

**Original Research Paper****Evaluation and Assessment of serum prolactin levels in Hypothyroidism**

Authors

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Abstract

Introduction: *Hyperprolactinemia is one of the most common endocrine disorder and has been seen with variable levels in patients of thyroid disorders. We decided to determine the relationship between hyperprolactinemia and hypothyroidism.*

Material and Methods: *A total of 160 subjects coming to General Medicine OPD for thyroid related problems were selected for the study and their serum T3, T4, TSH and Prolactin levels were assayed by enzyme linked fluorescent assay (ELFA) technique using Minividas auto analyzer from Biomerieux, France.*

Results: *TSH level was significantly higher in female as compared to males subject & there is a positive Correlation of serum TSH levels with prolactin*

Conclusion: *In our study we have found that level of serum prolactin rises positively to the increasing TSH level in hypothyroid patients.*

Keywords: *Hypothyroidism, Prolactin & TSH.*

Introduction

Prolactin (PRL), 198 amino acid polypeptide secreted by anterior by pituitary. Its secretion is regulated by various factors like dopamine which is secreted from the hypothalamus.

There are some other factors such as vasoactive inhibitory peptide (VIP) and thyrotropin releasing

hormone (TRH) which enhance the secretion of prolactin.^[1]

Among the various endocrine disorders related to hypothalamic pituitary axis, commonest one is hyperprolactinemia. In the year 1988, for the first time increase in the levels of serum prolactin was reported in woman with thyroid disorder.^[2]

There are various factors which lead to deranged prolactin secretion in patients having thyroid disorders like hypothyroidism. Development of the endocrine disorder hypothyroidism causes the increase in the secretion of central TRH hormone, results in the stimulation of prolactin secretion.^[3]

The role of TRH in releasing TSH from the anterior pituitary gland is well known but its role in the stimulation of prolactin secretion from the anterior pituitary is still disputed.^[3, 4]

Very few studies have been conducted to find out the relationship of prolactin with thyroid dysfunctions in this region of India. Considering feasibility to conduct the study and availability of patients in our set-up, we have undertaken the study to find out the correlation of prolactin and thyroid disorder.

Material and Methods

The present study was undertaken in the Department of Biochemistry of RKDF medical college, Jatkhedhi, Bhopal, Madhya Pradesh. After approval by ethical committee between August 2015 to July 2016.

A total of 160 patients attending to General Medicine OPD for thyroid related problems were selected for the study.

Study subjects were assessed for thyroid disorder i.e. hypothyroidism and its relation with the serum prolactin level. T3, T4, TSH and prolactin were analyzed by enzyme linked fluorescent assay (ELFA) technique using minividas auto analyzer from Biomerieux, France. The data was analyzed using SPSS-17 software package. Mean and standard deviation (mean± SD) were applied to the research data.

Inclusion Criteria

Newly diagnosed patients of hypothyroidism were included in the study. The clinical history was taken from all the patients and the details were recorded in the predesigned performa.

Exclusion Criteria

Patients having high levels of serum prolactin, pregnant women, lactating mothers and patients on antidepressant drugs were excluded.

Results

Thyroid hormone profile of the study subject participating in the study is shown in table 1, TSH level is high in female subjects as compared to the males.

Table 1: Comparison of T3, T4 & TSH levels (mean± SD) in study subject (Males & Females)

Gender	Hormonal level		
	T3(nmol/L)	T4(nmol/L)	TSH (mIU/L)
Male	1.89±0.7	86.98±15.7	2.66±2.3
Female	1.33±0.6	84.6±32.8	3.96±2.1

The mean of age group TSH and prolactin level for subject (table2), which shows that both the level of TSH and the level of prolactin are higher in the study subjects (male & female)

Table 2: Shows mean ± SD of various parameters of subjects (patients having Hypothyroidism)

Parameters	Cases (mean±SD)
Age (year)	34.15±6.18
TSH(mIU/L)	8.31±2.5
Prolactin(ng/ml)	37.96±3.88

The Pearson's correlation coefficient was analyzed for serum prolactin and TSH (table3)

Table-3: Correlation between serum prolactin and TSH levels in study subjects

	TSH	
	R	p
Prolactin	0.677	0.000

Showed that level of prolactin in study subjects is correlating significantly and positively with the TSH level.

Discussion

In present study, the role of serum prolactin levels was evaluated in males and females study patients. TSH level was significantly higher in female patients as compared to males.

This is in accordance with a study conducted by lunenfeld et al^[5], which showed that the mean serum TSH levels were significantly higher in female participants.

Our study is in accordance with the study conducted by researchers^[6] who concluded in their study that there is increased secretion of

prolactin in patients of hypothyroidism. Another study suggested that perhaps estrogen caused to increase prolactin response to TRH that caused higher prolactin level in woman than men^[7] which is in accordance to our study.

Notsu et al^[8], assessed prolactin levels in 15 healthy control and in 74 hashimoto's thyroiditis patients of which 42 were euthyroid, 18 had subclinical and 14 had overt hypothyroidism and prolactin was found to be elevated in hypothyroid patients as compared to of the euthyroid patients.

Das et al^[9] in their research which is conducted in the eastern India also found that the significant increased in the serum prolactin level in the patients suffering from hypothyroidism. Nath et al.^[10] found a positive correlation between serum TSH and prolactin level among the females subject in the northeast part of India kaur et al^[2] in their research concluded that the serum prolactin level rises in relation to rising level of serum TSH in the patients suffering from hypothyroidism.

In our study we have found the similar results with different studies done in other parts of India and world also. It is found that there is a positive correlation of serum TSH levels with prolactin.

Our study was confined to a limited number of period and patients.

Further research may determine whether the treatment of hypothyroidism will be benefitted in preventing adverse health outcomes such as infertility and deranged menstrual cycle. We hope to extend our study to a larger cross section of subject considering their occupation, sex, level of stress, geographic region and various etiological factors like auto immunity and drugs etc.

Conclusion

This is the first study of its kind in this part of India, with respect to thyroid disorders (hypothyroidism) and serum prolactin levels. This study demonstrate that the rise in the levels of serum prolactin is directly related to TSH level in the patients having hypothyroidism

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