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ESTIMATION OF CARDIAC FUNCTION BY TRANSESOPHAGEAL PULSED DOPPLER ECHOCARDIOGRAPHY IN DOGS

Tomoaki ATSUO

*Department of Veterinary Surgery
Faculty of Veterinary Medicine
Hokkaido University, Sapporo 060, Japan*

The purpose of this study was to assess the accuracy of transesophageal pulsed Doppler echocardiography as an intraoperative cardiac function monitor. Initially, four views for blood flow measurement were determined in normal dogs. Then the transesophageal Doppler method was compared with the standard method of measuring peak dP/dt , cardiac output and pulmonary artery pressure. Following is a summary of the results obtained:

1. Using three long-axis sections and one short one of the heart, two views of the aorta and another two of the pulmonary artery, which permitted clear imaging of the root of the vessel and adequate measurement of blood flow, were determined. The procedure of approach and the imaging rate of each view were described.

2. The Doppler-derived aortic peak velocity (V), V^2 , V divided by acceleration time (AT) and V^2/AT were compared with the catheter-derived peak dP/dt . The correlation coefficients between the Doppler indices and peak dP/dt were higher than 0.7.

3. In three of the four views, the correlation coefficients between cardiac output derived by the Doppler method and the thermodilution method were higher than 0.8.

4. The correlation coefficients between the Doppler-derived pulmonary artery pre-ejection period divided by ejection time or acceleration time and the catheter-derived mean or diastolic pulmonary artery pressure were higher than 0.7.

These results suggest that transesophageal Doppler echo-cardiography is a useful method for intraoperative cardiac function monitoring in dogs under general anesthesia. It allows the non-invasive estimation of cardiac contractility, cardiac output and pulmonary artery pressure, although the methodological accuracy depends on the view determined.