VOLUME - 10, ISSUE - 09, SEPTEMBER - 2021 • PRINT ISSN No. 2277 - 8160 • DOI : 10.36106/gjra

Original Research Paper

General Medicine

THYROID DISORDER AND HYPERTENSION

Dr Jitendra Kumar* Senior Resident ,dept. Of Medicine, Rajendra Institute Of Medical Science, Ranchi. *Corresponding Author

Dr Manish narayan Assistant Professor ,Dept Of Medicine ,Esic Medical College And Hospital, Bihat , Patna.

Dr Bindey Kumar Professor , Dept Of Medicine, Rajendra Institute Of Medical Science , Ranchi.

ABSTRACT Arterial hypertension represents a major global health concern; more than one fourth of the population is affected by high blood pressure. Albeit the underlying cause of the disease remains unclear in the vast majority of the cases, ~10% are of secondary origin. Endocrine disorders are common illnesses and some of them may lead to elevated blood pressure, among which thyroid diseases are of high prevalence and often overlooked, especially in mild cases. Overt and subclinical hyper- and hypothyroidism can both lead to (mostly mild) hypertension; however, the underlying mechanisms are only partially understood. The results of clinical studies are often controversial. During the past decades, some genetic mutations in the hypothalamus-pituitary-thyroid axis with cardiovascular consequences were revealed. Atherosclerotic changes resulting from lipid abnormalities due to thyroid dysfunction also affect the vasculature and can cause elevated blood pressure. The review gives a synopsis of our knowledge how thyroid hormone metabolism and functional thyroid diseases affect the cardiovascular system, their negative impact and causative role in the development of hypertension.

KEYWORDS : blood pressure, endocrine, hypertension, hypothyroidism,hyperthyroidism, arterial stiffness, cardiovascular risk

INTRODUCTION

Hypertension affects 26.4% of the global adult population remaining the leading preventable risk factor for premature death and disability worldwide . Besides the majority of patients with primary (essential) hypertension, a subgroup of ~10% of patients is affected by secondary hypertension. Among the underlying diseases several are of endocrine origin and thyroidal impairments represent an even smaller percentage of the secondary hypertension cases; their incidence and form of presentation varies with age and studied population . Hypertension may be the initial clinical presentation for at least 15 endocrine disorders , including overt and subclinical hyperthyroidism and hypothyroidism. The correction of thyroid dysfunction may normalize blood pressure (BP) in most cases, therefore checking thyroid function is essential during the workup for hypertension.

Thyroid dysfunction, both hypo- and hyperthyroidism may increase the risk of hypertension . Hypothyroidism should be considered as a graded phenomenon with a wide variety of clinical conditions from subclinical hypothyroidism to myxedema. Subclinical hypothyroidism is a combination of serum thyrotropin (TSH) above the upper reference limit and normal free thyroxine (fT4) and free triiodothyronine (fT3) levels . This definition is only applicable in the absence of other acute or chronic recent or ongoing severe illness, assuming a stable thyroid function weeks or more before the evaluation and a normally functioning hypothalamic-pituitary-thyroid axis. Overt hypothyroidism is characterized by an elevated TSH, usually above 10 mIU/L, in combination with reduced circulating fT4 and fT3 levels.

Previous studies on the prevalence of hypertension in subjects with hypothyroidism have demonstrated elevated systolic or diastolic BP values, whereas one study has reported no association between hypertension and hypothyroidism .Saito *et al.* found that diastolic BP correlated significantly with thyroxine (T4) and 3,5,3'-triiodothyronine (T3) in slightly hypothyroid females.

AIMS AND OBJECTIVE:

To study a relation between thyroid disorder and hypertension in patients admitted in RIMS, Ranchi

Materials and methodology

This study was done on patients admitted with symptoms and sign of hypothyroidism in medical ward of RIMS ,Ranchi over a period of one year with laboratory finding of abnormal thyroid function . This is a case control study and included 100 patients

INCLUSION CRITERIA

Age – 20 years – 50 years
No other cause of secondary hypertention is present
Normal RFT , Na+ , K+, Ca++ , Mg++
Abnormal thyroid function test

EXCLUSION CRITERIA

Age less than 20 yeays and more than 50 years
Cause of secondary hypertention
Normal thyroid function test

OBSERVATION AND RESULTS:

TSH LEVEL	NUMBER OF PATIENTS	HYPERTENTION
RAISED	100	20% of patients have diastolic BP with normal systolic BP
low	100	30% of patients have systolic BP with normal diastolic BP

DISCUSSION

Hypothyroidism being one of the most common secondary causes of dyslipidemia is clearly associated with an increased risk for atherosclerotic cardiovascular disease owing to its metabolic and hemodynamic effects .

Atherosclerosis develops in patients with hypothyroidism as a consequence of multiple mechanisms including hyperlipidemia, hypercoagulable state, endothelial dysfunction and increased arterial stiffness which leads to arterial hypertension and hyperthyroidism lead to decrease systemic vascular resistance and increase arterial stiffness which lead to hypertention.

CONCLUSION

Alterations of thyroid function may result in changes in blood

pressure values as well as other traditional cardiovascular risk factors, leading to an increased cardiovascular risk, which is mild in most cases, although hyperthyroidism represents a significant elevation of cardiovascular mortality risk. The delayed clinical recognition of subclinical forms of thyroid dysfunction, i.e., subclinical hypo and hyperthyroidism has unfavorable cardiovascular effects. Available data suggest that, concerning cardiovascular risks, early diagnosis, and treatment of even mild forms of functional thyroid disorders might be beneficial in the vast majority of the patients. However, overtreatment should be avoided, and age-related or individual variances of pituitary-thyroid set-points have to be respected.

REFERENCES

1. Kearney PM, Whelton M, Reynolds K, Muntner P, Whelton PK, He J. Global burden of hypertension–analysis of worldwide data. *Lancet*. (2005) 365:217–23. 10.1016/S0140-6736(05)17741-1 [PubMed] [CrossRef] [Google Scholar]
2. Forouzanfar MH, Alexander L, Bachman VF, Biryukov S, Brauer M, Casey D, et al. . Global, regional, and national comparative risk assessment of 79 behavioural, environmental and occupational, and metabolic risks or clusters of risks in 188 countries, 1990-2013: a systematic analysis for the Global Burden of Disease Study 2013. *Lancet*. (2015) 386:2287–323. 10.1016/S0140-6736(15)00128-2 [PMC free article] [PubMed] [CrossRef] [Google Scholar]
3. Charles L, Triscott J, Dobbs B. Secondary hypertension: discovering the underlying cause. *Am Fam Phys*. (2017) 96:453–461. [PubMed] [Google Scholar]
4. Prisant LM, Gujral JS, Mulloy AL. Hyperthyroidism: a secondary cause of isolated systolic hypertension. *J Clin Hypertens*. (2006) 8:596–9. 10.1111/ j. 1524-6175.2006.05180.x [PMC free article] [PubMed] [CrossRef] [Google Scholar]
5. Cappola AR, Ladenson PW. Hypothyroidism and atherosclerosis. *J Clin Endocrinol Metab*. (2003) 88:2438–44. 10.1210/jc.2003-030398 [PubMed] [CrossRef] [Google Scholar]