

Literature Briefs

Myron B. Laver, M.D., Editor

Literature Briefs were submitted by Drs. C. Battit, T. Caldwell, M. Gold, W. Mannheim, and S. Shnider. Briefs appearing elsewhere in this issue are part of this column.

Circulation

MYOCARDIAL BLOOD FLOW AND ANGINA The present study was initiated to assess changes in coronary blood flow during stress-induced angina. Twenty-seven patients were studied. Determinations included coronary blood flow (CBF) with ^{133}Xe injected into the left coronary artery and A-V_{O_2} difference across the coronary bed. Stress to the myocardium consisted of supraventricular pacing-induced tachycardia. Patients were grouped into two categories according to their responses. Group I patients developed ischemia, as manifested by either angina or ischemic ECG changes; they had marked increases in CBF (32 ml/min/100 g tissue). Group II patients did not develop ischemia; CBF increased considerably less (12 ml/min/100 g tissue). Furthermore, the ischemic responders had greater increases in myocardial oxygen consumption (Group I: 4.63 ml O_2 /min/100 g tissue) compared with the non-ischemic responders (Group II: 2.62 ml O_2 /min/100 g tissue). This rather surprising finding was attributed to greater coronary vasodilation surrounding the ischemic area and increased O_2 consumption of muscle adjacent to this area. Simultaneous aortic and coronary sinus lactate concentrations were measured in 13 patients at rest and during pacing. Seven of these patients developed ischemic responses to pacing, and five of the seven were "lactate producers," i.e., lactate concentrations in coronary sinus blood were higher

than those in aortic blood. (Conti, C., et al: *Myocardial Blood Flow in Pacing-induced Angina*, *Circulation* 42: 815, 1970.) EDITOR'S COMMENT: This provides further evidence (if any is needed) of the unpredictability of the response to stress in the patient with severe coronary artery disease. One wonders whether these surprising findings will also apply to anesthetized patients.

ANGIOTENSIN AND MYOCARDIAL FUNCTION The indications for the use of angiotensin in the treatment of hypotension are the subject of considerable controversy, because of the persistent disagreement regarding its effects on myocardial performance. In this study, left ventricular (LV) performance was investigated in nine intact anesthetized dogs before and during infusion of angiotensin. Despite a mean diastolic pressure rise of 25 per cent, mean changes in heart rate, stroke volume, LV coronary flow and LV oxygen consumption were not significant. Myocardial contractility declined uniformly (24 per cent), while LV end-diastolic and end-systolic volumes increased. Indeed, stroke work did not rise uniformly with the augmented overload, and the stroke work-to-fiber length ratio declined, suggesting that the upper work limits for the existing contractile state were reached. The authors conclude that: 1) angiotensin has a negative inotropic effect on the myocardium when circulation is intact; 2) the lack of change in myocardial oxygen consumption is the result of a balance between declining contractility and increasing wall tension; 3) the therapeutic use of angiotensin may be dangerous when contractility is already compromised. (Frank, M. J., Nadimi, M., Casa-