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Assessment of trans-mitral diastolic flow by pulsed vs. continuous wave Doppler: What difference does it make?

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Background: Pulsed wave Doppler (PW) is routinely used to interrogate the trans-mitral valve diastolic flow but continuous wave Doppler (CW) is used for analysis of trans-mitral diastolic flow in mitral stenosis.

Aim: To determine the differences between PW and CW for interrogation trans-mitral diastolic flow.

Methods: Consecutive patients in sinus rhythm referred to our echo lab underwent a routine echocardiographic study and in addition, trans-mitral diastolic flow was recorded by both PW and CW in the 4-chamber view. The PW sample volume was placed at the tips of the mitral leaflets and the CW curser was placed through the leaflets to obtain the best quality recording. At least 2 high quality recordings with 3-5 cycles were analyzed online and saved for repeated analysis by another observer. Peak E and A velocities, their ratio, and E wave deceleration time (E-Decel-T) were measured.

Results: Sixty-one patients were studied. Their mean age was 65±16 years (range 32-94), 51% were male, left ventricular function was normal in 87%, diastolic function was normal / mildly impaired in 84%, left atrial size was normal in 59%, mitral regurgitation was < moderate in 97%. Table summarizes the results by both methods, as well as the absolute and percent difference between methods.

	PW Mean ± SD	**CW** Mean ± SD	**Difference** Mean %	**P<**
E Wave (cm/sec)	81.7±27.3	91.5±29.9	9.8 (12%)	0.03
A Wave (cm/sec)	74.3±23.8	79.3±22.4	5.0 (7%)	NS
E/A Ratio	1.269±0.89	1.263±0.65	0.006 (0.5%)	NS
E-Decel-T (sec)	191.6±56.9	214.4±61.6	22.8 (12%)	0.02

Although peak E and A velocities were higher by CW, they were increased proportionally so that the E/A ratio was not significantly effected. The E-Decel-T was significantly longer by CW.

Conclusions: Higher trans-mitral diastolic velocities are measured by CW that did not effect the E/A ratio but increased the E-Decel-T. A comparison of the accuracy of both methods for determination of stenotic mitral valves by the pressure-half-time method is warranted.