Dipyridamole and dobutamine for myocardial perfusion imaging

SIR,—Kumar and colleagues conclude that dipyridamole is better than dobutamine during thallium myocardial perfusion tomography.1 We also prefer to use a vasodilator routinely (we use adenosine) and we reserve dobutamine for patients who are unable to exercise and in whom adenosine is contraindicated.2 Kumar and colleagues give several reasons to justify their conclusion, including greater stress perfusion scores in the lateral wall and apex of the left ventricle when dipyridamole is used. In the light of a recent editorial pointing out the importance of rigorous statistical methods in biomedical research,3 we question whether the conclusion and hence the title of the paper is valid.

Without a prior hypothesis of regional differences it is not appropriate to make multiple statistical comparisons of individual segments. Analysis of variance is the preferred test statistic, using a nonparametric method (Kruskal-Wallis) given the discontinuous nature of the scoring system followed by an appropriate post hoc test for individual segments only if there is evidence of heterogeneity. Any regional differences detected in this way should then be tested prospectively in a separate group of patients. The claimed segmental difference between the two forms of pharmacological intervention is unlikely to be real because there is no plausible reason why these segments should differ from the remainder of the myocardium. Kumar et al make no attempt to explain this anomaly.

They also claim a better correlation of perfusion score with a score derived from the x-ray angiogram when dipyridamole rather than dobutamine is used. There is no description of the statistical methods used in this analysis, and therefore the validity of this claim cannot be judged from the data provided.

We therefore suggest an alternative conclusion: that the null hypothesis of equivalence in efficacy for dipyridamole and dobutamine cannot be rejected, and that practical matters such as cost and duration of protocol should determine which is used in individual circumstances.

RICHARD UNDERWOOD
DAVID WOOD
National Heart and Lung Institute,
Dobson House St, London SW3 6LY

Long-term results of the corridor operation for atrial fibrillation

SIR,—The corridor operation for atrial fibrillation is an ingenious operation in which the surgeons isolate the left and right atrial free walls from the atrial septum, leaving a corridor of contiguous tissue between the sinus and atrioventricular nodes, thereby permitting chronotropically responsive atrioventricular conduction.

Unfortunately, because both atria remain in fibrillation, the corridor procedure fails to address the two major consequences of atrial fibrillation—namely, the loss of atrial transport function and thromboembolism. Therefore, it seems that the corridor procedure has no advantage over His bundle ablation and currently it is a major cardiac surgical procedure. I note that in the series of 36 patients reported by van Hemel et al His bundle ablation was performed and a pacemaker implanted in five patients "in whom the corridor operation was unsuccessful".

This letter was shown to the authors, who reply as follows:

SIR,—We were discouraged from advising a professional statistician on the methods used in our paper. It was suggested that Student’s t test was appropriate for comparison of perfusion scores obtained with the two pharmacological stress agents. The original hypothesis was that there was no difference in the effect of the two agents on myocardial perfusion and we therefore expected no difference in perfusion scores. We did multiple analysis and agree with Dr Underwood and Professor Wood that this may have been the cause of the segmental differences.

Because dobutamine and dipyridamole induce abnormalities of perfusion by different mechanisms there may be a "true" difference in their ability to produce segmental hypoperfusion. The correlation of perfusion score with angiographic score was performed by linear regression according to the methods in Draper and Smith (Applied regression analysis. 2nd ed. New York: Wiley, 1981:84).

Our study undoubtedly showed that studies with dipyridamole are cheaper, better tolerated, and less time consuming than dobutamine studies, without any loss in the ability to detect abnormal myocardial perfusion.

JOHN CAPLIN
EASWAR KUMAR
SUE STEEL
SYD HOWEY
Hull Royal Infirmary,
Unlady Road
Hull HU3 2ZF

This letter was shown to the authors, who reply as follows:

SIR,—We welcome the opportunity to respond to Professor Cheng's concern.

According to the Frank-Starling law, right atrial contraction and right filling pressures are the main determinants of cardiac function;4 in addition, diminished or absent left atrial contraction is not associated with alteration of cardiac function.2 The normal heart acts as a suction pump during normal diastole. So, at least in the normal heart, the atrial contribution to cardiac function is negligible.3

Because chronotropic sinus node function is the main determinant of increasing cardiac output during exercise,4 preservation of atrial fibrillation—occurred only in the left atrium and never de novo in the corridor. The operation was sometimes unsuccessful because we failed to create a persistent conduction block between the left atrium and the common pectus. This is why some of our patients needed His bundle ablation. Such surgical failures require technical improvement, but they do not detract from the corridor concept.

Currently, it is impossible to make a valid comparison between a non-selective and less invasive procedure such as His bundle catheter ablation5 and selective surgery for atrial fibrillation.3 This is because of the different in selection criteria, patient population, and the end point of treatment. The comparison is not even scientifically valid, because atrial fibrillation is a multifactorial protein disease.4 In the face of excellent long-term results, we strongly believe that surgical procedures for atrial fibrillation will become a well-established treatment in some subgroups of patients—for example, those who do not want to be dependent on a pacemaker and those who need cardiac surgery for other reasons.

TSUNG O CHEONG
Division of Cardiology,
The George Washington University
2150 Pennsylvania Avenue, NW,
Washington, DC 20037, USA

NORBERT M VAN HEMEL
Department of Cardiology,
St Antonius Hospital,
Box 500
3430 EM Nieuwpoort,
The Netherlands

GERARD M VANDER PUINDON
Department of Surgery,
University of Western Ontario,
London, Ontario,
Canada

1 Robinson TF, Factor SM, Sonnenblick EH. The heart as a suction pump. Scientific American 1986;254:84.


Dipyridamole and dobutamine for myocardial perfusion imaging.

R Underwood and D Wood

*BH* 1994 72: 594
doi: 10.1136/hrt.72.6.594

Updated information and services can be found at:
http://heart.bmj.com/content/72/6/594.1.citation

These include:

**Email alerting service**

Receive free email alerts when new articles cite this article. Sign up in the box at the top right corner of the online article.

Notes

To request permissions go to:
http://group.bmj.com/group/rights-licensing/permissions

To order reprints go to:
http://journals.bmj.com/cgi/reprintform

To subscribe to BMJ go to:
http://group.bmj.com/subscribe/