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Relation Between Ankle Brachial Index And Measures Of Left Ventricular Systolic Function

Low ankle brachial index (ABI) has long been considered evidence of peripheral arterial disease (PAD) and predictive of greater cardiovascular event rates. Several studies have shown that ABI is associated with left ventricular (LV) systolic function. This study further investigates the relationships between ABI and measures of LV systolic function, specifically, left LV ejection fraction (LVEF), stroke volume (SV), and global longitudinal strain (GLS). 79 patients (age 60 ± 12 yrs) had an echocardiogram and ABI and were recruited for this study. The mean ABI was 1.07 ± 0.17. Patients were divided into low and normal ABI groups; 14 patients had a low ABI (≤0.9 on either leg) and 65 had a normal ABI. 52 had GLS measured, 64 had SV measured, and 76 patients had LVEF estimated. The mean LVEF was 44 ± 17%. There was no difference in GLS in the low and normal ABI groups (p=ns). SV (p=0.007) and LVEF (p=0.04) were both lower in the low ABI group. The mean ABI correlated with SV ($r = 0.37$, $p = 0.003$), LVEF ($r = 0.33$, $p = 0.004$) and age ($r = -0.22$, $p = 0.05$). On linear regression using age, LVEF and SV, SV was found to be the stronger predictor of the mean ABI ($\beta=0.003$, $p = 0.053$). Although LVEF is calculated from the SV and LV diastolic volume, it appears that SV may influence the ABI to a greater extent than the LVEF.