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Original Research Article

An Observational Study on Thyroid Function in Patients Attending a Tertiary Care Hospital

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Abstract: **Introduction:** Thyroid disorders constitute the commonest endocrine abnormality. 42 million people in India are suffering from thyroid disorders. **Methods**: The present hospital-based study was conducted by department of physiology upon 136 patients reporting to OPD of P.B.M. Hospital Bikaner to evaluate their thyroid function status. Detailed history was taken along with blood sample collection after overnight fast for estimation of thyroid hormones. **Results:** Majority of the patients belonged to the age group of 20-40 years (47.8%). Male: female ratio was 3.69. 71.3% of the patients were euthyroid. 19.8% patients were hypothyroid of which 13.2% were clinically euthyroid, 3.7% suffered from subclinical hypothyroidism and 2.9% had primary hypothyroidism. 9.4% were hyperthyroid of which 5.1% had central hyperthyroidism, 2.9% suffered from primary hyperthyroidism, and 0.7% each had subclinical hyperthyroidism and T3 thyrotoxicosis. **Conclusion:** Hypothyroidism is alarmingly high in this region with higher prevalence in women.

Keywords: Hospital based, Observational study, Thyroid function status.

INTRODUCTION:

Thyroid disorders constitute the commonest endocrine abnormality and one-third of the world's population lives in are with iodine deficiency. Primary failure of thyroid gland is the commonest reason leading to this condition. Secondary causes included pituitary dysfunction, hypothalamic dysfunction, or generalized tissue resistance to the circulatory thyroid hormones (Garg, M.K. *et al.*, 2016). An estimated 108 million people suffer from endocrine and metabolic disorders in India, of which 42 million people are affected from thyroid disorders (Marwaha, R. K. *et al.*, 2012). A survey conducted upon Indian school children and adults revealed goitre rate to be 15.5% and 9.6%; hypothyroidism was present in 7.3% and 21% and hyperthyroidism in 0.3% and 0.6%, respectively (Sharma, D. *et al.*, 2014). Formal study regarding thyroid function status has not been done in this area. Considering the prevalence of thyroid dysfunction globally and the morbidities associated with this condition, the present study was conducted.

MATERIAL AND METHODS:

The present study was hospital-based observational in nature conducted at the department of Physiology S.P.Medical College Bikaner. It included patients reporting to OPD of the institute for any condition. Patients who were seriously ill, who were taking anti-thyroid drugs or who had undergone thyroid surgery were excluded. A total of 136 patients were included. Detailed history was taken to know the presenting complaints, past history regarding thyroid dysfunction and consumption of drugs known to affect thyroid function. Systemic examination of the patients was done and they were instructed to come next day after overnight fast for blood sample collection. Taking aseptic precautions, about 5 ml of blood was collected. Serum was separated and stored for further analysis. Thyroid hormone estimation was done using commercially available ELISA kitsand T3, T4 and TSH was estimated.

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RESULTS:

A total of 136 patients were included in the present study. [Table 1] shows background profile of the patients. Majority of the patients belonged to the age group of 20-40 years (47.8%) followed by 40-60 years (33.8%). Male: female ratio was 3.69.

TABLE 1 Background profile of the patients

BACKGROUND PROFILE		FREQUENCY	%
AGE	<10	3	2.2
	10-20	13	96
	20-40	65	47.7
	40-60	46	33.8
	60 ABOVE	8	5.9
SEX	**MALE**	29	21.3
	FE MALE	107	78.7

Table 2] shows thyroid function status of the patients. 71.3% of the patients were euthyroid. 19.8% patients were hypothyroid of which 13.2% were clinically euthyroid, 3.7% suffered from subclinical hypothyroidism and 2.9% had primary hypothyroidism. 9.4% were hyperthyroid of which 5.1% had central hyperthyroidism, 2.9% suffered from primary hyperthyroidism, and 0.7% each had subclinical hyperthyroidism and T3 thyrotoxicosis.

Table 2: Thyroid function status of the patients

THYROID FUNCTION STATUS	SUBTYPE	FREQUENCY	%
EUTHYROID	-	97	71.3
HYPOTHYROID	1.CLINICALLYEUTHYROID	18	13.2
	2.SUB CLINICAL	5	3.7
	3.PRIMARY	4	2.9
HYPERTHYROID	1.SUB CLINICAL	1	0.7
	2.PRIMARY	4	2.9
	3.THYROTOXICOSIS	1	0.7
	4.CENTRAL	7	5.1

DISCUSSION:

The present hospital-based study was cross sectional in nature conducted upon 136 patients reporting to P.B.M.Hospital Bikaner Rajasthan to evaluate their thyroid function status. In the present study, 47.8% of the patients belonged to the age group of 20-40 years followed by the age group 40-60 years (33.8%). Male: female ratio was 3.69. Mushir *et al.*, observed in Firozabad that the ratio of female to male was around 2.2:1 (Ahmad, M. *et al.*, 2016). Arora *et al.*, found that the prevalence of thyroid disorder was found to be 25.17% (992) in the study population (Arora, P. *et al.*, 2016). Tayal *et al.*, reported that the female to male ratio was 2.86 (Tayal, D. *et al.*, 2012). The maximum number of patients (%) belonged to the age bracket of 21- 40 years. Laskhimnaranaya *et al.*, observed that the study population included subjects of ages from 1-94 (Mean-41.95) years of age (Gopaliah, L. R. *et al.*, 2016). In the present study, it was seen that 71.3% of the patients were euthyroid. 19.8% patients were hypothyroid of which 13.2% were clinically euthyroid, 3.7% suffered from subclinical hypothyroidism and 2.9% had primary hypothyroidism. 9.4% were hyperthyroid of which 5.1% had central hyperthyroidism, 2.9% suffered from primary hyperthyroidism, and 0.7% each had subclinical hyperthyroidism and T3 thyrotoxicosis. Mushir *et al.*, observed that higher prevalence of thyroid disorder was seen in patients who are in their third decade of life with a female preponderance. A higher prevalence of hyperthyroidism and hypothyroidism was seen in patients in the age group of 31–45 years. A prevalence of hypothyroidism of around 43% and hyperthyroidism of around 26% was noted. Arora *et al.*, found that 74.82% patients were euthyroid. Among the thyroid dysfunction patients 16.85% belonged to hypothyroidism group and 8.29% to hyperthyroidism group. Maximum number of patients (69.32%) was diagnosed with primary hypothyroidism followed by 19.24% with sub clinical hypothyroidism and 11.42% with clinically euthyroid. 59% of patients belonged to central hyperthyroidism group followed by 32.11% in primary hyperthyroidism, 7.03% in sub clinical hyperthyroidism and 1.83% in T3 thyrotoxicosis group. Tayal *et al.*, reported that the majority of the patients (approximately 85%) were Euthyroid. Only 1.22% of the total number of referred patients turned out to be hyperthyroid. Hypothyroidism was more prevalent with the number of patients diagnosed with both sub clinical and overt hypothyroidism being 13.2%. Almost 80% of the total number of hypothyroid patients presented with sub clinical hypothyroidism. Most of the sub clinical hypothyroid patients (6.6%) had TSH levels between 6-10 µIU/ml. Serum TSH levels in the range of 11- 20

and > 20 µIU/ml were observed in 3.13% and 0.76% of the subjects respectively. Laskhimnaranaya *et al.*, observed that the overall prevalence rate of thyroid function abnormalities was 15.73%; more in females (16.91 %) than males (13.90%). The subclinical hypothyroidism was the commonest thyroid abnormality (7.15 %) followed by overt hypothyroidism (4.2%), hyperthyroidism (2.77 %) and subclinical hyperthyroidism (1.6 %). The prevalence rate of hypothyroidism in different age groups was 2.81 % in 1-19, 3.53 % in 20-45 and 5.36 % in those ≥ 46 years respectively. The prevalence rate of subclinical hypothyroidism was highest (8.05 %) in the age group of 20-45 years followed by 6.74 % in ≥ 46 and 4.19 % in 1-19 years.

CONCLUSION:

This study demonstrates that hypothyroidism is alarmingly high in this region with higher prevalence in women. This needs high index of suspicion in clinical situations where thyroid dysfunction may be the causative or contributing factor.

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