

# Left ventricular mass index is an independent determinant of diastolic dysfunction in patients on chronic hemodialysis: a tissue Doppler imaging study.

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## BACKGROUND:

Diastolic heart failure is the most common clinical form of heart failure. Tissue Doppler imaging (TDI) is often used to quantitate left ventricular (LV) diastolic function. The purpose of this study was to identify the determinant(s) of diastolic dysfunction in patients with end-stage renal disease on hemodialysis (HD), using the TDI method.

## METHODS:

The study subjects were 53 patients with end-stage renal disease and preserved LV systolic function on maintenance HD. LV function was assessed by conventional echocardiography. The ratio of early trans-mitral flow velocity to early mitral annular velocity (E/e') was measured by TDI. Patients were stratified into two groups based on E/e' value ( $\leq 15$  and  $> 15$  groups). Arterial stiffness was evaluated by pulse wave velocity and cardio-ankle vascular index.

## RESULTS:

Patients of the E/e'  $> 15$  group were older ( $p = 0.025$ ). There were no significant differences in blood pressure, ejection fraction, E/A, deceleration time, and pulse wave velocity between the E/e'  $> 15$  and E/e'  $\leq 15$  groups. However, there were significant differences in LV mass index (LVMI;  $p < 0.001$ ) and cardio-ankle vascular index ( $p = 0.048$ ) between the two groups. Multiple regression analysis identified that LVMI was an independent determinant of E/e' ( $p = 0.003$ ).

## CONCLUSIONS:

Our findings suggest that LVMI is an independent determinant of LV diastolic dysfunction in patients on HD.