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REPLY

With regard to Dr. Himpe's letter, I have the following comments. He found that by using a computer-stored algebraic treatment of Bull's heparin dose-response curve he could successfully return the ACT to preheparin levels. I had similar success, and was also able to correct ACT's using doses of protamine significantly smaller than those used by most staff in our department. That is to say, both of us have found algebraic treatments of Bull's technique that work.

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Phaeochromocytoma

To the Editor:

The article on phaeochromocytoma by Pullerits *et al.*¹ in the September 1988 issue of the Journal was well organized and informative. I commend them for this, though I take issue with them on two points.

First, their contention that the incidence of "clinically significant cardiomyopathy" in patients with phaeochromocytoma is approximately 58 per cent may be an overestimate, as their reference (Van Vliet *et al.*)² does not support that figure in today's hospital practice. Van Vliet *et al.* studied the hearts of 26 patients with an autopsy diagnosis of phaeochromocytoma from 1928-1964. They found an incidence of cardiomyopathy at autopsy of about 58 per cent in 26 patients. Their study may not be representative of elective surgery for phaeochromocytoma in the 1980's for four major reasons. First, patients who die of their disease may be expected to have a relatively high incidence of severe complications related to their pathological condition. Second, in some of the patients in Van Vliet's study the diagnosis was not made before surgery. Third, only 1 of 26 patients showed clinical evidence of cardiomyopathy before surgery.

Finally, as Pullerits *et al.* point out, the study was conducted during a period before the widespread use of alpha-adrenergic blockade in patients with phaeochromocytoma.³ Hence the stated incidence of "clinically significant cardiomyopathy" in phaeochromocytoma patients of 58 per cent may be much higher than the true incidence today.

This is not simply an academic point, as it has obvious implications for anaesthetic management. Pullerits *et al.* suggest that a Swan-Ganz catheter should be used in phaeochromocytoma patients suspected of having abnormal left ventricular function - by inference, in approximately 58 per cent of patients. Some studies suggest that occasionally even the young, apparently healthy patient with phaeochromocytoma may be at risk of iatrogenic fluid overload.⁴ Mihm⁵ suggests that Swan-Ganz catheterization be routinely performed in all phaeochromocytoma patients. These studies support the caution of Pullerits *et al.* regarding the monitoring of pulmonary capillary wedge pressure in phaeochromocytoma patients but do not address the question of the incidence of clinically significant cardiomyopathy.

The second point relates to the suggestion that hypertension occurs in over 50 per cent of phaeochromocytoma patients postoperatively. This may be the experience at their institution but it is not supported either by the literature or their quoted reference.⁶ It is true that the concentration of plasma catecholamines may remain elevated postoperatively for seven to ten days, but the same investigators also point out that there is no correlation between the concentration of plasma catecholamines and blood pressure. Furthermore, a recent review suggests a much lower incidence of postoperative hypertension.⁷

In summary, the true incidence of "clinically significant cardiomyopathy" in phaeochromocytoma is not known; the incidence of hypertension after operation may not be as high as Pullerits *et al.* indicate. Furthermore, the zeal to monitor aggressively patients with phaeochromocytoma must be tempered with a realistic appreciation of the true incidence of complications.

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