



CORRELATION OF THYROID PROFILE WITH SEVERITY OF CHRONIC KIDNEY DISEASE :A TERTIARY CARE CENTER STUDY

Ankur Mittal

Resident- General Medicine, Chirayu Medical College, Bhopal.

Vaishali Bhalavi

Assistant Professor- General Medicine, Chirayu Medical College, Bhopal.

ABSTRACT

Background: CKD is associated with a higher prevalence of primary hypothyroidism both overt and subclinical, but not with hyperthyroidism. Prevalence of primary hypothyroidism, mainly in the subclinical form, increases as glomerular filtration rate (GFR) decreases. **Materials and methods:** The present study is a cross-sectional study conducted among 350 patient admitted in medicine department, Chirayu medical college and hospital ,Bhopal from a period of 1st February 2021 to 31 July 2022. In the present study ,patient who diagnosed as chronic kidney diseases were included and their thyroid profile were done by CLIA (chemiluminescence immunoassay) method using MAGLUMI 2000 machine. **Aims and objective:** The aim of the present study is to assess thyroid dysfunction in chronic kidney disease patients and the correlation between thyroid dysfunction with the severity of renal diseases. **Result and conclusion:** In the present study, there is significant correlation between thyroid dysfunction with progression of CKD and there is a direct linear relation with eGFR and T3 , T4 level in the present study.

KEYWORDS : Thyroid profile, chronic kidney disease, eGFR, Hemodialysis

INTRODUCTION:

Chronic kidney disease (CKD) is becoming a serious health problem; the number of people with impaired renal function is rapidly rising, especially in industrialized countries¹. Progression of CKD is associated with having a number of complications, including thyroid dysfunction, dyslipidemia and CVD². The kidney normally plays an important role in the metabolism, degradation and excretion of thyroid hormones. CKD affects the hypothalamus pituitary thyroid axis. CKD affects thyroid function in manyways, including low circulating thyroid hormone levels, altered peripheral hormone metabolism, insufficient binding to carrier proteins, reduced tissue thyroid hormone content and altered iodine storage in the thyroid gland. Thus, in CKD, thyroid hormone metabolism is impaired³. CKD is associated with a higher prevalence of primary hypothyroidism, both overt and subclinical, but not with hyperthyroidism. Prevalence of primary hypothyroidism, mainly in the subclinical form, increases as glomerular filtration rate (GFR) decreases⁴. The aim of the present study is to assess thyroid dysfunction in chronic kidney disease patients and the correlation between thyroid dysfunction with the severity of renal diseases

MATERIALS AND METHODS:

The present study is a cross-sectional study conducted among 350 patient admitted in medicine department Chirayu medical college and hospital ,Bhopal from a period of 1st February 2021 to 31 July 2022.

In the present study ,patient who diagnosed as chronic kidney diseases were included and there eGFR is calculated using Cockcroft and Gault formula and thyroid profile were done by CLIA (chemiluminescence immunoassay) method using MAGLUMI 2000 machine. Those patient who already had a thyroid dysfunction ,those who are on dialysis and pregnant female were excluded in the present study.

RESULTS:

In the present study, out of 350 patients majority (60.9%) had grade IV CKD ,20.9% had grade III CKD and 4% had grade II CKD. In the present study, we compare the thyroid profile in different stages of CKD as shown in tables:

Table-1: shows association between T3 and CKD grade.

CKD	T3	
II	Mean	1.8
	SD	0.313
III	Mean	1.47

IV	SD	0.279
	Mean	0.78
V	SD	0.208
	Mean	0.55
	SD	0.105
P value = 0.001		

Table -2: Shows association between T4 and CKD grade.

CKD	T4	
II	Mean	3.33
	SD	1.363
III	Mean	2.32
	SD	1.167
IV	Mean	2.27
	SD	1.028
V	Mean	2.12
	SD	1.527
P value = 0.001		

Table-3 shows association between TSH and CKD grade.

CKD	TSH	
II	Mean	7.85
	SD	0.738
III	Mean	8.31
	SD	1.538
IV	Mean	10.50
	SD	2.891
V	Mean	11.88
	SD	1.225
P value = <0.001		

We found statistically significant increased in TSH level and decrease in T3 and T4 with severity of chronic kidney disease and there is a strong association of thyroid dysfunction with chronic kidney disease in the present study.

DISCUSSION:

In the present study, thyroid dysfunction was found to be very common in chronic kidney disease patients and we found that there is a significant correlation between thyroid dysfunction and severity of renal diseases. Since the thyroid profile undergoes changes due to dialysis. In our study, chronic kidney disease patients only on conservative management were studied.

In the present study, the level of T3 and T4 decreases as grade of CKD increases and TSH level increases as the grade of CKD increases.

Various study were conducted about thyroid dysfunction and severity of chronic kidney disease and have different results.

Khatwada S etal⁵ study showed the similar results but decrease in T3 and T4 was not significant but decrease in T3 and T4 with severity of CKD is significant in our study.

Song etal⁶ study found that decrease in T3 with severity of CKD which is similar to our study and is significant,

Lo etal⁴ found that decrease in eGFR was associated with increase in risk of hypothyroidism and is similar to the present study.

Miraj AK etal⁷ .study found that there was low T3 an low T4 with CKD progression and is similar to the present study.

CONCLUSION:

Thyroid dysfunction was found to be very common in CKD patients and had a significant correlation between thyroid dysfunction with progression of CKD. There is a direct linear relation with eGFR and T3 ,T4 level in the present study and is statically significant.

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