



IMAGING AND DIAGNOSTIC TESTING

PROGNOSTIC VALUE OF LEFT VENTRICLE FUNCTION BY TISSUE DOPPLER STRAIN IMAGING IN PATIENTS WITH SEVERE SEPSIS OR SEPTIC SHOCK

ACC Poster Contributions

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Background: The aim of the present study was to investigate the left ventricular (LV) myocardial deformation properties using tissue doppler strain imaging (TDSI) in patients with severe sepsis or septic shock and prognostic implications.

Methods: Forty-one patients admitted to the intensive care unit (ICU) with severe sepsis or septic shock with preserved LVEF (>50%) were prospectively enrolled. LV TDSI was performed within 24 hours of admission to the ICU. Study patients were divided into 2 groups: survival group (Ages 69.4 ± 12.2 , n=26), non-survival (Day 30 Mortality) group (Ages 69.0 ± 14.0 , n=15). We measured myocardial TDSI profiles at the basal, mid- and apical portions of the LV septal wall in the LV apical four chamber view. Blood hemoglobin concentration was measured in all patients.

Results: There was no difference in age, heart rate, systolic blood pressure, diastolic blood pressure, LVEF, vasoactive medication and transmitral early diastolic flow between survival group and non-survival group. LV end diastolic volume index (LVEDVI) and LV end systolic volume index (LVESVI) were lower in survival group than in non-survival group (survival group vs. non-survival group; LVEDVI: 38.6 ± 10.1 ml/m² vs. 52.1 ± 10.4 ml/m², p<0.001, LVESVI: 12.5 ± 4.0 ml/m² vs. 16.4 ± 6.0 ml/m², p<0.05). The peak systolic strain in the basal septum as well as the average of all 3 septal strain measurements were lower in survival group than in non-survival group (survival group vs. non-survival group; basal strain: $-17.5 \pm 5.6\%$ vs. $-22.0 \pm 5.9\%$, p=0.01, mean strain: $-16.2 \pm 3.3\%$ vs. $-19.5 \pm 4.0\%$, p<0.01). Hemoglobin concentration was higher in survival group than in non-survival group (10.5 ± 1.8 mg/dl vs. 9.0 ± 1.2 mg/dl, p<0.01). Moreover, LV basal strain was positively related to Hemoglobin (r=0.44, P<0.01).

Conclusion: These results suggest that patients presenting with severe sepsis or septic shock that died and had preserved LVEF on admission, had higher LV systolic strain, dilated LV volume and lower Hemoglobin compared to the patients that survived. Evaluation of the left ventricular longitudinal contraction by tissue Doppler strain imaging may serve as useful tool to predict survival in this patient population.