
References


Al-Halees et al. [1], Duran et al. [2], Amano et al. [3], and Grinda et al. [4] had mostly rheumatic patients (78—100%), which allowed us to draw the conclusions in the paper.

In addition, it is important to understand that one of the main reasons for attempting aortic valve repair is because the patients are young. The two main aortic valve pathologies found in young patients are rheumatic and congenital. Calcific or degenerative aortic disease will be found in older patients in whom we already have a good therapy: prosthetic replacement. There may not be much justification for attempting repair in these patients, and therefore it is important to describe the results in the specific patient population in whom repair has been tried, namely the young patient with rheumatic or congenital pathology. Thus far, repair does not seem to have durable results in the rheumatic population. We must hope that the congenital population will fare better.

Dr Izumoto’s second point is also well taken. Many different types of repair were described in each case series and it was very difficult to ascertain which methods of repair were successful and which were not. It is currently unknown if a triangular resection may perform better than a leaflet plavation. This is another area where future research will need to be done. I again thank Dr Izumoto for his insightful comments in an area where he has a great deal of expertise.

We read with interest the article by Seccareccia et al. [1], given the underlying assumptions and inherent limitations, this paper should be mainly regarded as hypothesis-generating until further external validation is available.
Reply to Biondi-Zoccai et al.

Reply to the Letter to the Editor

Reply to Biondi-Zoccai et al.

Fulvia Seccareccia a,*, Carlo Alberto Perucci b, Danilo Fusco b, Paola D’Errigo a
a National Centre of Epidemiology, Surveillance and Health Promotion, Istituto Superiore di Sanità, Via Giano della Bella, 34, 00161 Rome, Italy
b Department of Epidemiology – ASL RME, Rome, Italy

Received 6 February 2006; accepted 7 February 2006

Keywords: Coronary artery bypass graft; Outcome; Risk-adjustment; Mortality

We have already addressed the issues of recruitment, accuracy of information, and volume-outcome association in another letter that will be published in a forthcoming issue of this Journal. Now, we will discuss the remaining topics treated by Biondi-Zoccai et al. concerning the Italian CABG Outcome Study [1].

The rate of missing data in the studied population was 3.5%. Only for three centres we found significant differences in mortality between records with and without missing data. For these centres, in the website http://bpac.iss.it, we reported the estimates obtained assuming, for each patient, the two extreme hypotheses: alternatively presence or absence of all the missing comorbidities. The same analysis on all the other Centres proved the absence of this potential bias.

All criticisms risen by Biondi-Zoccai regarding model validation suit prognostic models, developed to predict the outcome of future patients. Actually, we pursued an explanatory objective: identification and control of confounders of the association between mortality and exposure (hospitals). For example, age is an important predictor of mortality. If age is homogeneously distributed among hospitals, it can be excluded from risk adjustment because it is not a confounder. This will reduce calibration and discrimination capacity of the model but the estimated effects measure for hospitals will not change. Moreover, we deal with multiple comparisons. Theoretically a specific risk adjustment model should be developed for each comparison, because real confounders actually vary between hospitals. For example, among selected 14 hospitals with more than 700 CABG, age acts as a real confounder only in four comparisons. For parsimony and comparability of analysis we included in the risk adjustment model only factors acting as confounders in at least one comparison. As a consequence our model tends to be redundant (i.e., including variables which are not actual confounders in some comparisons). However, the use of factors that are not confounders will not introduce bias on the estimated effects measure, but will only reduce their precision.

Overfitting represents a problem for predictive/prognostic purposes. Overfitting a model (including variables in the model with truly zero regression coefficients in the population) does not introduce bias when population regression coefficients are estimated. We must be careful, however, to avoid harmful collinearity. This occurs when there is a strong correlation between one or more ‘confounders’ and the ‘main exposure’. In this case, the inclusion of the ‘confounder’ into the model will cause the main exposure estimate to be unstable and its SE to become much larger. Anyway, collinearity between confounders causes loss of precision, not loss of validity of the effects measure in comparisons. This is not our case: no strong correlation between selected factors or their combinations was found.

Finally, the analysis of possible interactions is relevant. As previously described, although based on clinical grounds, we are not interested in defining the best prognostic model using all interactions between factors if these interactions do not involve the exposure.

In observational studies, propensity adjustment and risk adjustment are the two ways to identify and control confounding. In our case, they yield the same results.

Reference


* Corresponding author. Tel.: +39 06 49904234; fax: +39 06 49904230. E-mail address: fulvias@iss.it (F. Seccareccia).

doi:10.1016/j.ejcts.2006.02.010

Letter to the Editor

Do we need the new Italian risk stratification model for CABG patients?

Khosro Hekmat*, Uwe Mehlhorn, Thorsten Wahlers
Department of Cardiothoracic Surgery, University of Cologne, Kerpener Str. 62, 50924 Cologne, Germany

Received 24 January 2006; accepted 8 February 2006

Keywords: Risk model; Stratification; CABG

---

References


* Corresponding author. Address: Servizio di Emodinamica e Radiologia Cardiovascolare, Centro Cardiovascolare “E. Malan”, Policlinico San Donato, Via Morandi 30, 20097 San Donato Milanese (MI), Italy. Tel.: +39 3408626829; fax: +39 0252774585.
E-mail address: gbiondizoccai@gmail.com.
doi:10.1016/j.ejcts.2006.02.009