**PARADOXICAL SINUS DECELERATIONS DURING DOBUTAMINE STRESS TESTING**

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**Background.** Staged, incremental doses of dobutamine are used during pharmacologic stress testing with hemodynamic responses that mimic that of exercise. Paradoxical sinus deceleration (PSD) has been noted during dobutamine infusion in a subset of patients and its pathogenesis has been a matter of debate. The aim of this systemic review was to explore the prevalence, pathogenesis and clinical significance of PSD during dobutamine stress testing (DST).

**Methods.** Systematic search of English literature contained 4 retrospective studies (2 echo, 2 nuclear); 2 prospective studies (1 echo, 1 nuclear) and 6 case reports (5 echo, 1 nuclear) of PSD (101 patients).

**Results.** Incidence of PSD was 8.7% (101/1162). Mean age was 66 years and 51% were men. PSD was variously defined and decrease in heart rate ranged from 1 to 64 (mean 13) bpm compared to prior stage at dobutamine infusion rates of 20-40 μg/kg/min. Complete heart block or asystole occurred in 2 (2%) patients each. In 65% of the patients PSD was associated with concomitant drop in systolic blood pressure (paradoxical vasodepression). Angina at time of PSD was reported in 49% and electrocardiographic evidence of myocardial ischemia was noted in 24%. Inducible myocardial ischemia was present on imaging in 56% (46% by echo, 95% by nuclear). Angiographic obstructive coronary artery disease was present in 59%. Age, gender, prior coronary artery disease (CAD), chronic use of β-blockers and ischemic electrocardiographic changes did not predict PSD. In addition, PSD was not predictive of angiographic obstructive CAD or imaging evidence of inducible ischemia in general or specific to the inferior wall. However, patients with PSD were more likely to complain of angina during DST (50%-vs-22%, OR 3.46, 95% CI 1.44-8.32, p=0.02). Development of PSD during DST appears to be best explained by the activation of left ventricular mechanoreceptors by exogenous catecholamine and subsequent vagal-mediated bradycardia.

**Conclusion.** PSD occurs in 1 in 11 adults undergoing DST and does not predict presence of inducible ischemia or angiographic CAD.