Correspondence

Influence of Age and BSA in Tissue Doppler Imaging Velocities

Sir,

Tissue Doppler imaging (TDI) is sensitive in detecting early myocardial dysfunction. There are, however, great variations in normal values observed by different workers. This could be because of impact of demographic variables on TDI velocities.

We studied 64 normal persons with clinic BP of 120/80 mmHg or less and devoid of other cardiovascular risk factors. M-mode, 2-D, pulsed Doppler and tissue Doppler data were within normal limits. Multiple regression was performed using SPSS software. Age had significant negative correlation with TDI velocities of lateral mitral annulus. On the other hand, TDI velocities of medial mitral annulus had significant negative correlation with body surface area (BSA) (Table 1, Figure 1).

Relation of age with TDI velocities is known.\(^1\)\(^2\) Our study shows that the impact of aging is significant only on the lateral mitral annulus. This could be because of the fact that significant fibrosis occurs only in the longitudinal fibers with advancing age.\(^3\) Alam et al.\(^4\) have shown that longitudinal fibers are mostly localized to the free wall of LV and interventricular septum has abundance of circumferential fibers. It is, therefore, understandable that aging has less impact on Ea velocities of medial mitral annulus.

We observed significant negative correlation of Ea velocity of medial mitral annulus with body surface area. This relation has not been reported previously. We do not know the exact mechanism. Obesity alone affects TDI velocities. Insulin resistance and growth factors are implicated in pathogenesis.\(^5\)\(^6\) Similar mechanism could be responsible for changes in interventricular septum in patients with larger body surface area.

Correction of TDI velocities for age and BSA may increase sensitivity and specificity of TDI parameters.

Abbreviations

MV- Mitral valve, Lat- lateral annulus, Med- medial annulus, TDI- Tissue Doppler imaging, BSA- Body surface area, Ea V- Early relaxation velocity, Aa- relaxation velocity during atrial contraction.

![Fig. 1: Showing relation between (a) Age and Ea velocity of lateral mitral annulus; (b) Age and Ea/Aa ratio of lateral mitral annulus; (c) BSA and Ea velocity of medial mitral annulus; (d) BSA and Ea/Aa ratio of medial mitral annulus.](image)

<table>
<thead>
<tr>
<th>Variable</th>
<th>‘r’</th>
<th>‘t’</th>
<th>Significance (P&lt;0.05)</th>
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<tbody>
<tr>
<td>MV Lat TDI</td>
<td></td>
<td></td>
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<tr>
<td>Ea/Aa v/s Age</td>
<td>-0.383</td>
<td>-3.842</td>
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<td>Ea V v/s Age</td>
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<td>MV Med TDI</td>
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<td>Ea V v/s BSA</td>
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</table>

References


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