

ORIGINAL ARTICLE

SERUM THYROID STIMULATING HORMONE CONCENTRATION IN HYPERTENSIVE SUBJECTS: A HOSPITAL BASED OBSERVATIONAL STUDY

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ABSTRACT: AIM: To study serum thyroid stimulating hormones (TSH) in hypertensive patients.

MATERIALS AND METHODS: The present study was conducted in the Postgraduate Department of General Medicine, Government Medical College, Jammu for a period of one year from November 2012 to October 2013. A total of 300 patients with systolic blood pressure ≥ 140 and diastolic blood pressure ≥ 90 were taken up for study after applying proper inclusion and exclusion criterias. A detail clinical history, physical examination and laboratory investigations were done. Serum TSH levels were done using commercial chemiluminescent assays with a reference of .35-5.5Mu/L. All the data was statistically analysed and results were tabulated and drawn. **RESULTS:** Out of 300 patients with hypertension 138(46%) patients were having TSH levels of 3.1-6.0, 83(27.7% patients were having levels of 6.1-9. Some 34(11.3%) patients having 9.1-12 and 17(5.7%) patients having levels in the range of 12.0-16.0. **CONCLUSION:** Thus the prevalence of thyroid dysfunction is high among hypertensive patients and it is fruitful to investigate for thyroid disease to prevent further complications related to cardiovascular system.

KEYWORDS:Thyroid Stimulating Hormones, Hypertension.

INTRODUCTION: The thyroid gland produces thyroxine(T₄) and tri-iodothyronine(T₃). TSH is secreted by anterior pituitary and plays a pivotal role in control of thyroid axis and serves as the most useful marker of thyroid hormone action. Euthyroidism is defined as a TSH within the reference range of . 35-5.5Mu/L, sub clinical hypothyroidism is a disorder characterised by elevated serum TSH levels despite normal free thyroid hormone (FT₃ and FT₄) values.⁽¹⁾ Thyroid hormones influence the cardiovascular system and thyroid dysfunction may increase the risk of cardiovascular disease.⁽²⁾ Previous studies have shown that hypo - and hyperthyroidism increase the risk of hypertension and hypertension related to hypothyroidism can be reversed after T₄ treatment.^(3,4,5) Clinical hypothyroidism can raise the level of blood pressure.

The increment of systemic vascular resistance may be the main mechanism in clinical hypothyroidism patients. Serum T₃ can act directly on the arterial smooth muscle cells of blood vessels to cause vasodilatation.⁽⁶⁾ It was reported that the prevalence of hypertension in the subclinical hypothyroidism patients group was significantly higher than that in the normal control group.⁽⁷⁾ With the increasing awareness of subclinical forms of hyperthyroidism and hypothyroidism and increasing concern about thyroid disease in India, routine health examinations that include thyroid function are increasingly popular. The present hospital based study is done to assess the relationship between TSH concentration and hypertension.

STUDY DESIGN: The present study was conducted in the Postgraduate Department of General Medicine, Government Medical College, Jammu for a period of one year from November 2012 to

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October 2013. The protocol was reviewed and approved by Ethical Committee of the institute. The patients were included only on giving written consent after full explanation of the nature and purpose of the study. Details of clinical history, physical examination and laboratory investigations were recorded as per the proforma.

EXCLUSION CRITERIA:

1. Subjects with age <18 years and >70 years.
2. Subjects affected with chronic ailments.
3. Subjects with chronic renal failure.
4. Subjects with a personal history of thyroid disease or taking medication affecting thyroid functions.
5. Pregnant and lactating women.
6. Subjects with diabetes and recently diagnosed with thyroid dysfunction.
7. Obese subjects with BMI>34kg/m.²

Measurement of blood pressure was recorded using the dormant arm with sphygmomanometer making the patient first rest for 30 minutes and then serum TSH levels were recorded.

RESULTS AND DISCUSSION: Out of 300 patients with hypertension 138(46%) patients were having TSH levels of 3.1-6.0, 83(27.7% patients were having levels of 6.1-9. Some 34(11.3%) patients having 9.1-12 and 17(5.7%) patients having levels in the range of 12.0-16.0. The results of this study showed that there was a positive and linear association between serum TSH and systolic and diastolic blood pressure which was in accordance to the previous study.^(8,9,10)

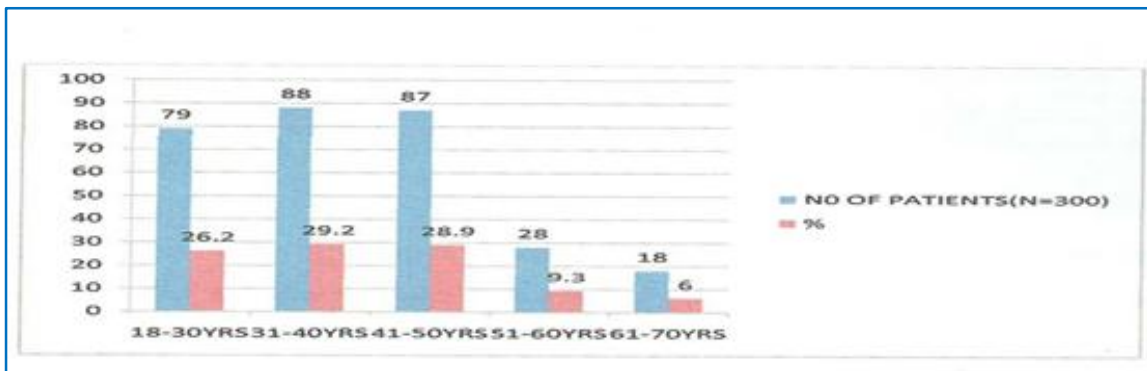


Fig. 1: Age-wise Distribution of Patients with Hypertension (n=300)

Tsh	Number of Patients	Percentage
1-3	28	9.3
3.1-6	138	46
6.1-9	83	27.7
9.1-12	34	11.3
12.1-16	17	5.7

Table 1

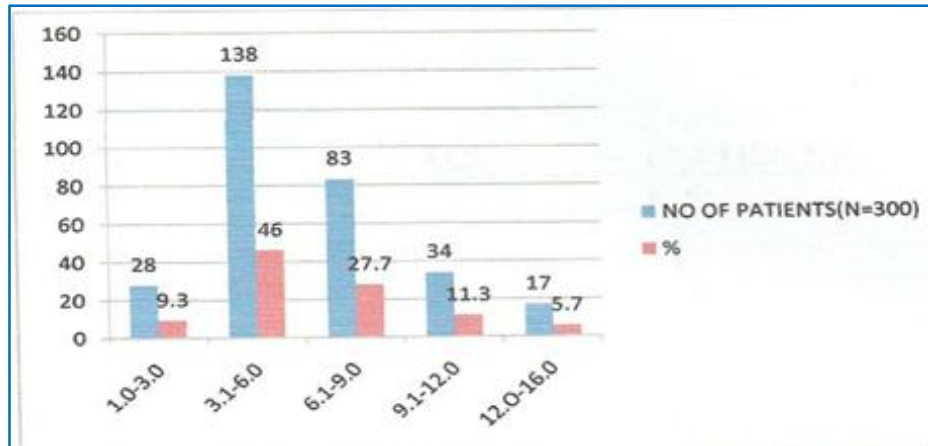


Fig. 2

Various studies have demonstrated effects of thyroid replacement therapy on arterial blood pressure in patients with hypertension and hypothyroidism ⁽³⁾. This was in consistency with our study.

CONCLUSION: Thus the prevalence of thyroid dysfunction is high among hypertensive patients therefore it is mandatory and fruitful to investigated for thyroid disease to prevent further complications.

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