

## LETTERS TO THE EDITOR

- The British Heart Journal welcomes letters commenting on papers that it has published within the past six months.
- All letters must be typed with double spacing and signed by all authors.
- No letter should be more than 600 words.
- In general, no letter should contain more than six references (also typed with double spacing).

### Heart rate variability in left ventricular hypertrophy

SIR,—Mandawat *et al* in their paper (*Br Heart J* 1995;73:139-44) showed that heart rate variability was significantly reduced in patients with left ventricular hypertrophy secondary to hypertension or aortic valve disease. In addition they showed that heart rate variability was not affected by  $\beta$  blocker treatment. However, they made no comment on the effect of other antihypertensive agents such as thiazide diuretics and certain calcium antagonists such as nifedipine which can cause reflex sympathetic activation and hence reduce heart rate variability. Nearly 60% of their patients were taking diuretics. We have recently found in a study of Chinese patients with hypertension that thiazide treatment was associated with reduced heart rate variability assessed by non-spectral and spectral methods, compared with a 4 week control during which potassium replacement treatment alone was given (unpublished). Like Mandawat *et al* we found a significant reduction in the SD of all NN intervals over 24 (SDNN) and in addition root mean square of difference of successive RRs (rMSSD), proportion of adjacent RRs more than 50 ms different (pNN50), with reduced low frequency and high frequency spectral power.

Though left ventricular hypertrophy may well be independently associated with reduced heart rate variability, we were surprised that no comment is made about the possible effect of treatments, other than  $\beta$  blockers, on heart rate variability in hypertensive subjects. In view of the possibility of an increase in sudden death in hypertensive patients taking thiazide diuretics<sup>1</sup> we would be interested to know whether Mandawat *et al* have any comparable data on the relation of thiazide treatment to heart rate variability in hypertensive subjects with left ventricular hypertrophy.

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1 Siscovick DS, Raghunathan TE, Psaty BM, *et al*. Diuretic therapy for hypertension and the risk of primary cardiac arrest. *N Engl J Med* 1994;330:1852-7.

This letter was shown to the authors, one of whom replies on behalf of his co-authors as follows:

SIR,—The observation by Sanderson and Tomlinson of reduced heart rate variability during treatment with a thiazide diuretic raises the interesting possibility of altered cardiac autonomic tone as a potential mechanism for the increased risk of sudden death associated with this treatment. Unfortunately this suggestion is neither supported nor refuted by our study. Most of our subjects were receiving a combination of antihypertensive drugs (mean 2.5). The inclusion of a diuretic with the regimen did not influence indices of heart rate variability (SD of all NN intervals over 24 h; triangular index; and SD of the mean NN interval for all 5 min segments of a 24 h recording), whether analysed as any diuretic drug (n = 54) or, more specifically, as a thiazide preparation (n = 32 of 82) (heart rate variability corrected for RR interval). Similarly, neither calcium antagonists (n = 39) nor angiotensin converting enzyme inhibitors (n = 21) affected time heart rate variability in these subjects with left ventricular hypertrophy. During prospective follow up of this cohort over 5.3 years, all-cause mortality was reduced by  $\beta$  blocker treatment but was unaffected by diuretic treatment (unpublished).

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### Risks and results of surgery

SIR,—We congratulate Professor Tom Treasure on his interesting and forward looking article.<sup>1</sup> However, we suggest that the objectives in this instance should not be limited merely to “redressing apparent differences in results by correcting for differential casemix”. Much more important potential benefits await the widespread introduction of an appropriate means of risk adjustment from observational databases.<sup>2,3</sup> These include an ability in coronary artery surgery to produce predictive data comparable to randomised controlled trials.<sup>4,5</sup>

Risk stratification on the basis of preoperative, perioperative, and postoperative variables is the cornerstone of any realistic comparisons but the system chosen must be robust and not open to manipulation or subjective elements.<sup>6,7</sup> The best system available for the task must be used. A system described in 1990 has been endorsed by the Association of Cardiothoracic Anaesthetists of Great Britain and Ireland (ACTA).<sup>8</sup> This ACTA system has been demonstrated to perform better (with improved receiver operating characteristic curves) than the Parsonnet system.<sup>9</sup> In this comparison the explanatory components of the Parsonnet and ACTA scoring systems were subjected to multiple logistic regression (MLR) analysis. The MLR package always selected the ACTA items rather than the Parsonnet items. Moreover the subjective elements of the Parsonnet data set (“catastrophic state” and “PTCA crash”) were not selected as explainers of increased mortality or prolonged stay in the intensive therapy unit (ITU) in this analysis.

There are other systems available, one of which (from New York State) has recently gained considerable publicity for the claims made for it and the criticism it has received.<sup>7,10</sup> This system and the Parsonnet system both contain subjective elements, which in the Parsonnet system are not good explainers of outcome but can be used subjectively to increase the score a patient achieves.

The Parsonnet and New York State data sets confine their outcome analysis to death in hospital, but there are more valuable measures of the process undertaken in different centres. Length of ITU stay (included in the ACTA system), length of hospital stay, and estimated in hospital cost are also important outcomes that can be estimated before cardiac surgery and are valuable both to the patient and to the centre undertaking the surgery.

The data becoming available from this type of observational study are increasingly valuable in addressing the planning needs of healthcare purchasers worldwide. Conclusions drawn from such observational studies with casemix adjustment have been recognised to be as valuable as randomised controlled trials. Acceptance of a proven inferior system would considerably retard the laudable objectives of Professor Treasure and others.

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- 1 Treasure T. Risks and results of surgery. *Br Heart J* 1995;74:11-2.
- 2 Bolsin SNC, Bryan AJ. Last word . . . Focus on Outcome Analysis 1995;1:19-20.
- 3 Hannan EL, Kilburn HJ, Racz M, Shields E, Chassin MR. Improving the outcomes of coronary artery bypass surgery in New York State. *J Am Med Ass* 1994;271:761-6.
- 4 Hlatky MA, Califf RM, Harrell FE, Lee KL, Mark DB, Pryor DB. Comparison of predictions based on observational data with the results of randomised controlled trials of coronary artery bypass surgery. *J Am Coll Cardiol* 1988;11:237-45.
- 5 Sowden AJ, Deeks JJ, Sheldon TA. Volume and outcome in coronary artery bypass graft surgery: true association or artifact? *BMJ* 1995;311:151-5.
- 6 Black AMS, Harris RI. Comparing two head injury treatments by linear logistic model. *Acta Neurochir Suppl (Wien)* 1982;62:31-46.
- 7 Green J, Wintfeld N. Report cards on cardiac surgeons. Assessing New York State's approach. *N Engl J Med* 1995;332:1229-32.
- 8 Bolsin SN, Morgan C, Ray R. A simple, preoperative scoring system for predicting mortality and intensive care unit stay in adult patients undergoing heart surgery with cardiopulmonary bypass. *J Cardiothorac Vasc Anesth* 1990;4(suppl 1):139.
- 9 Day C, Duncan F, Lopatzidis A, Feneck R, Bolsin S, Black A. Pre-weighted sum scores and stepwise logistic regression in explaining mortality from cardiac surgery [abstr]. *Br J Anaesth* 1995;75:242P.
- 10 Hannan EL, Kumar D, Racz M, Sui AL, Chassin MR. New York State's Cardiac Surgery Reporting System: four years later. *Ann Thorac Surg* 1995;58:1852-7.

### Percutaneous balloon dilatation of the mitral valve in critically ill young patients with intractable heart failure

SIR,—Patel and colleagues demonstrated the important role of emergency percutaneous