

## ORIGINAL ARTICLE

# Frequency of Hypertension and Diabetes Mellitus in Hypothyroid Patients: A study in Peshawar

PERVEZ MUHAMMAD<sup>1</sup>, MUHAMMAD TARIQ<sup>2</sup>, NAWABZADA KHAN<sup>3</sup>, SAJJAD MUHAMMAD<sup>4</sup>, AKHTAR MUNIR<sup>5</sup>, MUHAMMAD SHEHRYAR<sup>6</sup>

<sup>1</sup>Associate professor, chemical pathology, Jinnah Medical College, Peshawar

<sup>2</sup>Associate professor, Histopathology, Jinnah Medical College, Peshawar

<sup>3</sup>Assistant professor, Physiology, Jinnah Medical College, Peshawar

<sup>4</sup>Associate professor, Physiology, Jinnah Medical College, Peshawar

<sup>5</sup>Professor of Pathology, Jinnah Medical College, Peshawar

<sup>6</sup>PGR, Cardiology Department, Lady Reading Hospital, Peshawar

Correspondence to Dr. Pervez Muhammad, Associate professor Chemical Pathology

## ABSTRACT

**Aim:** To assess the frequency of hypertension and diabetes mellitus in hypothyroid patients.

**Methodology:** This cross-sectional study was conducted in Union council (UC) Zargar Abad, District Peshawar for a period of six months. Sample size was 200 patients and technique used was convenient random sampling.

**Results:** In hypothyroid cases, 200 cases were selected. Female were 40 and male were 160. They were divided into three groups i.e. 18-28 years, 29-40 yrs and 41-50 yrs. Maximum subjects fall in the age group of 29-40 years. In this group 100 were male and 20 were female. BMI of this group was notably higher than the other age groups. Out of 200 subjects 83 had hypertension of variable intensity. 60 male patients had hypertension and 23 female patients had hypertension. Out of 160 male subjects 42% had hypertension and 57% had hypertension.

**Conclusion:** There is an association of hypertension and DM in hypothyroid patients.

**Keywords:** Hypothyroidism, DM, Hypertension

## INTRODUCTION

Persistent rise of TSH level is diagnosed as hypothyroidism and free thyroid hormone levels were even normal<sup>4</sup>. The prevalence of hypothyroidism is 3-8%, which increases with increase in age, more frequent in females. Incidence of hypothyroidism is 4.1% with female predominantly<sup>1</sup>.

In another study, 4-8% incidence was in Brazil and in USA, it is 3-8%<sup>5</sup>. In India, the incidence of hypothyroidism is 30%<sup>6</sup>. Study on school going children in Pakistan revealed prevalence of 8.4%, which is higher as compared to 1.7% in US children<sup>7</sup>.

The objective of the study was to assess the frequency of hypertension and diabetes mellitus in hypothyroid patients.

## METHODOLOGY

This cross-sectional study was conducted in Union council (UC) Zargar Abad, District Peshawar for a period of six months after permission from IRB. Sample size was 200 patients and Sample technique used was convenient random sampling. Cases with age 18 - 50 years with either gender were included.

### Exclusion criteria:

- Subjects with anti-thyroid drugs, oral contraceptive, estrogen, steroids, and anti-epileptic drugs
- H/O thyroidectomy and pregnant ladies

**Data collection procedure:** Written informed consent was obtained. Demographic characteristics and complete history was obtained. 06ml of fasting blood sample was drawn. Serum TSH and FT4 was measured.

Received on 11-05-2021

Accepted on 21-09-2021

## RESULTS

The detail of results is given in tables 1,2,3,4,5,6

Table 1: Gender distribution

Gender	n	%age
Male	160	80
Female	40	20
Total	200	100

Table 2: Gender wise distribution of hypothyroid cases with hypertension

	Males	Females	Total
Hypertensive	60(30%)	23(11.5%)	83(41.5%)
Normotensive	100(50%)	17(8.5%)	117(58.5%)
Total	160(80%)	40(20%)	200(100%)

Table 3: Age distribution

Age (years)	n	%age
18—28	40	20
29—40	120	60
41—50	40	20
Total	200	100

Table 4: Gender wise age distribution in hypothyroid cases

Age (yrs)	Males	Females	Total
18—28	30(15%)	10(5%)	40(20%)
29—40	100(50%)	20(10%)	120(60%)
41—50	30(15%)	10(5%)	40(20%)
Total	160(80%)	40(20%)	200(100%)

Table 5: Hypothyroid cases with Diabetes Mellitus

DM	n	%age
Yes	33	16.5
No	167	83.5
Total	200	100

Table 6: Gender wise distribution of hypothyroid cases having DM

DM	Males	Females	Total
Yes	26(13%)	07(3.5%)	33(16.5%)
No	134(67%)	33(16.5%)	167(83.5%)
Total	160(80%)	40(20%)	200(100%)

## DISCUSSION

In this study, 200 cases were selected and were divided into three groups according to age. Maximum cases were in the age group of 29-40 years. Out of 200 subjects, 83 had hypertension of variable intensity. 60 male patients and 23 female patients had hypertension. Out of 160 males, 42% had hypertension and 57% of the female had hypertension. So hypertension was more common in the female than male.

Many studies have showed significant association between hypothyroidism, type 2 diabetes and impaired glucose tolerance test<sup>8</sup>. In these individuals, adipose tissue releases large amounts of non-esterified fatty acid, some pro inflammatory cytokines and glycerol.<sup>2</sup> Other researches showed that hypothyroid cases had 70 --75% increased chance of having hypertension. This may be due to release of immune modulators by adipose tissues<sup>3</sup>.

## CONCLUSION

There is an association of hypertension and DM in hypothyroid patients.

**Conflict of interest:** Nil

## REFERENCES

1. Jafar TH, Chaturvedi N, Pappas G. Prevalence of overweight and obesity and their association with hypertension and diabetes mellitus in an Indo-Asian population. *Canadian Medical Association Journal*. 2006; 175(9):1071-7.
  2. Stagnaro-Green, A., Akhter, E., Yim, C. et al. 2011. Thyroid disease in pregnant women with systemic lupus erythematosus: increased preterm delivery. *Lupus* 20, 690-699.
  3. Alterihy, F.A., Shemran, K.A., Altaee, A.H et al. 2012. The association between thyroid hormones and lipid profile in patients with primary hyperthyroidism. *Med. J. Babylon* 9 (4), 722-727.
  4. Cetinkaya E, Aslan A, Vidinlisan S et al. Height improvement by L-thyroxine treatment in subclinical hypothyroidism. *Pediatr Int*. 2003;45:534-537.
  5. Zimmermann MB, Aeberli I, Melse-Boonstra A et al. Iodine treatment in children with subclinical hypothyroidism due to chronic iodine deficiency decreases thyrotropin and C-peptide concentrations and improves the lipid profile. *Thyroid*. 2009;19:1099-1104.
  6. Stagnaro-Green A, Abalovich M, Alexander E et al. Guidelines of the American Thyroid Association for the diagnosis and management of thyroid disease during pregnancy and postpartum. *Thyroid* 21(10), 1081-1125 (2011).
  7. De Groot LJ, Abalovich M, Alexander EK et al. Management of thyroid dysfunction during pregnancy and postpartum: an endocrine society clinical practice guideline. *J. Clin. Endocrinol. Metab.* 97(8), 2543-2565 (2012).
- Nambiar, V., Jagtap, V.S., Sarathi, V et al. 2011. Prevalence and impact of thyroid disorders on maternal outcome in Asian-Indian pregnant women. *J. Thyroid Res*. 429-97.