26240 - COMPARISON OF TRICUSPID ANNULAR VELOCITIES USING TEE AND TTE

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INTRODUCTION: Tricuspid annular velocity (TAV) has been measured using transthoracic echocardiography (TTE) to assess right ventricular (RV) systolic function.(1) With a transgastric RV inflow view using transesophageal echocardiography (TEE) it is possible to align tricuspid motion with the Doppler plane. This allows intraoperative measurement of IVA and S wave.(2) The aim of this study was to compare the measurements using TTE with TEE.

METHODS: After Institutional Ethics Review Board approval and informed consent, 15 patients scheduled for CABG were enrolled. The patients were anesthetised and apneic for all measurements. We used a GE vivid 7 with a 1.7/3.4MHz TTE probe to obtain views of the lateral and inferolateral tricuspid annulus. A 5MHz TEE probe was inserted and a modified transgastric RV inflow view obtained. For each technique a tissue Doppler color sector was applied to the tricuspid annulus ensuring a frame rate >200fps. 4 cycles were stored digitally for offline analysis using dedicated software. A 6x6mm sample was placed on the ventricular side of the tricuspid annulus and adjusted to maximise the S wave velocity. For each beat the IVA (m/s²) and peak S wave velocity (cm/s) were measured using 30ms smoothing (figure 1A). TTE and TEE measurements were compared for both IVA and S wave using the Students t-test.

RESULTS: There were 14 males and 1 female with average age 63±9.5. We were unable to achieve adequate TTE views of the inferolateral annulus in 8/15 patients post induction. With TTE, there was no difference between the inferior and lateral walls for both the IVA and the S wave. When the TTE data were pooled, the TEE measurements were significantly lower than the TTE for both IVA and S wave (p<0.01 for both)(figure 1B).

DISCUSSION:

TAV's include; IVA, a load independent and S wave, a load dependent measure of contractility.(3) These can be easily measured using TTE however only the modified transgastric RV inflow view is able to align the annular motion with the Doppler axis using TEE. Using TTE we were unable to find a difference between the lateral and inferolateral portions of the annulus for both IVA and S although this may be due to insufficient power. The TTE measurements were significantly higher than those measured inferiorly by TEE. It is known that mitral annular velocities are lower than TAV's and influence the velocities measured in the septum.(4) The proximity of the inferior portion of the tricuspid annulus to the septum may explain the difference in velocities between the TEE and TTE techniques.

REFERENCES:

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Figure 1A: IVA and S wave using Tissue Doppler

Figure 1B: Comparison of S velocity (cm/s) using Lateral Wa and TEE method. The TEE