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Cardiovascular Support Drugs during Thoracic Epidural Analgesia

To the Editor:—Lundberg *et al.*[1] reported that a moderate dose of dopamine (4 $\mu g \cdot kg^{-1} \cdot min^{-1}$) was sufficient to maintain the mean arterial pressure and cardiac output at adequate levels during thoracic epidural analgesia.

In a similar study, we assessed circulatory changes following the continuous infusion of ephedrine, dopamine, or dobutamine during thoracic epidural analgesia in elderly patients[2] (71 ± 5 yr, mean ± SD). When systolic arterial pressure was restored to the pre-block values by a continuous infusion of ephedrine at a rate of 31 ± 17 $\mu g \cdot kg^{-1} \cdot min^{-1}$, dopamine at 6.9 ± 2.9 $\mu g \cdot kg^{-1} \cdot min^{-1}$, or dobutamine at 4.4 $\mu g \cdot kg^{-1} \cdot min^{-1}$, left ventricular stroke work index was restored by dopamine or dobutamine, and was increased above the pre-block value by ephedrine. This increase was greater with ephedrine than with dopamine or dobutamine ($P < 0.05$). Cardiac output was restored by the three drugs to the same degree. However, central venous pressure was increased more with dopamine or dobutamine than with ephedrine ($P < 0.01$), and pulmonary capillary wedge pressure was increased more with dopamine than with ephedrine ($P < 0.05$). Therefore, our data suggest that ephedrine among these three drugs is best for the control of arterial pressure, and dobutamine is better than dopamine in improving cardiac function during thoracic epidural analgesia.

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Prolonged Sinus Arrest Following Coronary Bypass Surgery

To the Editor:—Conduction disturbances after coronary bypass surgery have been reported to occur in as many as 20% of cases.[1] These disorders, often transient, have been attributed to hyperkalemia, inadequate cardioplegia, or atrial ischemia.[2] We report the development of prolonged sinus arrest attributed to air embolization of a right coronary artery bypass graft.

A 57-yr-old male with a history of inferior myocardial infarction underwent coronary bypass grafting after cardiac catheterization revealed high-grade (>80%) proximal lesions of the right, circumflex, and left anterior descending coronary arteries. While the patient was being warmed on bypass, the electrocardiogram showed atrial activity with periods of ventricular arrest, and A-V pacing was temporarily instituted (fig. 1A). Several minutes after bypass was discontinued, a small air bubble was noted to traverse the right coronary graft, and spontaneous atrial activity ceased. Atrial pacing restored hemodynamic stability and was, therefore, continued in the postoperative period (fig. 1B). Examination of the postoperative electrocardiogram revealed absence of sinus activity, a slow nodal rhythm, and a

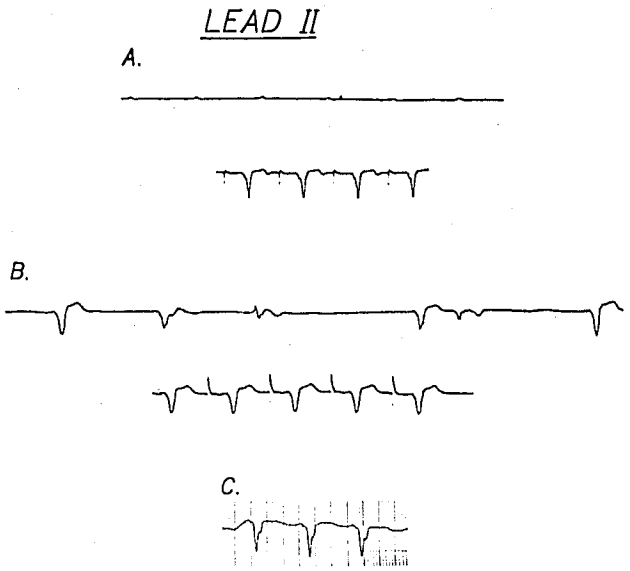

FIG. 1. *A.* Ventricular arrest while warming on bypass; atrioventricular pacing instituted. *B.* Atrial arrest following air embolization of the right coronary graft; atrial pacing started. *C.* Electrocardiogram at discharge.