



P-14. TWO-DIMENSIONAL ECHOCARDIOGRAPHIC MEASUREMENTS FOR DIAGNOSIS AND STAGING OF HEARTWORM DISEASE

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Cardiovascular changes caused by *Dirofilaria immitis* produce a succession of hemodynamic alterations that can be observed by echocardiography. Doppler methods are considered optimal for the diagnosis and staging of pulmonary hypertension (PH) and other disorders in heartworm disease, however they are considered difficult modes and sometimes impossible to quantify. The two-dimensional mode (2d) offers faster learning and greater ease of performance compared to the Doppler modes and its effectiveness has already been demonstrated in multiple canine heart diseases. The objective was to assess the usefulness of using measurements obtained by 2d echocardiographic mode in dogs suffering from heartworm.

In this study, 96 dogs were subjected to echocardiographic study without the use of sedation or anesthesia. The absence or presence of PH was determined using the right pulmonary artery distensibility index (RPADi < 29.5%). All measurements in 2d mode were adjusted for body surface area (BSA). The normalized minor (Minor RAn) and major (Major RAn) diameter of the right atrium, normalized tricuspid valve annulus diameter (TVADn), normalized major (Major RVn) and minor (Minor RVn) diameter of the right ventricle, right atrial area index (RAAi), right ventricular end-diastolic area index (RVEDAi) and right ventricular outflow tract-fractional shortening (RVOT-FS), were obtained with 2d mode in the right and left parasternal views, following previously published and validated protocols.

Through the use of RPADi, 3 groups of animals were created; 46,88% healthy animals (group A), 26,04% animals infected without PH (group B) and 27,08% animals infected with PH (group C). Presence of PH was observed in 50,98% of infected dogs. In general, the studied 2d mode measurements showed significant differences ($p < 0.05$). Higher values were reported comparing group C and the animals in groups A and B. On the other hand, no differences were shown between groups A and B.

Heartworm disease produces pressure overload alterations in the right heart chambers that, in chronic conditions, impair cardiac contractility and generate congestion and right heart failure. The results observed in the morphological alterations of the cardiac chambers, walls, and the valvular structures suggest that these can only be quantified in advanced stages of the disease. Therefore, the use of measurements in 2d mode is restricted to certain circumstances and must be supported by other echocardiographic modes. However, the easy determination of the measurements in 2d mode could be included as a simple and non-invasive method to determine the presence of PH through routine echocardiographic examination in dogs suffering from heartworm. New studies are indicated to standardize protocols and obtain exact reference values.

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