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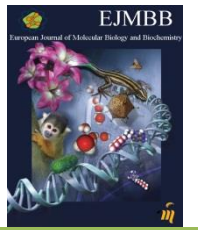

RELATIONSHIP BETWEEN HOMOCYSTEINE LEVEL AND RISK OF DIABETIC MELLITUS WITH AND WITHOUT CHRONIC KIDNEY DISEASE

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ABSTRACT
Chronic Kidney Disease (CKD) is famous to cause hyperhomocysteinemia which contributes to extended cardiovascular morbidity and mortalities. Thus, present study has a look at aimed to determine the homocysteine stage in patients with chronic kidney disease. Seventy patients with CKD have been recruited within this examined, and their fasting plasma homocysteine levels was measured. Normal plasma homocysteine level became considered to be below 15 µmol/litre. Out of 70 patients with CKD (Males: 57, Females:13 mean age 35-60), 52 patients had stage 5 CKD. Hyperhomocysteinemia turned into discovered in 74.2% of CKD patients. 25.7% had moderate hyperhomocysteinemia. End-level renal diseases patients had extended occurrence of hyperhomocysteinemia. There is no massive difference in hyperhomocysteinemia levels between patients undergoing dialysis and without dialysis. Hyperhomocysteinemia is a particularly prevalent condition seen in CKD patients.

INTRODUCTION

Chronic kidney disease (CKD) is a severe scientific and public health challenge globally. [1] In India, it's been currently anticipated that the age-adjusted occurrence price of End-Stage Renal Disease (ESRD) to be 229 in keeping with million population, and also 100,000 new patients enter renal alternative programs annually (Singh et al., 2013). CKD is related to age-associated renal function decline elevated in hypertension, diabetes, weight problems and primary renal problems [2].

Cardiovascular disorder (CVD) is the number one cause of morbidity and mortality where CKD is appeared as an accelerator of CVD risk and an independent risk thing for CVD activities [3].

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Homocysteine has been implicated as a capacity danger factor for cardiovascular sickness,that is the primary motive of morbidity and mortality in sufferers with CKD [4]. A moderate increase of plasma total homocysteine occurs inside the early tiers of CKD and will increase as renal function decreases, indicating the crucial role of the kidney on homocysteine metabolism. [5] Hyperhomocysteinaemia, defined as a plasma overall homocysteine level of 12 µmol/l, happens already at a GFR of about 60 ml/min and whilst ESRD has been reached, the superiority of hyperhomocysteinaemia is eighty five–a hundred%. [6, 7] Many research are ongoing to discover whether decreasing homocysteine in CKD patients will lower cardiovascular morbidity and mortality. [8] Even though many studies have shown widespread affiliation and a poor correlation between the lower in Glomerular filtration fee and increase in homocysteine level [9]. There is a restricted range of studies inside the Indian context.

Therefore, the modern look at turned into achieved with an aim to discover the homocysteine degree in sufferers with chronic kidney sickness and to locate its affiliation and correlation with reduced renal feature.

MATERIALS AND METHODS

The present study turned into a single targeted observational study performed in Sri Lakshmi Narayana Institute of Medical Sciences, Puducherry from January 2018 to August 2018 for a period of eight months. Ethics approval for patient recruitment and statistics evaluation changed into received from the Institutional Review Board. Inclusion criteria have been patients with extended blood urea, serum creatinine and displaying feature of CKD in ultrasound stomach. Patients with acute kidney injury, liver diseases and diabetics. In present study smokers /alcohol customers have been excluded. A general of 70 sufferers with chronic kidney disorder within the health center were recruited after obtaining the consent. Information about medical records, circle of relatives' history, contemporary medicine, and records of dialysis of individuals turned into accrued via self-report questionnaire. Investigations blanketed assessment of blood urea, serum creatinine, electrocardiograph, plasma homocysteine, GFR were measured by using fluorescein polarisation, immunoassay. Statistical analyses were finished using the SPSS statistical software program bundle for Microsoft Windows (version 14. Zero, SPSS Inc. Chicago, IL, USA). Student's t-check and chi-square check had been used to examine imply values and percentages respectively.

RESULTS

Along with the study population, the majority of the participants were in the age group of 51-60 (42%) years, and males 57(74%) with the mean age of 73.11±19.151 years. The mean weight of the study population was 57.82±11.5 kg. The mean serum urea and creatinine values were 116.33±36.1 mg/dl, 9.43±9.43 mg/dl respectively. The serum homocysteine level was 21.6±8.37 µmol/lt (Table 1).

The compared between plasma homocysteine level along with glomerular filtration rate. The stage of chronic kidney disease it suggests that as affected person deteriorates to next lower degree of CKD prevalence of hype discovered that during stage 4 and five of persistent kidney disorder occurrence of hyperhomocysteinemia have been 33.3%and ninety 58.3% respectively. We located that the majority of sufferers have been having atypical electrocardiograph indicating the bulk of patients with Chronic kidney disorder had a few them cardiac illnesses. Out of 70 patients decided on for the take a look at 43 patients had abnormal electrocardiograph constituting 89.5% In people with hyper homo cysteinemia best one found to have regular ECG All others had been having odd ECG (Table 2).

Table 3 showed of the total population majority of patients, 48(68.5%) were in CKD stage 5. In our study in those having hyperhomocysteinemia majority are falling in the group of mild hyperhomocysteinemia. Of the 90% patients with hyperhomocysteinemia, 63 patients were in the group of mild hyperhomocysteinemia. Seven were found to have moderate hyperhomocysteinemia.

Table 1: Baseline characteristics of study participants (n=70).

Parameter	Summary
Gender	
Male	57(81.4%)
female	13(18.5%)
Weight (in kgs)	58.72±15.149
Dialysis	10(14.2%)
Smoking	9(12.8%)
Alcohol	8(11.4%)
Clinical characteristics	
Serum urea	116.33±36.124
Serum creatinine	9.43±9.43
GRF	15.8±6.9
Homocysteine	21.6±8.37
Co-morbidities	
Diabetes mellitus	0
SysHT	48(68.5%)

Table 2: Stages CKD and ECG with normal and increased homocysteine level

Homocysteine level		
Stages of CKD	Normal (22)	Abnormal (48)
3	3(13.6%)	4(8.3%)

4	8(36.3%)	16(33.3%)
5	11(50%)	28(58.3%)
ECG		
NORMAL	1(4.5%)	5(10.4%)
ABNORMAL	21(95.4%)	43(89.5%)

Table 3: Based on CKD stage and hyperhomocysteinemia

Stage of CKD	Number of patients (%)
Stage0	0
Stage1	0
Stage2	0
Stage3	5(7.1%)
Stage4	17(34%)
Stage5	48(68.5%)
Hyperhomocysteinemia	
Mild (15 -30 umol/lite)	63(90.0%)
Moderate (31- 100 umol/litre)	7(10.0%)
Severe (> 100 umol/litre)	

DISCUSSION

Newly, disulfuramino acid homocysteine has gained much significance because of its role in vascular thrombosis and genesis of atherosclerosis. These studies have shown an increased prevalence of hyperhomocysteinemia in CKD patients and its involvement with cardiovascular morbidity and mortality. In the recent study, we establish that 87% of CKD patients had hyperhomocysteinemia similar with other studies conducted somewhere else in the world and hyperhomocysteinemia was more ubiquitous as stages of CKD increases.

Menon V *et al* showed that hyperhomocysteinemia was prevalent in 56% 0f CKD patients and hyperhomocysteinemia was partly amenable to treatment with vitamins in stages 3 and 4. [10] Although our take a look at pattern length turned into smaller, we found that hyperhomocysteinemia was extra regularly occurring inside the later stages of CKD due to renal function deteriorates the homocysteine excretion decreases and its degree more in plasma. Our study notices that during dialysis condition, it was not affecting the homocysteine level elevation. On the other hand, Nair AP *et al* results shown homocysteine level transiently decreased after a dialysis session but fell to normal range within two to three days to predialysis value. [11]

We determined that the majority of sufferers with CKD had some ECG abnormality correlating with the declaration that cardiovascular morbidities are the most vital purpose of mortality in patients with CKD. [8] Our major challenge to assess for the presence or absence of hyperhomocysteinemia in CKD patients became to decrease the cardiovascular morbidity and mortality. So, its worthy to take measures to decrease homocysteine levels in sufferers with CKD. These findings need to be taken into consideration understudies' barriers. First, we couldn't exclude different genetic versions which may have inspired homocysteine stage. Second, the precise correlation between decreased renal function and stage of hyperhomocysteinemia couldn't be assessed due to the non-uniform distribution of sample length amongst CKD patients.

Systematic reviews had reported the effect of B12 supplementation on decreasing homocysteine levels in patients with ESRDs when combined with folate supplementation. [12] although the levels of Vit B12 and folic acid, pyridoxine level could not be measured in the present study due to financial restriction.

CONCLUSION

Homocysteine Level is increased consistent to the stages of CKD. Hyperhomocysteinemia appears to be linked with increased cardiovascular disease risk between patients with CKD. In view of the study findings further large-scale longitudinal studies are recommended to explore further this association. Attempts must be taken by physician in identifying CKD patients with high homocysteine level owing to its improved susceptibility to cardiovascular risk.

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Conflicts Of Interest

The authors declare no conflict of interest.

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