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The role of Dobutamine dose on the cardiac parameters

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Introduction: The report presents the effects of dobutamine dose on the cardiac parameters such as blood pressures (basal, systolic, diastolic and maximum), heart rates (basal, peak and maximum), baseline cardiac ejection fraction and ejection fraction on dobutamine dose. There is a little literature about the effects of dobutamine dose on the cardiac parameters.

Method: The effects of dobutamine dose on the cardiac parameters have been examined based on a real echocardiography stress data set, collected at University of California, Los Angeles on 558 patients with 31 explanatory variables/factors. The distribution of the considered cardiac parameters is gamma with non-constant variance. So, they have been analyzed by joint generalized linear gamma models.

Result: The mean Basal Blood Pressure (BBP) decreases as the double product of maximum Heart Rate (MHR) and Maximum Blood Pressure (MBP) at Dobutamine Dose (DPMAXDO) ($P < 0.001$) increases, while the variance of BBP increases as the DPMAXDO ($P < 0.001$) increases. The mean systolic blood pressure (SBP) increases as the dobutamine dose (DOSE) ($P = 0.032$) increases, while the mean SBP increases as the DPMAXDO ($P < 0.001$) decreases. The mean MBP increases as the DPMAXDO ($P < 0.001$) increases. The mean Baseline Cardiac Ejection Fraction (BEF) decreases as the DOSE ($P = 0.025$) increases. The mean ejection fraction on dobutamine dose (DOBEF) increases as the DOSE ($P = 0.011$) increases, while the variance of DOBEF increases as the dobutamine dose at maximum double product (DOBDOS) ($P = 0.001$) decreases. The mean Basal Heart Rate (BHR) increases as the DPMAXDO ($P < 0.001$) or DOBDOS ($P = 0.074$) decreases. The mean peak heart rate (PHR), or maximum heart rate (MHR) increases as the DPMAXDO ($P < 0.001$) increases, while the variance of PHR, (MHR) increases as the DOBDOS ($P < 0.001$) decreases (increases). On the other hand, dobutamine dose is associated with many cardiac parameters such as SBP, MBP, new Myocardial Infarction (new MI), history of MI (hxofMI) etc.

Conclusion: Only the dobutamine dose effects are observed on SBP, MBP, DOBEF, new MI, histMI, etc. while the joint effects of dobutamine (DPMAXDO and DOBDOS) are observed on each cardiac parameter. The results are new inputs in the dobutamine dose study literature.

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