Monitoring myocardial damage in cardiac surgery by troponin T detection

Sir,—Perioperative myocardial injury remains the most common cause of death in cardiac surgery. The need for new diagnostic criteria to assess the comparative efficacy of different myocardial protection techniques prompted us to identify reliable markers of myocardial necrosis. Katus et al reported that the serum concentration of troponin T, a cardiac-specific protein, reliably detects myocardial cell necrosis in patients undergoing myocardial revascularisation.1 We assayed troponin T (ELISA, Troponin T, Boehringer Mannheim) in 40 different patients of whom 34 underwent coronary artery bypass grafting (CABG), four mitral valve replacement (MVR), and two aortic valve replacement (AVR). Myocardial protection was accomplished by antegrade-retrograde blood cardioplegia according to the method described by Buckberg.2 No perioperative deaths occurred. Using the same electrocardiographic (ECG) criteria for perioperative myocardial infarction described by Katus et al we found two cases among the CABG patients and one among the AVR patients. Troponin T concentrations were lower than 0·1 μg/l in all preoperative samples and rose after surgery in the three patients with perioperative myocardial infarction to a peak value of 6·96 μg/l (median 6·68 μg/l), and 28·75 μg/l respectively. These results accord with those of Katus et al who reported a troponin T median peak value of 11 μg/l (range 6–31 μg/l) in patients in whom ECG signs of perioperative myocardial infarction developed after CABG. In patients with no evidence of myocardial infarction after surgery troponin T release was significantly lower (median 0·96 (0·98 μg/l), median 0·68 μg/l, range 0·26–4·6 μg/l) than that in patients with perioperative myocardial infarction. Surprisingly, these values were also lower than that reported by Katus et al in a similar subgroup (median 5 μg/l, range 1·3–11 μg/l) who were cardioprotected by a Bretschneider HTK cardioplegic solution.3 Because there were no apparent differences in the duration of cardiopulmonary bypass and aortic cross-clamping or the number of diseased and grafted coronary vessels we suggest that the reduced troponin T release seen in our patients was due to different myocardial protection protocol. Therefore troponin T seems to be a highly specific and sensitive marker for myocardial cell necrosis, that is also useful for assessing the efficiency of myocardial protection techniques. MICHELE TRIGGIANI ALBERTO DOLCI FRANCESCO DONATELLI ADALBERTO GROSSI Institute for Cardiovascular and Respiratory Disease, University of Milan and *Proton Unit, Department of Medicine Laboratory, Scientific Institute RIS Raffaello, Via Olgettina 60, 20132 Milan, Italy


BRITISH CARDIAC SOCIETY NEWSLETTER

The challenges that lie ahead in staffing cardiac units into the twenty first century, which were the subject of a meeting last November, require continuous debate. Both the Specialist Advisory Committee and the Manpower and Training Committee are developing strategies to improve our training programmes and ensure that staffing levels are appropriate.

The working party on cardiology in district general hospitals, chaired by Andrew McLeod, is contributing to this debate. All the indications are that nearly double the number of consultants will be required over the next decade and it remains to be seen how the funding will be provided. The formal government response to the Calman report after a period of consultation is awaited and will no doubt precipitate vigorous debate. Harmonising our training programmes with the rest of Europe is not going to be easy and cannot be achieved overnight.

The Specialist Advisory Committee is reviewing the content of training, which will become more structured with formal guidelines and a formal assessment of training of trainees being introduced.

Archives

Arthur Holman, who was appointed by Council, writes: “The main task of the archivist is the preservation and proper arrangement of the Society’s records. These will include: minutes of Council meetings; financial accounts; minutes of annual general meetings; records of the scientific meetings and programme books; membership records; minutes of Officers’ meetings; records and meetings of associated groups; and correspondence. Advice is being sought from a professional archivist on how these records should be kept and indexed, with special reference to computer management.

Our important need to have a complete set of the British Heart Journal from its foundation in 1939 has been met by a most welcome gift from Richard Emanuel. He has given us the bound volumes of the journal that belonged to his father, Professor J G Emanuel, and we are deeply grateful to him for his generosity. We now have to obtain a set of Cardiovascular Research.

In addition, I intend to establish a small library of books that will cover the development of cardiology from the mid-nineteenth century to the present day. If possible we would also like to have a small collection of historical instruments both diagnostic and therapeutic—for example, the Mackenzie polygraph and the mitral valve dilator.

If members have books, instruments, or other items of historical interest that they would like to donate to the Society I will be most grateful if they will get in touch with me either at the Society’s office or at my home: Seabank, Chick Hill, Pett, Hastings, East Sussex TN35 4EQ (tel: 0424 813228).”

Data Management Committee: progress on the Read Clinical Terms

Malcolm Tollan writes: “Our list of diagnostic (clinical) terms in congenital heart disease and “adult” heart disease and terms for special investigations—such as electrocardiography, electrophysiology, and nuclear cardiology—have been completed. The list of terms for echocardiography is almost complete. The Centre for Coding and Classification now has the
We persevered and made in the larger changes to the way that cardiology services are funded. Previously, they were designated as regional specialties and the budgets for services were often not "ring-fenced" but were lost in the overall financial programmes of the host hospitals, and activity was controlled by the facilities that were provided.

Supra-regional centres for cardiac and pulmonary transplantation, infant and neonatal cardiology, and associated cardiac surgery have been funded through central top-slicing, and there have been the exceptions. Attempts to introduce a similar process for complex cardiac electrophysiology procedures have been unsuccessful.

The introduction of the internal market has led to major changes in the way that cardiac services are funded and controlled. The role of the Regional Health Authorities has altered from that of funding and supervising providers to that of supervising the purchasing functions of District Health Authorities. In turn Districts are being amalgamated so that the purchasing function is becoming multi-district. The increasing number of trust hospitals, though reporting directly to the Department of Health through the six Outposts in England and Wales, find themselves competing with each other and other providers for contracts offered by these new purchasing authorities.

At present the new arrangements provide no advisory machinery to ensure that there is appropriate strategic planning for individual specialties, and developments are dependent on market forces and the vagaries of the aspirations of individual trusts, directly managed units, and purchasing authorities. The emphasis of the purchasing authorities is on financial control with, as yet, no mechanism in place to ensure that the contracting arrangements provide levels of activity for individual procedures that meet national targets, with the possible exception in our specialty of coronary bypass operations, and even here the target is out of date (1990).

CONTRACTING ARRANGEMENTS
In the first year of the internal market (1991-92) money allocated to specialties was identified to individual districts on the basis of the activity in 1989-90 as recorded by finished consultant episodes and taking no account of the actual speciality costs. These costs had not been accurately identified before this exercise took place. When more accurate costing were available during the second year of contracting (1992-93), many districts were faced with a shortfall and could not purchase the same level of service as before.