Original Research Paper

Gynaecology

THE STUDY ON SERUM WITH eGFR IN PATIENTS OF CHRONIC KIDNEY DISEASE

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ABSTRACT **INTRODUCTION:** Chronic Kidney Disease (CKD) is defined as a disease characterized by alterations in either kidney structure or function or both for a minimum of 3 months duration. According to the National Kidney Foundation criteria, CKD has been classified into five stages with stage 1 being the earliest or mildest CKD state and stage 5 being the most severe CKD stage.[1] To stage CKD, it is necessary to estimate the GFR rather than relying on serum creatinine concentration. Glomerular filtration rate (GFR), either directly measured by computing urinary clearance of filtration marker such as inulin or estimated by calculating from different equations using serum creatinine. is the most commonly used parameter to assess kidney function.

AIM AND OBJECTIVES: a) Establish relationship between serum CKD and eGFR

MATERIAL AND METHOD: A Cross-sectional study on 100 cases of newly diagnosed Chronic Kidney Disease patients and matched control subjects is undertaken to study.100 Patients who are newly diagnosed as CKD are selected after proper initial screening.

RESULT AND ANALYSIS: In case, the mean eGFR (mean± s.d.) of patients was 25.1500 ± 11.8929. In control, the mean eGFR (mean± s.d.) of patients was 87.2200 ± 17.8295. Difference of mean eGFR in two groups was statistically significant (p<0.0001). In case, the mean creatinine (mean± s.d.) of patients was 3.6350 ± 2.4419 mg/dl. In control, the mean creatinine (mean± s.d.) of patients was .9435 ± .1317 mg/dl. Difference of mean creatinine in two groups was statistically significant (p<0.0001).

CONCLUSION: eGFR was strongly associated with CKD that also statistically significant. The positive correlation was found in eGFR.

KEYWORDS : Correlate Serum, Egfr And Chronic Kidney Disease

INTRODUCTION
Chronic Kidney Disease (CKD) is defined as a disease characterized by alterations in either kidney structure or function or both for a minimum of 3 months duration. According to the National Kidney Foundation criteria, CKD has been classified into five stages with stage 1 being the earliest or mildest CKD state and stage 5 being the most severe CKD stage.[1] To stage CKD, it is necessary to estimate the GFR rather than relying on serum creatinine concentration. Glomerular filtration rate (GFR), either directly measured by computing urinary clearance of filtration marker such as inulin or estimated by calculating from different equations using serum creatinine. is the most commonly used parameter to assess kidney function.

Chronic Kidney Disease (CKD) is defined as a disease characterized by alterations in either kidney structure or function or both for a minimum of 3 months duration. Chronic kidney disease (CKD) is a type of kidney disease in which there is gradual loss of kidney function over a period of months or years.   Early on there are typically no symptoms. [2] Later, leg swelling, feeling tired, vomiting, loss of appetite, or confusion may develop.[2] Complications may include heart disease, high blood pressure, bone disease, or anemia. [3]

Screening at-risk people is recommended.[4] Initial treatments may include medications to manage blood pressure, blood sugar, and lower cholesterol.[5] NSAIDs should be avoided. Other recommended measures include staying active and certain dietary changes. Severe disease may require hemodialysis, peritoneal dialysis, or a kidney transplant. Treatments for anemia and bone disease may also be required.

Chronic kidney disease affected 753 million people globally in 2016, including 417 million females and 336 million males.[1] In 2015 it resulted in 1.2 million deaths, up from 409,000 in 1990. [6,7] The causes that contribute to the greatest number of deaths are high blood pressure at 550,000, followed by diabetes at 418,000, and glomerulonephritis at 238,000. [6]

Causes of chronic kidney disease include diabetes mellitus, hypertension, glomerulonephritis, autoimmune disease, obstructive uropathy, polycystic kidney disease.

a) Establish relationship between serum CKD and eGFR

MATERIAL AND METHOD
a) Study Design:
A Cross-sectional study on 100 cases of newly diagnosed Chronic Kidney Disease patients and matched control subjects is undertaken to study the prevalence of Vitamin D deficiency in CKD population and correlation between their serum eGFR at Midnapore Medical College, Paschim Medinipur.

b) INCLUSION CRITERIA:
1.   Patient should be eighteen years or older.
2.   eGFR value <50ml/min/1.73m2

c) EXCLUSION CRITERIA:
1.   Patients who were on medications known to affect vitamin D absorption metabolism such as anticonvulsants, isoniazid, rifampicin, theophylline, glucocorticoids.
2.   Taking vitamin D supplements
3.   eGFR>50ml/min/1.73m2

RESULT AND ANALYSIS
We found in case, 4(4.0%) patients had ≤40 years age, 14(14.0%) patients had 41-50 years age, 31(31.0%) patients had 51-60 years age, 30(30.0%) patients had 61- 70 years age and 21(21.0%) patients had 71-80 years age. In control, 15(15.0%) patients had 41-50 years age, 36(36.0%) patients had 51-60 years age, 31(31.0%) patients had 61- 70 years age and 18(18.0%) patients had 71-80 years age. Association of age vs. group was not statistically significant (p=0.3246). In case, 44(44.0%) patients had female and 56(56.0%) patients had male. In control, 53(53.0%) patients had female and 47(47.0%) patients had male. Association of sex vs. group was not statistically significant (p=0.2028). In case, 52(52.0%) patients had HTN and in control, 51(51.0%) patients had HTN. Association of HTN vs. group was not statistically significant (p=0.8874). In case, 56(56.0%) patients had DM and in control, 60(60.0%) patients had DM. Association of DM vs. group was not statistically significant (p=0.5665). According to CTD in case, 93(93.0%) patients had no CTD, 1(1.0%) patients had Scleroderma and 6(6.0%) patients had SLE. According to CTD in control, 95(95.0%) patients had no CTD and 5(5.0%) patients had

SLE. Association of CTD vs. group was not statistically significant (p=0.5734).

Our study showed that according to obstruction in case, 94(94.0%) patients had no obstruction, 4(4.0%) patients had Prostatomegaly and 2(2.0%) patients had PUJ Obstruction. According to obstruction in control, 97(97.0%) patients had no obstruction, 3(3.0%) patients had Prostatomegaly. Association of obstruction vs. group was not statistically significant (p=0.3345). According to Etiology in case, 1(1.0%) patients had Alport Syndrome, 7(7.0%) patients had CTD, 28(28.0%) patients had HTN, 15(15.0%) patients had HTN+DM and 9(9.0%) patients had Obstruction. According to Etiology in control, 5(5.0%) patients had CTD, 28(28.0%) patients had DM, 19(19.0%) patients had HTN, 27(27.0%) patients had HTN+DM and 3(3.0%) patients had Obstruction. Association of Etiology vs. group was statistically significant (p<0.0001). In case, the mean urea (mean± s.d.) of patients was 51.3300 ± 29.2029 mg/dl. In control, the mean urea (mean± s.d.) of patients was 25.7000 ± 3.3439 mg/dl. Difference of mean urea in two groups was statistically significant (p<0.0001). In case, the mean creatinine (mean± s.d.) of patients was 3.6350 ± 2.4419 mg/dl. In control, the mean creatinine (mean± s.d.) of patients was .9435 ± .1317 mg/dl. Difference of mean creatinine in two groups was statistically significant (p<0.0001).

We showed that in case, the mean sodium (mean± s.d.) of patients was 138.9100 ± 4.6386 mEq/L.In control, the mean sodium (mean± s.d.) of patients was 139.3500 ± 4.8687 mEq/L. Difference of mean sodium in two groups was statistically significant (p=0.5137). In case, the mean potassium (mean± s.d.) of patients was 4.6260 ± .7327 mEq/L. In control, the mean potassium (mean± s.d.) of patients was 4.4190 ± .5880 mEq/L. Difference of mean potassium in two groups was statistically significant (p=0.0287). In case, the mean calcium (mean± s.d.) of patients was 8.2450 ± .9918 mg/dL. In control, the mean calcium (mean± s.d.) of patients was 8.4480 ± .8027 mg/dL. Difference of mean calcium in two groups was not statistically significant (p=0.1132). In case, the mean Phosphate (mean± s.d.) of patients was 5.0810 ± .7701 mEq/L.In control, the mean Phosphate (mean± s.d.) of patients was 4.3780 ± .9866 mEq/L. Difference of mean Phosphate in two groups was statistically significant (p<0.0001). In case, the mean eGFR (mean± s.d.) of patients was 25.1500 ± 11.8929. In control, the mean eGFR (mean± s.d.) of patients was 87.2200 ± 17.8295. Difference of mean eGFR in two groups was statistically significant (p<0.0001).

DISCUSSION
ZULFIKAR JABBAR et al [8] found that mean age 39.55± 1 9.88 years in control and mean 40.6 1 ±12.04 years in case.

We found that in case, the mean age (mean± s.d.) of patients was 60.6900 ± 10.6246 years. In control, the mean age (mean± s.d.) of patients was 60.8100 ± 9.1747 years. Difference of mean age in two groups was not statistically significant (p=0.9320).

In case, 4(4.0%) patients had ≤40 years age, 14(14.0%) patients had 41-50 years age, 31(31.0%) patients had 51-60 years age, 30(30.0%) patients had 61- 70 years age and 21(21.0%) patients had 71-80 years age. In control, 15(15.0%) patients had 41-50 years age, 36(36.0%) patients had 51-60 years age, 31(31.0%) patients had 61- 70 years age and 18(18.0%) patients had 71-80 years age. Association of age vs. group was not statistically significant (p=0.3246)

In case, 44(44.0%) patients had female and 56(56.0%) patients had male. In control, 53(53.0%) patients had female and 47(47.0%) patients had male. Association of sex vs. group was not statistically significant (p=0.2028).

Both deficiency and insufficiency was higher in CKD group compare to control and that also statistically significant.

In case, 52(52.0%) patients had HTN and in control, 51(51.0%) patients had HTN. Association of HTN vs. group was not statistically significant (p=0.8874). In case, 56(56.0%) patients had DM and in control, 60(60.0%) patients had DM. Association of DM vs. group was not statistically significant (p=0.5665)

According to CTD in case, 93(93.0%) patients had no CTD, 1(1.0%) patients had Scleroderma and 6(6.0%) patients had SLE. According to CTD in control, 95(95.0%) patients had no CTD and 5(5.0%) patients

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In case, 1(1.0%) patient had Alport Syndrome, 1(1.0%) patients had B/L Renal Art stenosis, 96(96.0%) patients had no other and 2(2.0%) patients had Polycystic Kidney Ds. In control, all patients had no other. Association of others vs. group was not statistically significant (p=0.2528).

We found that according to Etiology in case, 1(1.0%) patients had Alport Syndrome, 7(7.0%) patients had CTD, 28(28.0%) patients had HTN, 15(15.0%) patients had HTN+DM and 9(9.0%) patients had Obstruction. According to Etiology in control, 5(5.0%) patients had CTD, 28(28.0%) patients had DM, 19(19.0%) patients had HTN, 27(27.0%) patients had HTN+DM and 3(3.0%) patients had Obstruction. Association of Etiology vs. group was statistically significant (p<0.0001).

ZULFIKAR JABBAR et al [8] found that the inorganic phosphate, alkaline phosphatase and iPTH levels were significantly increased whereas albumin, calcium and 25(OH) D were lower in CKD patients. Compared to those in stageIV CKD, stageV patients had significantly higher inorganic phosphate (6.36 1 2.14 vs 4.98 1 2.32 mg/dL, P = 0.0045) but there was no statistically significant difference between groups in serum albumin, calcium, 25(OH) D, iPTH or proteinuria the remainder had levels in the 'insufficient' range (15– 30 ng/mL). Compared to their healthy counterparts, CKD patients showed a significantly higher frequency of 'severe' (<5 ng/mL) vitamin D deficiency (P = 0.0026).

We found that in case, the mean urea (mean± s.d.) of patients was 51.3300 ± 29.2029 mg/dl. In control, the mean urea (mean± s.d.) of patients was 25.7000 ± 3.3439 mg/dl. Difference of mean urea in two groups was statistically significant (p<0.0001). In case, the mean creatinine (mean± s.d.) of patients was 3.6350 ± 2.4419 mg/dl. In control, the mean creatinine (mean± s.d.) of patients was .9435 ± .1317 mg/dl. Difference of mean creatinine in two groups was statistically significant (p<0.0001)

Present study found that in case, the mean sodium (mean± s.d.) of patients was 138.9100 ± 4.6386 mEq/L. In control, the mean sodium (mean± s.d.) of patients was 139.3500 ± 4.8687 mEq/L. Difference of mean sodium in two groups was statistically significant (p=0.5137). In case, the mean potassium (mean± s.d.) of patients was 4.6260 ± .7327 mEq/L. In control, the mean potassium (mean± s.d.) of patients was 4.4190 ± .5880 mEq/L. Difference of mean potassium in two groups was statistically significant (p=0.0287).

We found that in case, the mean calcium (mean± s.d.) of patients was 8.2450 ± .9918 mg/dL. In control, the mean calcium (mean± s.d.) of patients was 8.4480 ± .8027 mg/dL. Difference of mean calcium in two groups was not statistically significant (p=0.1132). In case, the mean Phosphate (mean± s.d.) of patients was 5.0810 ± .7701 mEq/L. In control, the mean Phosphate (mean± s.d.) of patients was 4.3780 ± .9866 mEq/L. Difference of mean Phosphate in two groups was statistically significant (p<0.0001)

In case, the mean eGFR (mean± s.d.) of patients was 25.1500 ± 11.8929. In control, the mean eGFR (mean± s.d.) of patients was 87.2200 ± 17.8295. Difference of mean eGFR in two groups was statistically significant (p<0.0001).

SUMMARY AND CONCLUSION
eGFR was strongly associated with CKD that also statistically significant. The positive correlation was found in eGFR.

In case, the mean eGFR (mean± s.d.) of patients was 25.1500 ± 11.8929. In control, the mean eGFR (mean± s.d.) of patients was 87.2200 ± 17.8295. Difference of mean eGFR in two groups was statistically significant (p<0.0001).

Table: Distribution of mean eGFR, Urea, Creatinine, Sodium, Potassium, Calcium and Phosphate vs. Group

		Number	Mean	SD	Minimum	Maximum	Median	p.value
eGFR	Case	100	25.1500	11.8929	3.0000	49.0000	24.5000	<0.0001
	Control	100	87.2200	17.8295	62.0000	133.0000	83.0000	
Urea	Case	100	51.3300	29.2029	21.0000	213.0000	41.0000	<0.0001
	Control	100	25.7000	3.3439	21.0000	33.0000	26.0000	
Creatinine	Case	100	3.6350	2.4419	1.5000	15.4000	2.8500	<0.0001
	Control	100	.9435	.1317	0.6000	1.2800	0.9400	
Sodium	Case	100	138.9100	4.6386	129.0000	147.0000	139.0000	0.5137
	Control	100	139.3500	4.8687	129.0000	147.0000	139.0000	
Potassium	Case	100	4.6260	.7327	3.2000	6.6000	4.7000	0.0287
	Control	100	4.4190	.5880	3.3000	6.6000	4.5000	
Calcium	Case	100	8.2450	.9918	6.2000	12.9000	8.2000	0.1132
	Control	100	8.4480	.8027	6.9000	10.7000	8.5000	
Phosphate	Case	100	5.0810	.7701	3.5000	7.1000	5.1000	<0.0001
	Control	100	4.3780	.9866	1.9000	5.9000	4.6500	

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