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INTERACTION OF PLASMA HOMOCYSTEINE, RENAL FUNCTION AND CARDIO-METABOLIC RISK FACTORS- AN OBSERVATION IN A RURAL POPULATION OF BANGLADESH

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BACKGROUND AND AIMS: Elevated plasma total homocysteine (tHcy) levels are associated with atherosclerotic diseases in coronary, cerebral and peripheral blood

vessels. It is possible that hyperhomocysteinemia may lead to intrarenal arteriosclerotic lesions and decline in GFR or impaired renal function. Aim of this study was to elucidate the association of plasma homocysteine level with renal function and cardiovascular risk factors in rural population.

METHOD: A well defined rural area was selected. Study subjects were identified by computer generated random numbers after entering household listings and then Kish table was used to choose a participant. Adult subjects (≥ 18 years) were only included. The approached participant was explained the purpose, if consented, then given an appointment to be present at a research hospital on a separate date for clinical and biochemical evaluation. A face to face interview was conducted. Clinical history, physical examination anthropometrics were recorded on data sheet. Fasting blood sample and morning spot urine was collected. Then serum tHcy was measured by chemiluminescent microparticle immunoassay (CMIA) technology. Study population were investigated with Spot urine ACR, Fasting glucose, serum lipid profile, creatinine, homocysteine, Folic acid and Vit B₁₂.

RESULTS: Early results of 234 random subjects are presented here. The mean age was 41 ± 13 (18-92) years with male 33% and female 67%. Mean eGFR was 99 ± 26 ml/min, tHcy 11.6 ± 5.9 μ mol/l, Vit B₁₂ 329 ± 187 pg/ml and Folic Acid 5.57 ± 2.63 ng/ml. A tHcy cut-off value in study subjects ≥ 15 μ mol/l was seen in 17 % and < 15 μ mol/l in 83%. Serum creatinine, Uric Acid, Cholesterol, LDL was significantly higher and Vit B₁₂, Folic acid lower in tHcy ≥ 15 μ mol/l group. Further grouping showed tHcy level was significantly higher in Vit B₁₂ < 200 pg/ml and Folic acid < 3 ng/l group. Correlation studies showed homocysteine positively correlated with age, systolic blood pressure, creatinine, LDL and negatively with Folic acid and Vit B₁₂.

CONCLUSION: Our findings suggest that elevated plasma homocysteine level might influence and are associated with altered markers of renal, cardiac and metabolic risk factors in rural population. Preventive approaches are required towards this issue as larger population segment belongs to rural areas.