or heart failure is an ominous stigma in such situations. The role of prior CABG is ambiguous. In the case of an acute revascularization attempt with percutaneous coronary intervention (PCI), bypass grafts may provide protection when attempting native vessels. On the other hand, recanalizing an acutely thrombosed bypass graft has a low success rate and a high risk for complications, in particular distal embolizations. Moreover the recurrence rate is dismal.

After its introduction in the late 1960s,[4,5] CABG was utilized for a couple of decades as the treatment of choice of myocardial ischaemic disease for an increasing number of patients, reaching a peak in the mid to late 1990s[6,7]. Nevertheless it is well known that half of all vein grafts become diseased and one-quarter occluded within 5 years, increasing the risk of recurrent myocardial ischaemia and infarction in the long term. Only the increasing use of arterial bypasses prevented an avalanche of infarctions due to degrading venous grafts over the past 20 years. As with all acute infarctions, the choice is between thrombolysis and PCI, emergency CABG for acute myocardial infarction being all but discarded.

Berry *et al.*[8] have reported an interesting subanalysis of the VALIANT trial (valsartan, captopril or both in myocardial infarction complicated by heart failure, left ventricular dysfunction, or both). In this study, baseline characteristics, treatment, and clinical outcomes were compared in two subgroups of patients with myocardial infarction, heart failure, or left ventricular dysfunction, i.e. those with prior CABG (1026 patients) and those without (13 677 patients). With a median follow-up of 26 months, this randomized controlled trial found that patients with prior CABG had a markedly worse composite outcome of cardiovascular death, myocardial infarction, heart failure, resuscitated cardiac arrest, or stroke (64% vs. 39%, $P < 0.0001$). This is consistent with published data of patients undergoing CABG or PCI in the real world, collected in different registries or retrospective observational studies, as for example in the GRACE registry.[9] The same holds true for a study recently published by Yan *et al.*[10] that compared 3841 consecutive patients undergoing CABG with 4417 patients undergoing PCI. The CABG group admittedly had a higher incidence of diabetes, heart failure, left ventricular ejection fraction <45%, multivessel CAD, or peripheral vascular and cerebrovascular disease (all $P < 0.01$).

In the report of Berry *et al.*,[8] patients with prior CABG also had a worse clinical profile. They were older, and more often had a history of myocardial infarction, stroke, diabetes, hypertension, and atrial fibrillation, and a lower left ventricular ejection fraction. Additionally they received evidence-based therapies such as acetylsalicylic acid and β-blockers less often.

It is thus corroborated that prior CABG is a surrogate for sicker patients and hence portends a poorer outcome. Clinicians taking care of such patients should recognize that fact, not more and not less, and apply the optimal medical treatment[11] and revascularization/recanalization procedures even more stringently and diligently. This had apparently not been the case in the VALIANT patients examined. Hence, there is room for improvement

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.

* Corresponding author. Tel: +41 31 632 96 51, Fax: +41 31 382 10 69, Email: bernhard.meier@insel.ch

† doi:10.1093/eurheartj/ehp102

to this end and to narrow the gap in the results between those patients with or without prior CABG. In particular, the low incidence of primary PCI (14% in patients with prior CABG) is unacceptable. Prior CABG is synonymous with multivessel CAD which mandates angiography whenever symptoms change. There is no more dramatic change of symptoms than a myocardial infarction. Of course, this has to be seen in the context of the equally low primary PCI rate in patients without prior CABG (15%), pointing more to a general problem than to a disqualification of patients with prior CABG.

We definitely do not need guidelines tailored to patients with acute myocardial infarction in the realm of heart failure and prior CABG. It simply needs to be mentioned in general guidelines that these are high-risk patients by definition. They call for immediate attention, they call for tertiary centres, and they call for experienced and accomplished doctors. These prerequisites having been met, they may well wind up with a conservative approach more frequently than lower risk patients. There are and will always be limits to how much we can correct nature.

Conflict of interest: none declared.

References

1. Deedwania P, Barter P, Carmena R, Fruchart JC, Grundy SM, Haffner S, Kastelein JJ, LaRosa JC, Schachner H, Shepherd J, Waters DD. Reduction of low-density lipoprotein cholesterol in patients with coronary heart disease and metabolic syndrome: analysis of the treating to New Targets study. *Lancet* 2006;**368**:919–928.
2. The Long-Term Intervention with Pravastatin in Ischaemic Disease (LIPID) Study Group. Prevention of cardiovascular events and death with pravastatin in patients with coronary heart disease and a broad range of initial cholesterol levels. The Long-Term Intervention with Pravastatin in Ischaemic Disease (LIPID) Study Group. *N Engl J Med* 1998;**339**:1349–1357.
3. Ferrari R, Bertrand ME, Remme WJ, Simoons ML, Deckers JW, Fox KM. Insight into ACE inhibition in the prevention of cardiac events in stable coronary artery disease: the EUROPA trial. *Expert Rev Cardiovasc Ther* 2007;**5**:1037–1046.
4. Favaloro RG. Saphenous vein graft in the surgical treatment of coronary artery disease. Operative technique. *J Thorac Cardiovasc Surg* 1969;**58**:178–185.
5. Garrett HE, Dennis EW, DeBakey ME. Aortocoronary bypass with saphenous vein graft. Seven-year follow-up. *JAMA* 1973;**223**:792–794.
6. Ferguson TB Jr, Hammill BG, Peterson ED, DeLong ER, Grover FL. A decade of change–risk profiles and outcomes for isolated coronary artery bypass grafting procedures, 1990–1999: a report from the STS National Database Committee and the Duke Clinical Research Institute. Society of Thoracic Surgeons. *Ann Thorac Surg* 2002;**73**:480–489; discussion 489–490.
7. Gummert JF, Funkat A, Beckmann A, Schiller W, Hekmat K, Ernst M, Krian A. Cardiac surgery in Germany during 2006: a report on behalf of the German Society for Thoracic and Cardiovascular Surgery. *Thorac Cardiovasc Surg* 2007; **55**:343–350.
8. Berry C, Pieper KS, White HD, Solomon SD, Van de Werf F, Velazquez EJ, Maggioni AP, Califf RM, Pfeffer MA, McMurray JJV. Patients with prior coronary artery bypass grafting have a poor outcome after myocardial infarction: an analysis of the VALsartan in acute myocardial iNfarcTion Trial (VALIANT). *Eur Heart J* 2009;**30**:1450–1456. First published on 3 April 2009.
9. Goldberg RJ, Currie K, White K, Brieger D, Steg PG, Goodman SG, Dabbous O, Fox KA, Gore JM. Six-month outcomes in a multinational registry of patients hospitalized with an acute coronary syndrome (the Global Registry of Acute Coronary Events [GRACE]). *Am J Cardiol.* 2004;**93**:288–293.
10. Yan BP, Clark DJ, Buxton B, Ajani AE, Smith JA, Duffy SJ, Shardey GC, Skillington PD, Farouque O, Yii M, Yap CH, Andrianopoulos N, Brennan A, Dinh D, Reid CM. Clinical characteristics and early mortality of patients undergoing coronary artery bypass grafting compared to percutaneous coronary intervention: Insights from the Australasian Society of Cardiac and Thoracic Surgeons (ASCTS) and the Melbourne Interventional Group (MIG) Registries. *Heart Lung Circ* 2009 Epub ahead of print.
11. Graham I, Atar D, Borch-Johnsen K, Boysen G, Burell G, Cifkova R, Dallongeville J, De Backer G, Ebrahim S, Gjelsvik B, Herrmann-Lingen C, Hoes A, Humphries S, Knapton M, Perk J, Priori SG, Pyorala K, Reiner Z, Ruilope L, Sans-Menendez S, Scholte op Reimer W, Weissberg P, Wood D, Yarnell J, Zamorano JL, Walma E, Fitzgerald T, Cooney MT, Dudina A, Vahanian A, Camm J, De Caterina R, Dean V, Dickstein K, Funck-Brentano C, Filippatos G, Hellemans I, Kristensen SD, McGregor K, Sechtem U, Silber S, Tendera M, Widimsky P, Altiner A, Bonora E, Durrington PN, Fagard R, Giampaoli S, Hemingway H, Hakansson J, Kjeldsen SE, Larsen ML, Mancia G, Manolis AJ, Orth-Gomer K, Pedersen T, Rayner M, Ryden L, Sammut M, Schneiderman N, Stalenhoef AF, Tokgozoglu L, Wiklund O, Zampelas A. European guidelines on cardiovascular disease prevention in clinical practice: executive summary. *Eur Heart J* 2007;**28**:2375–2414.