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Correlation between serum homocysteine levels and serum vitamin B12 levels in first time acute MI patients with relative lack of conventional risk factors in (rural) north Indian population

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Introduction: Indian patients have higher incidence of cardiac diseases inspite of the conventional risk factors comparable to western counterpart. The increased excess cardiac risk in Indians as compared to western population remains unexplained. Low serum vitamin B12 and high serum homocysteine levels are known predictors of cardiovascular mortality and are highly frequent in Indians .Our present study was taken to ascertain whether these two factors are responsible for excess cardiac risk in Indians.

Aim of the study: We in our study aimed to study subjects with AMI in whom most of the known risk factors for cardiovascular disease are absent but were deficient in vitamin B12 or having high S. homocysteine levels and correlate the two parameters.

Material and Methods: Subjects presenting to our Asian tertiary care hospital who were having first time MI(naive)patients without any cardiac disease or any treatment and without any family history. All patients with STEMI less than 12 hours of duration and no past history of cardiac disease/DM/HTN/Dyslipidemia were included. After obtaining written informed consent, detailed history was sought and subjects were again evaluated for routine laboratory biochemical parameters including Serum vitamin B12 levels and serum homocysteine levels, coronary angiography and ECHO. 100 Subjects who were found to be suffering from AMI were included as cases, and 20 subjects showing symptoms of chest pain but lacking any elevation in CK total or CK MB, no changes on ECG and normal ECHO and angiographic findings were included as controls.

Results: Various risk factors of AMI including Age, non vegetarian diet, DM, HTN, Family history, BMI, Dyslipidemia, Low HDL, High TG, LDL, Cholesterol were found to be lower in cases compared to controls. Serum vitamin B12 levels were found to be significantly lower (<0.0001) and serum homocysteine levels (<0.0001) were significantly higher in cases. Further Weak downhill (r=-0.367) but significant correlation was noted between S. Vit B12 and S. Homocystein levels. Also significant association was noted between low s. Vit. B12 and high homocysteine and Acute MI. ROC curve was plotted to evaluate predictive value of parameters for AMI. Vitamin B12 was found to have AUC of 96.2 % and sensitivity of 95% and specificity of 100 % at cut off value lower than 360 pg/L. Also Serum homocysteine was found to have AUC of 93.2 % and sensitivity of 86% and specificity of 100 % at cut off value higher than 25.3 mcg/L.

Conclusion: In individuals especially younger age group (20-30years) who lack conventional risk factors/family history of coronary artery disease, low serum vitamin B12 levels and high serum homocysteine levels pose significant risk of heart disease. Serum vitamin B12 and serum homocysteine levels should be regularly assessed to predict the risk of AMI in subjects with lack of other risk factors along with dietary and lifestyle changes.

Biography

Hariharan is doing DNB postgraduation in internal medicine and research in nephrology, cardilogy, infectious diseases and diabetology. He has published papers in national and international journals and attended various conferences for oral and poster presentations.

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