Anesthesiology
71:465, 1989

Phenylephrine and Myocardial Ischemia in Patients Undergoing Carotid Endarterectomy. I.

To the Editor:—Smith *et al.*[1] described an increased incidence of myocardial ischemia in patients who received phenylephrine to maintain blood pressure during isoflurane or halothane anesthesia as compared with patients who were lightly anesthetized.

At our institution, we routinely use prophylactic low-dose nitroglycerin (0.5 to 1 $\mu g \cdot kg^{-1} \cdot min^{-1}$), iv, in patients suspected to have coronary artery disease. We also use phenylephrine to maintain perfusion pressure, but only during concomitant nitroglycerin infusion. Phenylephrine alone may cause alpha-adrenergic coronary vasoconstriction,[2] especially in patients with diseased stenotic epicardial coronary arteries. Nitroglycerin probably counteracts this coronary vasoconstrictive action of the alpha-agonist, resulting in a more favorable myocardial oxygen balance.[3]

Unfortunately, Smith *et al.* did not include such a group in their study. The increase in systolic wall stress noted in the study, a correlate of LVEDP and a major determinant of coronary perfusion pressure, is also likely to be reduced by the administration of nitroglycerin,[4] possibly eliminating the myocardial oxygen imbalance in the phenylephrine-treated patients. We would be interested to see the echocardiographic indices during prophylactic nitroglycerin infusion in the phenylephrine-treated group. This technique may substantially reduce the 44% incidence of intraoperative myocardial ischemia noted by Smith *et al.*

The selection of 1.4 MAC as the desired concentration of inhalation anesthetic is quite arbitrary, although hypotension requiring intervention was requisite to the study. We often find that patients require blood pressure support in order to tolerate low concentrations of the anesthetic agent. Nitroglycerin infusion is always maintained during anesthesia and phenylephrine added.

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(Accepted for publication May 9, 1989.)

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In Reply:—While we understand that nitroglycerin is commonly used with phenylephrine, we had only a finite number of patients, time, and effort to spend on the study. As one enlarges the study groups, one makes the questions more complex and the answers less conclusive. Nevertheless, we do believe that their proposed study would be one worth doing and we encourage Drs. Wilhite and Nakatsuka to perform it.

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(Accepted for publication May 9, 1989.)