

CARDIAC CHRONOTROPIC RESPONSE AND RECOVERY DURING DOBUTAMINE STRESS ECHOCARDIOGRAPHY: ITS ASSOCIATION WITH LEFT VENTRICULAR ISCHEMIC CONTRACTILE RESPONSE

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BACKGROUND: In patients with coronary artery disease, heart rate response and recovery during treadmill exercise stress test reflects autonomic nervous system function and have been associated with the severity of coronary stenoses as well as future cardiac events. We aimed to determine if cardiac chronotropic response and recovery during dobutamine stress echocardiography (DSE) is associated with the ischemic contractile response.

METHODS: We retrospectively analyzed consecutive DSE studies done between January 2003 and June 2005. Hemodynamic and chronotropic parameters during DSE were noted, including the percentage of target heart rate(%THR) achieved, peak heart rate (PHR), heart rate recovery (HRR) at 1 minute after peak dobutamine dose, and blood pressure (BP) response. The presence or absence of inducible ischemia as assessed by left ventricular (LV) contractile response was noted.

RESULTS: There were 147 patients (mean age 58.92 \pm 12.95; 68 males, 79 females); 104 of whom had negative DSE results, while 43 had positive DSE test for inducible ischemia. There was no difference in hemodynamic and chronotropic parameters between the groups: The positive DSE group showed the following: %THR=78.72 \pm 12.95; PHR=126.32 \pm 19.67; HRR=8.11 \pm 12.41; The negative DSE group showed: %THR=80.39 \pm 12.4; PHR=131.14 \pm 19.56; HRR=11.76 \pm 14.36. There was no association between chronotropic response and HRR with DSE outcome. Use of beta-blockers as maintenance medication did not significantly affect the %THR achieved and HRR. Subanalysis excluding the use of atropine to achieve THR also did not show a difference in parameters between the two groups. Interestingly, patient age was shown to inversely correlate with %THR and HRR.

CONCLUSION: There was no association between chronotropic response and HRR with LV contractile response during DSE. It appears that both variables are not useful markers of myocardial ischemia in DSE, in contrast to its significance in treadmill exercise stress test.

Keywords: dobutamine stress echocardiography, chronotropic response, heart rate recovery