Abrupt withdrawal of atenolol in patients with severe angina: comparison with the effects of treatment

Sir,

The correspondence (1986;55:112-3) arising out of the paper by Dr Walker and colleagues¹ prompts us to make the following comments. We agree with Dr Walker that the conclusions of the study should be confined to the specific clinical setting and should not be extended to encompass the view that it is never harmful to stop atenolol abruptly in patients with coronary artery disease.

Walker *et al* saw no serious coronary events in 20 patients with stable angina in the six days after atenolol was stopped. This is not surprising because few would regard the risk of serious consequences from abrupt β blocker withdrawal as being high under these circumstances. They also noted no rebound in heart rate or blood pressure measured daily—this is also not surprising because these variables were recorded under unstressed conditions (which is why the earlier formal investigations into the phenomenon produced negative results). Furthermore, they saw no rebound in the consequences of treadmill exercise testing five days after atenolol was stopped—again this is not unexpected since these tests were probably on the late side and treadmill exercise is not the only form, and not necessarily the most potent form, of sympathetic stimulation to which patients may be exposed. These negative findings certainly do not demonstrate that the phenomenon of β adrenergic hypersensitivity is absent after treatment with atenolol has been stopped, nor that it would be safe to ignore the possibility of this consequence in clinical practice.

The manifestation of increased β adrenergic sensitivity as it gradually declines after the end of β blocker treatment will depend upon the net level of β adrenoceptor stimulation, and this in turn will depend upon the competition between sympathetic drive and the declining concentration of the β blocking drug. Our data showed that the phenomenon is indeed present after atenolol is stopped; under the particular circumstances of our study (in which heart rate was measured when the patient was standing after sublingual glyceryl trinitrate) the rebound was significantly greater for the group as a whole only at four days and not at five days. It occurred 2-3 days after propranolol, oxprenolol, "slow release" oxprenolol, and acebutolol.^{2,3} Exercise, moreover, is only one way of increasing sympathetic drive, and the increased sympathetic drive

with exercise is only one component cause of the increase in heart rate and myocardial energy requirements. Emotional stress, the reflex response to vasodilator drugs, or operation, can all cause very high β adrenergic activity and it would not be wise to regard this as always being innocent.

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References

- 1 Walker PR, Marshall AJ, Farr S, Bauminger B, Walters G, Barritt DW. Abrupt withdrawal of atenolol in patients with severe angina: comparison with effects of treatment. *Br Heart J* 1985;53:276-82.
- 2 Ross PJ, Lewis MJ, Sheridan DJ, Henderson AH. Adrenergic hypersensitivity after beta-blocker withdrawal. *Br Heart J* 1981;45:637-42.
- 3 Singh H, Rimmer A, Lewis MJ, Henderson AH. Beta-adrenergic hypersensitivity after stopping oxprenolol: discrepant findings not attributable to methodology. *Br J Clin Pharmacol* 1983;16:722-4.

This letter was shown to Dr Walker, who replies as follows:

Sir,

I thank Dr Lewis and Dr Henderson for their comments and share their concern that the results of our study¹ should not be extrapolated too widely—certainly not towards the extreme view they fear might be adopted. Our own views remain those condensed in the final paragraph of our paper.

While I agree that, on previous evidence, the risk of serious consequences from abrupt atenolol withdrawal was very small (otherwise we should not have performed our study), we believed that more than just a few clinicians were still anxious about what to expect in patients with stable coronary artery disease. I disagree that for patients with severe angina a hospital admission for coronary arteriography and a discussion of its implications, two maximal exercise tests, and the other investigations described consti-