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CARDIAC

MV-IVRT

MITRAL VALVE ISOVOLUMIC RELAXATION TIME (MV-IVRT)

Isovolumic Relaxation Time (IVRT) is the first phase of diastole. Its duration begins after Aortic Valve (AV) closure and lasts until the opening of the Mitral Valve. It is used as an indicator of Left Ventricle (LV) diastolic dysfunction.

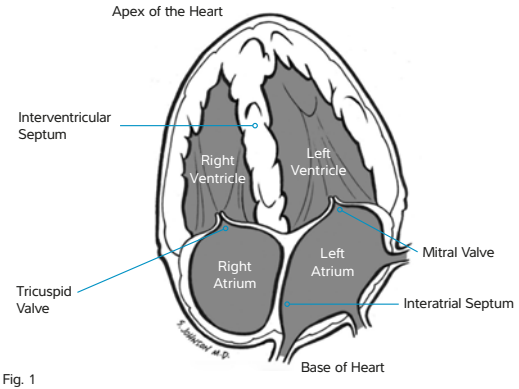

Fig. 1

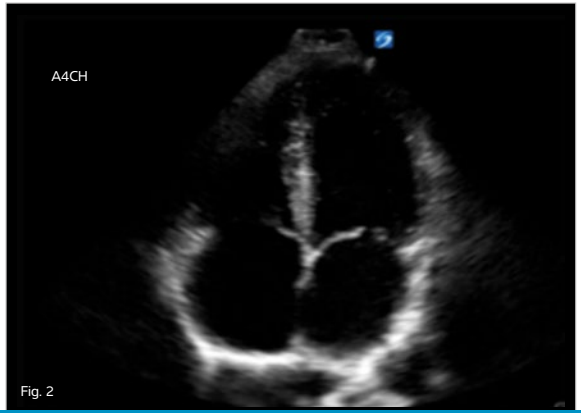

Fig. 2

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The mitral inflow visualizes the individual phases of the filling as well as the contribution of each individual phase if filling. As the MV inflow reflects the pressure difference between the atria and the ventricle, any abnormality of the diastolic pressure (as in the presence of diastolic dysfunction) in the chambers will affect the velocity and shape of the Doppler inflow signal. Specifically, diastolic dysfunction alters the relationship between early and late filling (E and A-Wave) (Fig. 3), how rapidly flow velocity declines in early diastole (E-Wave Deceleration Time (DT)) and how long it takes for the filling of the ventricle to start after the ventricle relaxes which is known as the IVRT (Fig. 3).

Performing measurement:

- Apical 4 Chamber view (A4C) (Fig. 2) and Pulsed Wave Doppler (PWD) (Fig. 4).
- Obtain a A4C view of the heart, the sample gate between the aortic outflow and mitral area (Fig. 4) Activate the PWD.
- Freeze the PWD strip to optimize the best tracing of the MV and AV. Under the calculation (Calc) package, choose MV, IVRT.
- Place 1st vertical line at the end of AV closure, 2nd vertical line at the MV opening – Save Calculation.
- IVRT normal value 70 +/- 12ms, 10ms longer for >40 years of age.

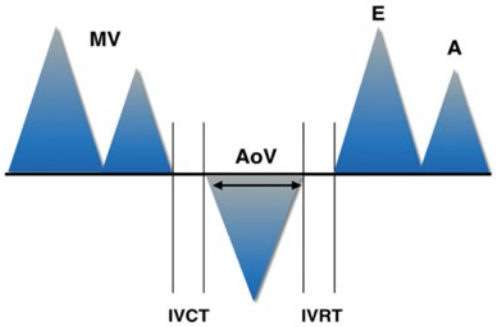

Fig. 3

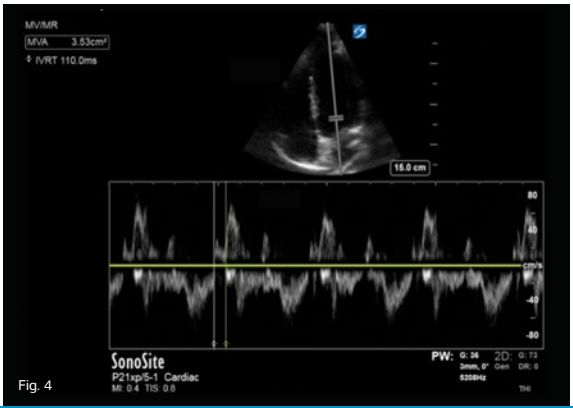

Fig. 4