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TO STUDY THE PREVALENCE OF LOW T3 SYNDROME IN CHRONIC KIDNEY DISEASE PATIENTS

General Medicine

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ABSTRACT

Background- Thyroid functional disorders are commonly observed in chronic kidney disease (CKD) patients. To study the prevalence of low T3 Syndrome in Chronic kidney disease patients.

Methods-The present study was conducted on 230 patients, who were diagnosed to chronic kidney disease and on conservative management, were admitted or OPD patients in Department of Medicine, S.P. Medical College & P.B.M. Associated Group of Hospitals, Bikaner (Rajasthan) during the period of July 2019 to June 2020.

Results- In present study, out of total 230 cases, 55 cases were normal, 2 cases had hyperthyroid, 28 cases had hypothyroid, 85 cases had low T_3 and 60 cases had sub clinical thyroid.

Conclusion- In present study, 230 CKD patients who were on conservative management were studied among them 76% of patient had thyroid function abnormalities (including hypothyroidism, hyper-thyroidism, low FT3, subclincal hypothyroidism).

KEYWORDS

CKD, T3, T4

INTRODUCTION

Thyroid functional disorders are commonly observed in chronic kidney disease (CKD) patients[1]. Primary hypothyroidism, which is typically identified by biochemical tests including an elevated serum thyrotropin (TSH) level in conjunction with a low or normal. In present study, we will (i) examine potential mechanistic links between thyroid and kidney disease; (ii) describe common patterns of thyroid functional test alterations in CKD and (iii) discuss the clinical management of hypothyroidism in CKD patients and future areas of research. thyroxine (T4) level[2], is disproportionately more prevalent in patients with advanced kidney dysfunction compared to those with normal function[3]. In addition, various thyroid functional test abnormalities are frequently seen in CKD patients, resulting from alterations in thyroid hormone synthesis, metabolism, and regulation[1,4]. While early studies hypothesized that thyroid hormone deficiency may be a physiologic adaptation in kidney disease patients[5], contemporary data have demonstrated that hypothyroidism is associated with higher risk of cardiovascular disease and death in this population[1,6].

MATERIAL AND METHODS

Source of data

Patients who were conservative management fulfilling the criteria for chronic kidney disease admitted in Department of Medicine, S.P. Medical College & P.B.M. Associated Group of Hospitals, Bikaner (Rajasthan).

Methods of collection of data

Study subjects:

The present study was conducted on 230 patients, who were diagnosed to chronic kidney disease and on conservative management, were admitted or OPD patients in Department of Medicine, S.P. Medical College & P.B.M. Associated Group of Hospitals, Bikaner (Rajasthan) during the period of July 2019 to June 2020. These samples were selected by using simple random sampling method.

Statistical parameters such as mean, standard deviation (SD) and correlations will be used, and parametric and non parametric tests were used for the analysis.

Informed consent was obtained from all the patients.

Study design: An observational, cross sectional

Inclusion criteria

1. Patients with chronic kidney disease.
2. Patients who fulfill the criteria for CKD and who will on conservative management.

Criteria for Chronic Kidney Disease

1. Presence of uraemic symptoms for 3 months or more
2. Raised blood urea, serum creatinine and reduced creatinine clearance.
3. Ultra sonogram evidence of chronic kidney disease
   a. Bilateral contracted kidneys — size less than 9 cm.
   b. Poor cortico-medullary differentiation.
   c. Supportive laboratory evidence of CKD like anaemia, changes in serum electrolytes, etc.,

Exclusion criteria

1. Patients on peritoneal dialysis or hemodialysis
2. Nephrotic range of proteinuria
3. Hypoalbuminemia
4. Other conditions like
   a. Acute illness
   b. Diabetes mellitus
   c. Recent surgery
   d. Trauma
   e. Burns
   f. Liver diseases
   g. Drugs altering thyroid profile like amiodarone, phenytoin, beta-blocker, dopamine, steroids, estrogen pills and iodine containing drugs.

OBSERVATIONS

Table 1

Distribution of cases according to age group in relation to thyroid profile

Age Group (years)	Thyroid Profile										Total	
	Euthyroid		Hyper Thyroid		Hypothyroid		Low FT3		Sub Clinical			
	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%
≤30	6	10.9	0	-	0	-	12	14.1	3	5.0	21	9.1
31-50	16	29.1	0	-	9	32.1	36	42.4	23	38.3	84	36.5
51-70	24	43.6	2	100	16	57.1	34	40.0	34	56.7	110	47.8
>70	9	16.4	0	-	3	10.7	3	3.5	0	-	15	6.5
Total	55		2		28		85		60		230	
Mean	54.58		63.50		52.93		48.45		50.52			
SD	15.60		7.78		13.39		13.34		13.50			
f	2.168											
p	0.073											

In present study, out of total 230 cases, 55 cases were normal, 2 cases had hyperthyroid, 28 cases had hypothyroid, 85 cases had low T_3 and 60 cases had sub clinical thyroid.

Out of total 55 euthyroid cases, 6, 16, 24 and 9 cases belonged to age group ≤30, 31-50, 51-70 and >70 years respectively, in hyperthyroid

group both cases belonged to age group 51-70 years, in hypothyroid group, out of 28 cases, 9, 16 and 3 cases belonged to age group 31-50, 51-70 and >70 years, in low FT3 group, out of total 85 cases, 12, 36, 34 and 3 cases belonged to age group ≤30, 31-50, 51-70 and >70 years respectively while in subclinical group out of 60 cases, 3, 23 and 34 cases belonged to age group ≤30, 31-50, 51-70 groups respectively.

Mean age in euthyroid group was 54.58±15.60 years, in hyperthyroid group mean age was 63.50±7.78 years, in hypothyroid group mean age was 52.93±13.39 years, in low FT3 group mean age was 48.45±13.34 while in subclinical group mean was 50.52±13.50 years. On applying ANOVA test, the difference was found statistically insignificant ($p>0.05$).

DISCUSSION

Thyroid dysfunction in chronic renal failure was extensively studied by Ramirez et al[7]. Apart from their study, various studies conducted in this line have showed different results. Many studies have been conducted by comparing chronic renal failure patients on conservative management and hemodialysis by Ramirez et al[93] and Kayima et al[8]. Many studies conducted in chronic renal failure patients showed low T3 values. Low T3 had been reported in Ramirez et al[7] Hegedüs et al[9] and Beckett et al[10] studies, that too in cases of severe renal failure.

CONCLUSION

In present study, 230 CKD patients who were on conservative management were studied among them 76% of patient had thyroid function abnormalities (including hypothyroidism, hyper-thyroidism, low FT3, subclincal hypothyroidism).

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