

Association of renal insufficiency health and social care essay



**ASSIGN
BUSTER**

Introduction: Cardiovascular morbidity and mortality is associated chronic renal insufficiency in various studies. 1, 2, 3 One of the main disadvantages of severe chronic renal insufficiency is that it augments the incidence of cardiovascular disease, particularly of atherosclerotic disease. 4 Milder degrees of renal can also result in adverse cardiovascular consequences. In the present investigation, the relation between renal function and coronary artery disease burden was studied in a cohort of 2687 patients . This prospective study investigated the prevalence of obstructive 3-, 2-, 1-, and 1- to 3-vessel CAD in 398 patients with moderate or severe chronic renal insufficiency versus 2289 patients with mild or no renal insufficiency undergoing coronary angiography for suspected CAD.

Methods:

Setting: The study was carried out in National institute of Cardiovascular Diseases (NICVD), Karachi, Pakistan for a period of 3 years from 2009 till 2011 during which a total of 2688 patients reporting to the angiography department were enrolled. NICVD is a 600 bedded tertiary care cardiac hospital with state of the art cardiac care facilitates. Subjects: Patients were 2145 male and 543 female . Their mean age was 52.6 ± 10.1 years.

Systemic hypertension was diagnosed if a patient was receiving antihypertensive drug therapy, if systolic blood pressure was ≥ 140 mm Hg, or if diastolic blood pressure was ≥ 90 mm Hg. ref Diabetes mellitus was diagnosed if a patient was receiving hypoglycemic drug therapy or if fasting blood sugar was ≥ 126 mg/dl on ≥ 2 occasions. ref Patient was termed Smoker if he smoked > 5 cigarettes a day or was an ex-smoker with > 5 pack years. Ref BMI was calculated using height and weight and distributed

into 4 categories namely underweight (<18.5), normal (18.5-25), overweight (≥ 25) and obese (≥ 30). need refThe study had an observational character and required no intervention whatsoever. Patients were enrolled into the study during their initial hospitalization with an acute event or at their first clinic visit. Patients qualified for the study when they had an MI within past 14 days; the diagnosis of unstable angina within past 14 days; an ischemic stroke confirmed by history, physical examination no sooner than 5 d and no later than 30 d after the acute event. Patients with a normal coronary angiogram, and patients with major mechanical complications of AMI were excluded from the study. All patients under study were discharged alive, indicating that patients who died shortly after the ACS were also not included. Patients in this series who were considered to have an indication for surgery, reflecting the fact that patients transferred to the cardiac surgical department in the first few days after the ACS were also not included in the study.

Measurement of Kidney FunctionThe abbreviated MDRD equation was used to estimate GFR as per international guidelines. $9, 10 eGFR (ml/min \text{ per } 1.73 \text{ m}^2) = 175 \times [\text{SerumCreatinine}(\mu\text{mol/L}) \times 0.0113]^{-1.154} \times \text{Age}(\text{years})^{-0.203} (\times 0.742 \text{ if female})$ equationIn additional sensitivity analyses, and to reconfirm values of MDRD, CrCl was calculated using the Cockcroft-Gault equation using ideal body weight. 11Severe renal insufficiency (RI)was diagnosed if the GFR was <30 ml/min/1.73 m². Moderate RI was diagnosed if the GFR was 30-59 ml/min/1.73 m². Mild or no RI was diagnosed if the GFR was 60-89 ml/min/1.73 m² and normal was 90ml/min/1.732 m² or above.

Angiography: All the patients enrolled in the study underwent coronary angiography. The procedure of coronary angiography was performed using either the radial or the femoral artery.

<https://assignbuster.com/association-of-renal-insufficiency-health-and-social-care-essay/>

Dominance of the heart was determined as right, left or co-dominant. 70% stenosis of the arterial luminal diameter (in any view) was considered a significant lesion. Left main coronary lesions were counted when the luminal diameter was reduced by 50%. On the basis of lesions, diagnosis of single vessel disease, two vessel disease and three vessel disease were made. Statistical analysis: Data are presented as arithmetic mean and standard deviation, Patients were divided into tertiles of eGFR values and moderate-severe and mild-normal were analyzed together as groups. Chi-square tests were used to analyze dichotomous variables. Correlations between the various parameters under study were calculated by using the Pearson correlation coefficient. Pair of means of continuous variables was compared by using independent Student t tests. Probability values <0. 05 were considered significant.

RESULTS:

A total of 2688 subjects were enrolled. Mean age $52. 6 \pm 10. 1$ bmi $27. 1 \pm 5. 0$ mean eCcr was $92. 54 \pm 43. 03$ Of these, 2145(79. 8%) were male and 543(20. 2%) female. 738 (27. 5%) were smokers; 1608(59. 8%) were hypertensive; 14(0. 4%) had renal impairment and 465(17. 3%) had a family history of hypertension and CAD. 1366(50. 8%) had a history of a previous infarct. Diabetes was present in 714 of 2688 patients (26. 6%) of the total. 52 (1. 9%) were underweight, 924(34. 4%) were normal, 1052 (39. 1%) were overweight and 660 (24. 6%) were obese. 1267(47. 1%) were normal with eGFR above 90ml/min. 1023(38. 1%) were mild, 367(13. 7%) were moderate and 31(1. 2%) were severe with eGFR below 30ml/min. fig1 Of the participants, 2290 had normal or mild eGFR (group1) and 398 participants

had Moderate or Severe eGFR (Group 2). Table 1 shows the distribution and significance. In general, subjects with lower baseline eGFR were more likely to be older, male, and to have a history of diabetes, hypertension, and CHF. Angiographic studies showed patients with dominance RCA in 1689 (73.7%), LCA in 296 (12.9%) and co-dominance in 308 (13.4%). Obstructive CAD was present in 2107 out of 2688 (78.38%) of the patients. Of these, 333 out of 398 (83.67%) were with moderate or severe decrease in GFR versus 1774 out of 2290 (77.5%) with mild or no decrease in GFR ($p < 0.001$). 3-vessel obstructive CAD was present in 168 of 333 (50.45%) with moderate or severe GFR decrease and in 701 of 1774 patients (39.5%) with mild or no GFR decrease ($p < 0.001$). fig 2

Discussion:

In our study, we found that severity of coronary artery disease found in the coronary angiogram, was significantly correlated to the estimated glomerular filtration rate. Estimation of GFR, was divided into tertiles, Severe renal insufficiency (RI) was diagnosed if the GFR was $< 30 \text{ ml/min/1.73 m}^2$, moderate RI was diagnosed if the GFR was $30\text{-}59 \text{ ml/min/1.73 m}^2$, mild or no RI was diagnosed if the GFR was $60 \text{ ml/min/1.73 m}^2$ or higher. The calculated GFR was just not correlated to the presence of coronary artery disease also to the angiographic severity of the disease. We demonstrated that the level of kidney function is also associated with the extent of demonstrable angiographic coronary disease. Our results are in good concordance with the notion that decreased renal function act as a risk factor for coronary artery disease. The use of a formula to estimate GFR have led to greater investigative supremacy over plasma creatinine alone¹²

because just using plasma creatinine did not show an association between creatinine and cardiovascular mortality¹³ or showed an association only in the male sex¹⁴The Cholesterol and Recurrent Events trial¹⁵ and the Antihypertensive and Lipid-lowering Treatment to Prevent Heart Attack trial showed that a low glomerular filtration rate independently predicted increased risk for coronary heart disease¹⁶ (Review references) Numerous studies across an extensive range of populations, such as the HOPE study, the Hypertension Optimal Treatment (HOT) Study the Cardiovascular Health Study (CHS), Study, the Framingham and Framingham Offspring Studies, and the Atherosclerosis Risk In Communities (ARIC) Study, have shown that total cholesterol, systolic blood pressure levels and the percentage of subjects with low HDL cholesterol, diabetes, Left Ventricular Hypertrophy, ischemic cardiac disease, and cardiac failure are higher in those with decreased GFR. 131–135(Review references) In two studies involving women, Chen et al. concluded that depressed renal function was associated with CAD in women but not in men ¹⁷ where as Reis et al. found that plasma creatinine correlated with coronary artery disease score and with maximum coronary artery stenosis. ¹⁸ Many studies put forward observations that declining renal function is associated with subclinical atherosclerosis (vascular stiffness, brachial artery endothelial dysfunction, carotid artery intima-media thickening). ^{19, 20, 21} Various theories have put forward to explain the pathophysiological mechanism for the association between mild renal insufficiency and angiographic CAD.(HOPE REFERNCES). Different studies have demonstrated that the depth and extension of general atherosclerosis is highly correlated with severity of glomerulosclerosis , renal arteriolosclerosis and nephrosclerosis^{22, 23}. Stefanski et al. ²⁴

<https://assignbuster.com/association-of-renal-insufficiency-health-and-social-care-essay/>

demonstrated that in very early stages of renal disease an increase in blood pressure and cardiac remodeling occur. Also in early stages of renal disease, Lipoprotein a levels, 25 homocysteine serum concentrations²⁶ increase promoting atherosclerosis and subsequently causing coronary artery disease. Pro-inflammatory cytokines can modify cardiovascular risk in patients with renal dysfunction. Oxidative stress, increased advanced glycation end-products, changes in apoproteins can all act as potential mechanisms for the association between renal insufficiency and Coronary Artery Disease. 27, 28, 29, 30, Cytokines have been isolated in atherosclerotic lesions and they also cause production of acute-phase reactants such as C-reactive protein from liver, whose levels predict cardiovascular mortality in patients with end-stage renal disease. 31

Conclusion: Our study corroborates previous findings of a relation between severity of coronary artery disease and decreased renal function, in a specific setting taking the GFR value measured at admission. This relationship has establish renal dysfunction as a risk factor for coronary artery. Since glomeruli act as modified blood vessels, renal dysfunction could act as a marker for the overall systemic vascular system status. We suggest that CKD should be included in the highest-risk group for recommendations for prevention, detection, and treatment of CVD risk factors. We also suggest that the routine evaluation of patients with CVD or those at high risk for CVD should include estimation of GFR by serum creatinine and prediction equations