



International Journal of
**Current Pharmaceutical & Clinical
Research**

www.ijcpcr.com

**STUDY OF PATTERN AND PREVAILING OF HYPOTHYROIDISM
WITH ANAEMIA**

B. Shanmukha^{1*}, C. Manisehar¹, S. Shareen¹, A. Ammajan¹, Aleem Sarwar¹

¹Asst. Professor, Dept of Pharmacy Practice, Sri Venkateswara College of Pharmacy. RVS Nagar, Tirupati Road, Chittoor – 517 127, Andhra Pradesh, India.

ABSTRACT

Background:-Anaemia can cause immense and variety of haematological disorders and hypothyroidism would be its first manifestations. The pathogenesis of this hypothyroidism are involved numerous mechanisms can be macrocytic, microcytic. Macrocytic hypothyroidism usually ascribe to loss of iron and malabsorption of iron through menorrhagia. Microcytic hypothyroidism is caused by malabsorption of vitamin folic acid, vitamin B₁₂ inadequate nutrition and pernicious anaemia. Normocytic anemia is characterized by reticulopenia, decreased the level of erythropoietin, hypoplasia of erythroid genealogy, essentially survival regular erythrocyte. This study we designed to investigate the hypothyroid incidence of anaemia patients and its morphological pattern in urban populations. Aim and objective: To study the proportion of hypothyroid and its morphological pattern of hypothyroidism with anaemia in the urban population. Materials and methods: This study was conducted at RVS Medical College and Hospital from January 2019 to April 2019. In this study enrolled a total number of 50 patients after granted permission. Data information were collected from the case sheets in RVS medical college and hospital, originally, demographic data information such as (patients name, age, sex, etc.), the present complication of hypothyroidism in anaemia, enrolled all subjects of past history. Result: In our study, 50 enrolled patients having (35%) hypertension and co morbid conditions (38%) followed by DM, (18%) Dyslipidemia and obesity (6%). Defining the Hb level for the anaemia in female were respectively <12 g/dL and <13 g/dL. The haemoglobin range was observed to be between >8 to 10 g/dL for 7 male & 28 female patients and more than 10 g/dL was observed in 14 (2 male and 12 female). Discussion: Data information according to the World Health Organization, the prevalence of anaemia is 25.9% all over the world mostly in underdeveloped countries observed in this study. In India hypothyroid with anaemia is a complicated health problem in the country, which may be accelerated by a situation such as anaemia. Conclusion: As females are the most basic consumptive of hypothyroidism alike with sufficient intake iodine there would be a group of screening for haematological parameters along with thyroid function for the earlier intervention and detection. And also, in hypothyroid patients are the most common types of anaemia are microcytic anaemia.

Key words: Hypothyroidism, Anaemia.

INTRODUCTION

Hypothyroidism and anaemia is one of the trivial and universal and common disorders in India which is affecting the population and it may be influenced for further sickness by hypothyroidism and anaemia. The hypothyroidism prevalence is differs from each country to country and ranges from 2-5% of the population

of range from 3-6% all over the global; it may increase up to 21% after 65 years of age. The study reported recently In India, the prevalence of anaemia and hypothyroidism as 4.8% and alternate-clinical anaemia and hypothyroidism as 8.7% in adults. Hypothyroid disorders more effective in

Corresponding Author :- **B. Shanmukha** Email:- shanmukhab94@gmail.com

females than males [1]. The essential thyroid hormones are for metabolic balance, differentiation, the normal development, and all physiologic function including all tissues virtually. Endocrine diseases are most common among thyroid disorders. Anaemia and haematological abnormalities associated with thyroid disorders one of the most prevalent disorders. Hypothyroid has been narrated in 21-65% of patient cases with anaemia. Anaemia has a drop off metabolic activity in the body [2]. The systemic organs are affected and depend on age wise sign and symptoms, hormones status and occurrence of deficiency. Encountered the most frequent type of anaemia is normocytic and normochromic anaemia. The reason, because of the repression deficiency of thyroid hormone and bone marrow also causes effective due to the production of erythropoietin arising oxygen needed from the reduction. Haematological and hypothyroid disorders could be the first manifestation with anaemia [3]. The pathogenesis of this hypothyroidism is involved in numerous mechanisms that may be macrocytic, microcytic. Macrocytic hypothyroidism usually ascribes to loss of iron and malabsorption of iron through menorrhagia. Microcytic hypothyroidism is caused by malabsorption of vitamin folic acid, vitamin b12 inadequate nutrition, and pernicious anemia. Normocytic anemia is characterized by reticulopenia, decreased the level of erythropoietin, hypoplasia of erythroid genealogy, essentially survival regular erythrocyte. This study we designed to investigate the hypothyroid incidence of anaemia patients and its morphological pattern in urban populations [4].

AIM AND OBJECTIVE

To study the proportion of hypothyroid and its morphological pattern of hypothyroidism with anaemia in the urban population.

MATERIALS AND METHODS

This study was conducted at RVS Medical College and Hospital from January 2019 to April 2019. In this study enrolled a total number of 50 patients after granted permission. The normal range of anaemia has been characterized as haemoglobin less than 13.5 g/dL in male and less than 12.0 g/dL in the female. Data information were collected from the case sheets in RVS medical college and hospital, originally, demographic data information such as (patients name, age, sex, etc.), the present complication of hypothyroidism in anaemia, enrolled all subjects of past history [5]. Thyroid tests were performed with the help of using electrogenerated chemiluminescence (ECL). Thyroid

function tests (TFT's) include thyroid stimulating hormone (TSH, also known as thyrotropin) and normal reference ranges for The normal reference ranges for free T3 (FT3; tri-iodothyronine), and free T4 (FT4; thyroxine), as clinical laboratory in our hospital's were respectively 0.30–5.5 µIU/mL, 1.5-4.5 pg/mL and 0.6-2.1 ng/dL with all respect. A detail of clinical history and smear study was done with a complete blood count (CBC). Characteristics baseline was used to describe statistical analysis. The collected data were analyzed statistically. CBC is analyzed and peripheral smear analysed in automated analyser by Leishman stain [6].

Inclusion Criteria

All treatments for hypothyroidism patients more than 20 years of age both male and female gender, in this study newly diagnosed hypothyroidism with anaemia patients were included. Comorbidities patients such as diabetes mellitus, hypertension, dyslipidaemia, and obesity were included [7].

Exclusion Criteria

Chronic renal failure is the secondary cause for anaemia patient with <20 years of age, blood loss, alcoholic, CKD, Malignancy, and a pregnant female was excluded from this study [8].

RESULTS

Investigated blood parameters of 50 patients with hypothyroidism in this study. The patient means age was 36.3±15.8 years and diverse between 20 to 80 years of age. 42 out of 50 were female (81%) and 8 were male (16%). In our study, 50 enrolled patients having (35%) hypertension and co morbid conditions (38%) followed by DM, (18%) Dyslipidemia and obesity (6%). Defining the Hb level for the anaemia in female were respectively <12 g/dL and <13 g/dL. The haemoglobin range was observed to be between >8 to 10 g/dL for 7 male & 28 female patients and more than 10 g/dL was observed in 14 (2 male and 12 female). The highest number of population of 36 (5 males and 31 females) was seen in the range between <6-11 g/dL. Female predominance also supported and anaemia morphologically classified the frequency of microcytic, normocytic and macrocytic anaemia as determined patients for each and male and female [9]. Hypochromic and Microcytic anaemia was currently present in (58%) of patients, hyperchromic Macrocytic anaemia was observed in (20%) and normochromic and normocytic anemia was currently present in (4%) commenced respectively[10].

Table 1: Age wise Distribution

Sl. No	Age in years	Total Number. of Patients	Percentage of Patients (%)
1	20-29 years	8	16
2	30-39 years	19	38
3	40-49 years	9	18

4	50-59 years	8	16
5	60-69years	3	6
6	>70 years	3	6
Total		50	100

Table 2: Risk factors of Hypothyroidism with Anaemia

Risk of factors	Total Number of Patients	Percentage of Patients (%)
Diabetic mellitus	10	20
Hypertension	11	22
Dyslipidaemia	9	18
HTN +DM	12	24
Obesity	3	6
HTN+DM + Dyslipidaemia	5	10
Total	50	100

Table3: Levels of Haemoglobin

Levels of Haemoglobin	Male	Percentage of Patients (%)	Female	Percentage of Patients (%)
<8	1	2	4	8
8-10	4	8	11	22
11-12	3	6	15	30
>12	2	4	10	20
Total	9	20%	41	80%

Table 4: Frequency of Hypothyroidism with Anaemia patients

Types of Anaemia	Male (%)	Female (%)
Macrocytic hyperchromic	4(8%)	10(20%)
Microcytic hypochromic	5(10%)	29(58%)
Normocytic normochromic	0(0%)	2(4%)
Total	9(18%)	41(82%)

DISCUSSION

Data information according to the World Health Organization, the prevalence of anaemia is 25.9% all over the world mostly in underdeveloped countries observed in this study. In India hypothyroid with anaemia is a complicated health problem in the country, which may be accelerated by a situation such as anaemia [11]. Treatment for hypothyroid patient perfectly, with an etiological cause is necessary for a determination. The hypothyroidism adverse effect on the haematological system can develop anaemia. This study was conducted and carried out from January 2019 to April 2019 in RVSIMS, a 1200-bedded multispecialty tertiary care teaching hospital located in Chittoor district. In this study, we investigated the relationship of hypothyroidism in anaemia [12]. In this study, a total of 50 patients enlisted. Where are 9 patients male and 41 patients female out of 50 patients?

In this study, it was observed and initiated that mostly group of patients affected were female patients which is under the age of 30-39 years of age (19 patients). The mean study of haemoglobin level is 10.11g/dL, In our study, frequently founds to male and female anaemic patients anaemia frequency in male and female patients was

found to be 16% and 81%, respectively as in our study [13]. Diabetes mellitus, among the comorbid conditions, dyslipidaemia and hypertension incidence group was high among in the study [14]. Patients difficulty from microcytic hypochromic, hypothyroidism in anaemia, the highest and basic cause for the serious conditions in hypothyroidism with anaemia which is (58%) were female and where male was (10%) observed in our study, macrocytic hypochromic of which (8%) are male and (20%) female and normocytic normochromic no male patients but female patient are (4%) respectively [15]. In this study, anaemia is the most generally encountered type of anaemia is microcytic hypochromic anaemia which is associated with Iron deficiency [16]. Iron deficiency anaemia broadly occurring due to various hormonal imbalance and observed malabsorption in hypothyroid disorders. Study similarly encountered most frequently normochromic normocytic anaemia types, the reasons of the bone marrow suppression and deficiency of thyroid hormone because of the causes of abnormal erythropoietin production which is arising from defeat in needed oxygen's [17].

CONCLUSION

Hypothyroidism with anaemia is most basically endocrinological disorders which is a variety of demonstrations. It has disadvantages and adverse effects on erythropoiesis which is reduced stored body iron and anaemia [18]. As females are the most basic consumptive of hypothyroidism alike with sufficient intake iodine there would be a group of

screening for haematological parameters along with thyroid function for the earlier intervention and detection [19]. And also, in hypothyroid patients are the most common types of anaemia are microcytic anaemia. So, there is advised that efficient and reorganization earlier and medication cure the hypothyroid treatment as a needed to prevent the risk factor of developing anaemia [20].

REFERENCES

1. Unnikrishnan AG, Kalra S, Sahay RK, et al. Prevalence of hypothyroidism in adults: an epidemiological study in eight cities of India. *Indian J Endocrinol Metab.* 17(4), 2013, 647-52.
2. Das C, Sahana PK, Sengupta N, et al. Etiology of anemia in primary hypothyroid subjects in a tertiary care center in Eastern India. *Indian J Endocrinol Metab.* 16(2), 2012, 361-3.
3. Larson SO. Anemia and iron metabolism in hypothyroidism. *Acta Med scand.* 157(5), 1957, 339-63.
4. Felker GM, Stough WG, Shaw LK, et al. Anemia and coronary artery disease severity in patients with heart failure. *Eur J Heart Fail.* 8(1), 2006, 54-7.
5. Kazemi-Jahromi M, Shahriari-Ahmadi A, Seyed-Hosein S, et al. The association between hypothyroidism and anemia a clinical study. *International Journal of Hematology Oncology and Stem Cell Research.* 4(3), 2010, 6-9.
6. Bamashmous SA, Al-Nuzaily MAK, Al Maktari LAS, et al. Prevalence and etiology of anemia in overt and subclinical hypothyroid women in Sana'a, Yemen. *J Clin Res Lett.* 4(1), 2013, 57-60.
7. Fein HG, Rivlin RS. Anemia in thyroid diseases. *Med Clin North Am.* 59(5), 1975, 1133-45.
8. Horton L, Coburn RJ, England JM, et al. The haematology of hypothyroidism. *Q J Med.* 45(177), 1976, 101-23.
9. Grymula K, Paczkowska E, Dziedziejko V, et al. The influence of 3,3',5-triiodo-L-thyronine on human haematopoiesis. *Cell Prolif.* 40(3), 2007, 302-15.
10. Montagnana M, Lippi G, Targher G, et al. The red blood cell distribution width is associated with serum levels of thyroid stimulating hormone in the general population. *Int J Lab Hematol.* 31(5), 2009, 581-2.
11. Iddah MA, Macharia BN, Ng'wena AG, et al. Thyroid hormones and hematological indices levels in thyroid disorders patients at MOI teaching and referral hospital, Western Kenya. *ISRN Endocrinol.* 2013, 1-6.
12. Surks MI, Ortiz E, Daniels GH, et al. Subclinical thyroid disease: scientific review and guidelines for diagnosis and management. *JAMA.* 291(2), 2004, 228-38.
13. Col NF, Surks MI, Daniels GH. Subclinical thyroid disease: clinical applications. *JAMA.* 291(2), 2004, 239-43.
14. Yen PM. Physiological and molecular basis of thyroid hormone action. *Physiol Rev.* 81(3), 2001, 1097-142.
15. Franchini M, Montagnana M, Manzato F, et al. Thyroid dysfunction and hemostasis: an issue still unresolved. *Semin Thromb Hemost.* 35(3), 2009, 288-94.
16. Erdogan M, Kosenli A, Ganidagli S, et al. Characteristics of anemia in subclinical and overt hypothyroid patients. *Endocr J.* 59(3), 2012, 213-20.
17. Vanderpump MP. The epidemiology of thyroid disease. *Br Med Bull.* 99, 2011, 39-51.
18. Unnikrishnan AG, Kalra S, Sahay RK, et al. Prevalence of hypothyroidism in adults: an epidemiological study in eight cities of India. *Indian J Endocrinol Metab.* 17(4), 2013, 647-52.
19. Wilson GR, Curry RW. Subclinical thyroid disease. *Am Fam Physician.* 72(8), 2005, 1517-24.
20. Fein HG, Rivlin RS. Anemia in thyroid diseases. *Med Clin North Am.* 5(5), 1975, 1133-45.

