Maximal exercise testing in variant angina

Sir:

The performance of exercise testing in suspected angina in order to elicit abnormal electrocardiographic patterns has always been regarded as a potentially harmful procedure, possibly aggravating or even inducing myocardial damage. Paul Wood (1956) stated 'This test is not entirely without danger and should only be carried out when . . . the resting electrocardiogram (is) normal or equivocal'. Some authorities go further and advise against this test if the resting electrocardiogram is equivocal.

Detry *et al.* (*British Heart Journal* (1975), **37**, 900) describe six cases in which the above test was performed. In Case 6 the authors comment in their table of clinical data that the resting electrocardiogram showed biphasic T waves in leads V2 and V3, and it may well be significant that they report 'Two months later he had an antero-septal acute myocardial infarction . . .' In Case 4 (electrocardiogram not shown) they report the resting tracing as abnormal, and that during spontaneous angina 5 mm rises in the ST segments occurred in leads V1 to V3. It is surely questionable whether exercise testing was indicated (or desirable) in such a case. In the remaining four cases significant ST segment changes occurred during spontaneous angina, resting electrocardiograms being normal.

Whether or not (as the authors claim) previous reports could be wrong in 'claiming that in the variant form of angina, exercise tests were of little value . . .' there seems little doubt that the spontaneous electrocardiographic abnormalities during pain in these six cases rendered exercise electrocardiograms unnecessary and potentially dangerous.

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Reference

Wood, P. (1956). *Diseases of the Heart and Circulation*, 2nd ed. Eyre and Spottiswoode, London.

This letter was shown to Dr. J. M. R. Detry and his co-authors who reply as follows:

Sir:

The general attitude towards exercise testing of cardiac patients varies from centre to centre, the enthusiasm of the medical staff being directly proportional to its knowledge and experience.

Our own experience is based on over 10 000 tests of maximal exercise with an incidence of 10 (1/1000) ventricular fibrillation episodes requiring ventricular defibrillation, with no death; these numbers are similar to those reported by Rochmis and Blackburn (1971) in an epidemiological survey covering 170 000 exercise tests. When the indication is well defined (exclusion of recent acute infarction) and the test adequately supervised (presence of a physician with a defibrillator), exercise testing can, therefore, be performed at a low risk; in men, the electrocardiographic data so obtained correlate well with the arteriographic findings which can be obtained only at a greater risk. In addition, exercise testing is the only way to evaluate the severity of the symptoms and to measure the physical working capacity. The presence of resting electrocardiographic abnormalities, when not related to a recent acute infarction, does not increase the risk of the procedure; such abnormalities are sometimes purely aspecific and disappear during exercise. With Bruce (1973), we consider exercise testing as the normal and necessary 'extension of the clinical examination of the ambulatory cardiac patient'; it also represents an essential step in the process of cardiac rehabilitation.

The patients with spontaneous angina pectoris represent a small percentage of the coronary patients; among them, those with spontaneous angina associated with a transient ST segment elevation constitute a small and poorly delineated group. Once the rather exceptional diagnosis of variant angina has been established, on the basis of an ST segment elevation recorded during a spontaneous attack, we agree that exercise testing is no longer a diagnostic method. It is, however, useful to

evaluate the exercise tolerance of these patients, more especially as they usually have no major complaints with exercise; in our experience, the occurrence of an ST segment elevation attended by unexpected ventricular rhythm disturbances during exercise was helpful in deciding about the appropriate therapy.

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References

- Bruce, R. A. (1973). Principles of exercise testing. In *Exercise Testing and Exercise Training in Coronary Heart Disease*, pp. 45-59. Ed. by J. Naughton and H. K. Hellerstein. Academic Press, New York.
- Rochmis, P., and Blackburn, H. (1971). Exercise tests: a survey of procedures, safety and litigation experience in approximately 170 000 tests. *Journal of the American Medical Association*, **217**, 1061.