Research Paper

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To Study the Clinical Profile of Hypothyroidism in a Tertiary Care Hospital.

Medical Science

KEYWORDS : Hypothyroidism, Clinical profile.

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ABSTRACT

PURPOSE

To know about clinical profile of hypothyroidism and to notice commonest as well as rarest signs and symptoms in hypothyroidism.

METHOD

After a written and informed consent, all the patients presenting with signs and symptoms of hypothyroidism were included in this study. The study period was of 18 months from Jan 2013 to June 2014. They were investigated by using enzyme linked immune essay (ELISA) and those with normal thyroid profile were excluded. A total of 128 hypothyroid patients were studied in this study.

RESULT

Out of 128 total patients in this study, 31 were males and 97 were females, the ratio nearly being 1:3. Most common signs and symptoms noted in this study were anaemia, fatigue, weight gain, constipation, loss of libido, muscle cramps and cold intolerance in 73.43%, 70.3%, 65.62%, 63.28%, 42.96%, 40.62% and 37.5% cases respectively.

In males, anaemia, fatigue, constipation, cold intolerance, weight gain and loss of libido were the common seen features while in females muscle cramps, constipation, fatigue, weight gain, menstrual irregularities, anaemia and cold intolerance were the common signs and symptoms. Association of diabetes was found to be present in 31 cases. Subclinical hypothyroidism was seen in 26 cases while 102 cases were of overt Hypothyroidism

Conclusion:

In daily based medicine practice, patients often presents with signs and symptom suggestive of hypothyroidism which are often missed by the clinician and through this study we want to make sure that hypothyroidism should be kept in mind as a differential diagnosis and to be investigated whenever needed.

Introduction:

Hypothyroidism is a clinical syndrome resulting from a deficiency of thyroid hormones, which in turn results in a generalized slowing down of metabolic processes.[1] Nearly 108 million people in India suffer from endocrine and metabolic disorders. Thyroid disorders are the most common among all the endocrine diseases in India and hyperthyroidism and hypothyroidism are more frequent in women.[2,3] Studies of the goitrous subjects in India showed overall prevalence of hypothyroidism in 5.4% [4]

Pathology of the thyroid gland (Primary hypothyroidism) accounts for over 99.5% of cases of thyroid gland failure and < 0.5% result from disorder of the pituitary gland or hypothalamus (central hypothyroidism).[5,6] Subclinical hypothyroidism is defined as a serum thyroid stimulating hormone (TSH) above the defined upper limit of the reference range, with a serum free thyroxine (T4) within the reference range. Subclinical hypothyroidism (SCH), also called mild thyroid failure, is diagnosed when peripheral thyroid hormone levels are within normal reference laboratory range but serum thyroid-stimulating hormone (TSH) levels are mildly elevated. This condition occurs in 3% to 8% of the general population. It is more common in women than men, and its prevalence increases with age.. Currently, the practical approach is routine levothyroxine therapy for persons with a persistent serum TSH of more than 10.0 mIU/L and individualized therapy for those with a TSH of less than 10.0 mIU/L.[7]

Overt hypothyroidism refers to cases in which the serum thyroid stimulating hormone (TSH) concentration is elevated and serum T4 (free thyroxin) is below the reference range. The progression to overt hypothyroidism is approximately 2–5% per year. [8] Thyroid hormones exert direct cellular effects on almost all tissues of the body. It causes multi organ dysfunction secondary to deranged metabolism. The cardiac dysfunction ranges from functional systolic/diastolic dysfunction to overt failure and coronary artery disease. It can cause a number of symptoms, such as tiredness, poor ability to tolerate cold, and weight gain. In children, hypothyroidism leads to delays in growth and intellectual development, this is called cretinism in severe cases. The diagnosis of hypothyroidism, when suspected, can be confirmed with blood tests measuring thyroid-stimulating hormone (TSH) and thyroxin levels.

Worldwide, too little iodine in the diet is the most common cause of hypothyroidism. In countries with enough dietary iodine, the most common cause of hypothyroidism is the autoimmune condition Hashimoto's thyroiditis. Less common causes include the following: previous treatment with radioactive iodine, injury to the hypothalamus or the anterior pituitary gland, certain medications, a lack of a functioning thyroid at birth or previous thyroid surgery.

Hypothyroidism can be well treated with manufactured levothyroxine; the dose is adjusted according to symptoms and normalization of the thyroxin and TSH levels.

Material and methods:

This study was conducted in the Department of Medicine, Rohilkhand Medical College and Hospital, Bareilly. The Rohilkhand Medical College and Hospital is a tertiary care teaching hospital with well equipped state of art infrastructure and a well trained human resources. It caters mainly to the population of district

Bareilly and adjoining areas. This study was approved by institutional ethical committee. Informed written consent was obtained from all subjects.

Source of data :
All the patients attending Rohilkhand medical college and hospital, OPD/IPD and Causality with signs and symptoms suggestive of hypothyroidism. All the patients referred from other departments for evaluation of hypothyroidism.

A prospective study was conducted during a study period of 18 months i.e. January 2013 to june 2014.

Inclusion criteria:
- All the patients presented with signs and symptom suggestive of hypothyroidism.
- Patients referred from other departments, for evaluation of hypothyroidism.
- Patients with thyroid profile suggestive of hypothyroidism.

Exclusion criteria:

- Patients whose thyroid profile was within normal limits.
- Patients who refused to sign the consent form.

Method of collection of data:
After a written and informed consent, patients presented with clinical signs and symptoms of hypothyroidism were included in the study. A detailed history was taken and every patient was thoroughly examined. General investigations were sent for and the patients. For T3,T4, TSH , evaluation was done by BENESPHERA enzyme linked immunosorbent assay (ELISA) kit from USA. An early morning fasting sample was taken and serum/plasma was prepared by centrifugation from whole blood by complete aseptic precautions. Normal value for TSH is 0.39- 6.16 μ IU/L using 50 μ L sample. Sensitivity for TSH after one hour incubation procedure is 0.078 μ IU/L and after two hour incubation period it is 0.027 μ IU/L. Normal value for T4 in males is 4.4- 10.8 μg/dl and for females it is 4.8-11.6 μg/dl. Sensitivity for T4 is 80 pg equivalent to a sample containing a concentration of 0.4 μg/dl. Specificity of T4 with interfering substrates is , to i- Thyroxine- 1.00, d-Thyroxine – 0.98, d- triiodothyronine- 1.5% increase in OD at 100 μg/dl, diiodothyronine 0.01% increase in O.D at 100 μg/dl. Sensitivity for T3 is 0.04 ng/dl.

Results:
The study included 128 hypothyroid patients out of which 31 were males and 97 were females. (Table 1)

Most common signs and symptoms seen are anaemia, fatigue, weight gain, constipation, loss of libido, muscle cramps and cold intolerance in 73.43%, 70.3%, 65.62%, 63.28%, 42.96%, 40.62% and 37.5% patients respectively.(Table 3)

Out of 31 males in this study who constituted 24.22% of total cases, anaemia, fatigue, constipation, cold intolerance, weight gain and loss of libido were the common seen features while in 97 females who constituted 63.28 % of total study population, muscle cramps, constipation, fatigue, weight gain, menstrual irregularities, anaemia and cold intolerance were the common signs and symptoms. (Table 3)

Discussion:
The present study included 128 patients. It was conducted at Rohilkhand Medical College and hospital, Bareilly (UP). The study period was from January 2013 to June 2014. This discussion analyses data obtained from other studies done with similar objectives.

In this study most common signs and symptoms seen are anaemia, fatigue, weight gain, constipation, loss of libido, muscle cramps and cold intolerance in 73.43%, 70.3%, 65.62%, 63.28%, 42.96%, 40.62% and 37.5% patients respectively.

Out of 31 males in this study who constituted 24.22% of total cases, anaemia, fatigue, constipation, cold intolerance, weight gain and loss of libido were the common seen features while in 97 females who constituted 63.28 % of total study population, muscle cramps, constipation, fatigue, weight gain, menstrual irregularities, anaemia and cold intolerance were the common signs and symptoms.

Sex distribution
In our study, out of 128 patients there were 31 (24.22%) males & 97 (75.78%) females. This obtained data is similar to a study carried out by S. Haritha et al [9], in which there were 76% females & 24% males out of 100 patients. Our data is also closely related to a study out by Ashok Kumar et al [1], in which there were 63.5% females & 36.5% males. Our study also closely relates to a study done by Ali Jabbari [11], with 84% females & 16% male patients. (Table 1)

Age group wise distribution of males and females
In our study maximum patients belonged to age group of 31-40 years, 35 (24.34%) being the total number of patients in this age range, 32 (25%) patients in age range of 41-50 years, 23 (17.96%) patients in age range of 51-60 years, 19 (14.84%) patients in age range of 21-30 years, 15 (11.72%) in age range of 61-70 years, 3 (2.34%) patients in age range of 71-80 years and only 1 patient above the age of 80 years. (Table 2)

Incidence of cold intolerance
In our study the total incidence of cold intolerance was 48 (37.5%). Similar findings were cited by M. Bahemuka et al [12]. where as according to Ashok Kumar et al [10] & Ali Jabbari [11] et al the incidence cited was 62.7% & 95% respectively.

From total of male cases, 8 (25.8%) had cold intolerance & 40 (41.2%) females had cold intolerance from the total female cases in our study.

Incidence of constipation
In our study the incidence of constipation was 81 (63.28%). This finding closely relates to studies carried out by Ali Jabbari et al [11] & Zulewski et al [13], which showed the incidence of 76% & 52% respectively.

15 (48.4%) of male population & 66 (68%) of total female population showed incidence of constipation.

Incidence of fatigue
From the total of 128 cases, 80 (70.31%) presented with complains of fatigue in our study. This total incidence finding coincides with a study carried out by Abalovich M et al [14] & Zulewski [13] showing the incidence of 75% & 83% respectively.

From the total male population, 26 (83.9%) males complained of fatigue and 64 (66%) females complained of fatigue from the total female population.

Incidence of anaemia
Out of 128 cases in our study, anaemia was seen is 94 (73.43%) patients. Similar study by Ali Jabbari et al cited the incidence to be 80%, which is in accordance to our study.

Of the 94 anaemic patients, 51 patients showed normocytic blood picture which is similar to Harrison textbook which coat normocytic blood picture as most common in hypothyroidism [15]. 33 patients showed microctytic blood picture and 10 showed macrocytic blood picture.(Table 5)

From the total male population, 27 (87.1%) males were anaemic and 67 (69%) females were anaemic from the total female population. (Table 5)

Bradycardia

Out of the 128 patients, 30 (23.43%) were found to be having Bradycardia. This finding is in accordance with Ashok kumar et al [10] and Ali Jabbari et al [11] , who cited the incidence to be 29.4% & 16% respectively in their study. But our study did not match the incidence of Zulewski et al [13] (70%).

From total of male cases, 6 (19.4%) had Bradycardia & 24 (24.7%) females had Bradycardia from the total female cases in our study.

Body mass index (BMI)

BMI was found to be in range of overweight i.e 25-29.9 kg/m^2 in 44 (34.37%) patients while 64 (50%) patients have BMI in range of moderate obesity i.e 30-35 kg/m^2. 20 (15.63%) patients were having high obesity out of 128 total patients.

11 (35.5%) males were in range if overweight out of total male study population while it was 33 (34%) in felame population. In total male population 16 (51.6%) males were moderately obese and it was noted in 48 (49.5%) females in their group.

High level of obesity with BMI between 35-40 was found in 4 (12.9%) males out of total male population and it was found in 16 (16.5%) females in their group.

This finding is in accordance with study done by Zulewski et al [13] who also noted a significant rise in BMI in hypothyroid patients. Abalovich. M et al [14] also cited that weight gain is a common feature in hypothyroidism. Ashok kumar et al [10] also cited that 56.3 % patients of hypothyroidism were having weight gain in his study, while Ali Jabbari et al [11] cited it to be present in 84 % patients in his study.

Depression :

In this study of total 128 patients, a total of 13 (10.1%) patients were having depression.

Out of these 10 patients there was 1 male patient and rest 12 were females consisting 12.2% of total female population.

This finding was similar to a study by Ali Jabbari et al [11] who cited that 16% hypothyroid patient were suffering from depression. Also, M. Bahemuka [12] cited the incidence of depression in hypothyroidism to be 20% which is also closely related to this present study.

Infertility:

7 (5.46%) patients out of 128 were found to be having infertility, including 2 males and 5 females. This finding is in accordance with a study done by Abalovich. M et al.[14]

Menstrual irregularities:

Out of 97 females in this study, 76 (78.4%) females have irregular menses while 21(21.6%) had no menstrual irregularities, 14(14.4%) had menorrhagia, 35(36.1%) had oligimenorrhoea, 23(23.71%) had menopause, while 4 (4.12%) were having amenorrhoea. Ali Jabbari et al [11] though cited that 92.85 % females were having irregular menses which is concordant to this study. (Table 4)

Other signs and symptoms:

Hoarsensess of voice was seen on 7 (6.5%) patients out of 128 total patients out of ehich 1 is male and 7 are females. Zulweski et al cited the incidence of hoarse voice to be 74% which doesnot match our statistics.[13]

Thyroid swelling is seen in a total of 14 (10.93%) patients including 2 males and 12 females. Thinning of eyebrows was seen in 18(14.06%) patients including 2 males and 16 females. This finding is in accordance with a study done by S. Haritha et al [9] who cited an incidence of 20% in hypothyroidsm.

No cases of Night blindness, Acute psychosis, Galactorrhoea and impaired memory was seen in this study, while puffiness of face was seen in 18 (14.06%) cases.

Thyroid profile:

Out of 128 cases 26 (20.31%) were having subclinical hypothyroidism and 102 (79.69%) patients were having overt hypothyroidism. One patient was having raised T4 level due to over treatment.

Association with diabetes

Of all the cases 31 (24.21%) patients were suffering from diabetes mellitus including 5 males and 26 females.

Conclusion:

It was concluded that, in male population, anaemia, fatigue, constipation, cold intolerance, weight gain and loss of libido were the common seen features while in females muscle cramps, constipation, fatigue, weight gain, menstrual irregularities, anaemia and cold intolerance were the common signs and symptoms. So in general, in daily based medicine practice, patients often presents with signs and symptom suggestive of hypothyroidism which is often missed by the clinician and through this study we want to make sure that hypothyroidism should be kept in mind as a differential diagnosis and to be investigated whenever needed.

Table 1: Sex distribution in study group:

Sex	No. Of patients (n=128)	Percentage
Male	31	24.22%
Female	97	75.78%

Table 2: Age wise distribution of male and female:

Age group	Male (n=31)	Female (n=97)
21-30 years	2 (6.5%)	17 (17.5%)
31-40 years	9 (29%)	26 (26.8%)
41-50 years	13 (41.9%)	19 (19.6%)
51-60 years	6 (19.4%)	17 (17.5%)
61-70 years	1 (3.2%)	14 (14.4%)
71-80 years	0	3 (3.1%)
› 80 years	0	1 (1.0%)

Table 3: Symptoms & Signs among males and females in study group.

Groups	MALES (31)		FEMALES(97)	
Signs & symptoms	Number	Percentage %	Number	Percentage %
Cold intolerance	8	25.8	40	41.2
Constipation	15	48.4	66	68
Fatigue	26	83.9	64	66
Anaemia	27	87.1	67	69.1
Bradycardia	6	19.4	24	24.7

Depression	1	3.2	12	12.4
Infertility	2	6.5	5	5.2
Galactorrhoea	0	0	0	0
Hoarse voice	1	3.2	7	7.2
Thyroid swelling	2	6.5	12	12.4
Thinned eyebrows	7	22.6	24	24.7
Puffy face	2	6.5	16	16.5
Memory loss	0	0	0	0
Decreased perspiration	4	12.9	15	15.5
Muscle cramps	13	41.9	39	40.2
Dysphagia	2	6.5	14	14.4
Dyspnoea	8	25.8	33	34
Dysphonia	1	3.2	3	3.1
Night blindness	0	0	0	0
Acute psychosis	0	0	0	0
Loss of libido	12	38.7	5	5.2
Increased sleep	3	9.7	5	5.2

Table 4: Menstrual irregularities in females

Menstrual irregularities	No. Of patient (n=97)
NORMAL	21 (21.6%)
MENORHAGIA	14 (14.4%)
OLIGOMENORRHOEA	35 (36.1%)
MENOPAUSE	27 (27.8%)
AMENORRHOEA	0

Table 5: Type of anaemia in study group

Type of anaemia	Male (n=31)	Female (n=97)
MACROCYTIC	12 (38.7%)	39 (40.2%)
MICROCYTIC	10 (32.3%)	23 (23.7%)
NORMOCYTIC	5 (16.1%)	5 (5.2%)
NONE	4 (12.9%)	30 (30.9%)

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