



A STUDY OF THYROID PROFILE IN PATIENTS OF UNIPOLAR AND BIPOLAR DEPRESSION

Biochemistry

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ABSTRACT

Background and Objectives: Dysfunctional hypothalamus-pituitary-thyroid (HPT) axis have been documented in patients with depression. Condition of both excess and insufficient thyroid hormones can cause mood abnormalities including depression. Thyroid dysfunction is a common feature in depression, with mixed type of response. Unipolar and bipolar depressions are also related differently in consideration to thyroid status. This study comprises of assessment of the thyroid disorder prevalence in depressive patients and comparative analysis among unipolar and bipolar groups. **Result:** Gender wise males were dominant with majority in bipolar group in the younger age group. Most of the cases were normal with few hyperthyroid and hypothyroid cases. Bipolar group comprised the majority of overt hyperthyroid, whereas unipolars were more in the subclinical hypothyroid category. **Conclusions:** This study concludes that differences exist in the thyroid response among the unipolar and bipolar depression group, more numbers of hypothyroidism in unipolar group.

KEYWORDS

Depression, Thyroid function disorder, Unipolar, Bipolar

INTRODUCTION

Depression is a common mental disorder. Globally, it is estimated that 5.0% of adults suffer from depression. Depression is a leading cause of disability worldwide and is a major contributor to the overall global burden of disease. The link between thyroid dysfunction and depression has long been recognised. Dysfunctional hypothalamus-pituitary-thyroid (HPT) axis have been documented in patients with depression. Depression is a common mental disorder that presents with depressed mood, loss of interest or pleasure, decreased energy, feelings of guilt or low self-worth, disturbed sleep or appetite, and poor concentration. Moreover, depression often comes with symptoms of anxiety. These problems can become chronic or recurrent and lead to substantial impairments in an individual's ability to take care of his or her everyday responsibilities. In a worst case scenario, depression can lead to suicide. Bipolar affective disorder typically consists of both depressive and manic episodes separated by periods of normal mood. Manic episodes involve elevated mood and increased energy, resulting in decreased need for sleep, pressure of speech and over-activity.⁽⁴⁾

Condition of both excess and insufficient thyroid hormones can cause mood abnormalities including depression, which can adequately be reversed by thyroid treatment. Overt thyroid disease is rare in depression, 1 to 4% found to be hypothyroid, while subclinical hypothyroidism occurs in 4% to 40% of these patients.

This study was undertaken with the objective of assessing thyroid hormone profile of the patients with unipolar and bipolar depression. It also aimed to determine the prevalence rate of thyroid disorders associated with depressive disorders.^{(1),(2)}

MATERIAL AND METHOD

This is a cross sectional study conducted from May 2022 to October 2022 in tertiary care hospital, Ahmedabad. Both unipolar and bipolar as per DSM-V (Diagnostic and Statistical Manual of Mental Disorders). A total of 50 depression patients, 37 unipolar and 13 bipolar cases, were included.

Inclusion Criteria:

Patients of the age group 18-65 years, irrespective of their genders, diagnosed of depression both unipolar and bipolar as per DSM-V criteria, were included.

Exclusion Criteria:

Patients with diabetes, hypertension, renal, liver disorders, infection, autoimmune disorder, other psychiatric disorders, drugs such as antipsychotics, OCP, substance use, anti thyroid drugs and those who are on hormone replacement, pregnant and lactating subjects were excluded.

BIOCHEMICAL ANALYSIS

For analysis of serum TSH, serum Free T3 and serum Free T4, after taking informed consent of all participants and under all aseptic measures, 5 ml venous blood was collected in clot activator serum vacuttes from all the patients and control group by venipuncture. Serum was separated by centrifugation and analysed on fully auto immunoassay analyzer Beckman Coulter uniceL DxI 600 using the chemiluminescent immunoassay (CMIA) technology. At Biochemistry Laboratory, tertiary care hospital Ahmedabad. Commercially available ready to use reagent kits were used estimation of various parameters.

DATA ANALYSIS

The Master chart was prepared using Excel 2007 software. Data was statistically Analyzed using Chi-square test, which evaluated the differences of various parameters within groups on the basis of p value.

RESULT

This Study shows thyroid function abnormalities in Depression. The study consisted of 37 unipolar and 13 bipolar depression cases, with male consisting 58% of the total. Representation in the unipolar group was almost equal for both genders, whereas in bipolar group 84.62% were male. Pearson chi-square test revealed, male were significantly higher in the bipolar group in contrast to female comprising the unipolar group ($p < 0.05$). However, age categories did not give any significant variation between unipolar and bipolar group (Table 1).

Regarding the thyroid status, total 46 cases were euthyroid, among which 58.7% were male, 26.08% cases were bipolar and 63.04% are in the productive age group of 20-40 years.

Table 1: Frequency Distribution Of General Characteristics And Depressive Characters.

Variable	Frequency (%)			Chi-square (p-value)
	Depressive characters	Unipolar depression	Bipolar depression	
Gender	Male	18 (62.07%)	11 (37.93%)	p<0.05
	Female	19 (90.47%)	2 (9.53%)	
Age (years)	<20	4 (80%)	1 (20%)	p>0.05
	20-40	25 (78.12%)	7 (21.88%)	
	>40	9 (64.28%)	5 (35.72%)	

Majority of the subclinical hypothyroid cases were of productive age group, however, common in unipolar group. Subclinical hypothyroidism was almost equal among male and Female. (Table 2).

Of the total cases 92% were euthyroid cases, followed by subclinical hypothyroidism (4%), subclinical hyperthyroidism (2%) and hypothyroidism (2%) (Table 2). Among male 93.1% were euthyroid, followed by subclinical hypothyroidism (3.44%) and subclinical hyperthyroidism (3.44%). Females consist majority of euthyroid (90.48%), followed subclinical hypothyroidism (4.76%), and hypothyroidism (4.76%). Unipolar cases were more euthyroid (91.89%) followed by subclinical 1 hypothyroidism (5.4%), and hypothyroidism (2.7%). Bipolar cases euthyroid (92.30%) follow (Table 2).

Age wise, in < 20 years euthyroids were the majority (100%). In age group 20-40 years, euthyroid 9.62%, followed by subclinical hypothyroidism (6.25%) and subclinical hyperthyroidism (3.13%). Similarly, in the age group >40 years euthyroid s comprised the majority (92.86%), followed by hypothyroidism (7.14%) (Table 2).

However, there was no any significant association of various characteristics as gender, age and depressive character with thyroid function status among the patients with depression.

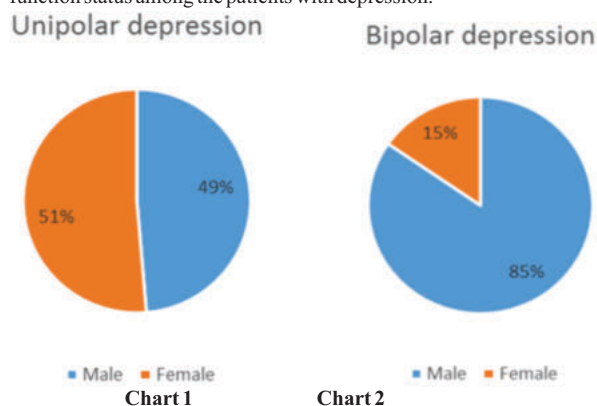


Figure 1: Chart 1 showing Prevalence of Unipolar depression is almost similar in both gender, whereas Chart 2 shows Prevalence of bipolar depression is more in male cases.

DISCUSSION

From this study Prevalence of depression was found more common among male cases. Comparatively more unipolar cases were female and bipolar were male, which is in concordance with few other clinic-based studies but contradictory to many other studies which were basically population based. ⁽³⁾

Even minute decrease in available thyroid hormone might be expected to produce depressive symptoms directly, on the basis of basic and clinical data on the role of the thyroid axis in mood regulation. In addition, decrease in thyroid function cause decrease in energy, concentration, mood, and drive, which might produce depression on the basis of loss of function, attribution, or other mechanisms. ⁽⁶⁾

Table 2: Cross Tabulation Of General Characteristics And Thyroid Status

Variable	Frequency (%)						Chi-square (p-value)
	Thyroid status	Euthyroid	Hypothyroid	Hyperthyroid	Subclinical Hypothyroid	Subclinical Hyperthyroid	
Gender	Male	27 (93%)	0	0	1 (3.44%)	1 (3.44%)	p>0.05
	Female	19 (90.48%)	1 (4.76%)	0	1 (4.76%)	0	
Depressive character	Unipolar	34 (91.89%)	1 (2.7%)	0	2 (5.4%)	0	p>0.05
	Bipolar	12 (92.30%)	0	0	0	1 (7.70%)	

Age(years)	<20	5 (100%)	0	0	0	0	p>0.05
	20-40	29 (90.62%)	0	0	2 (6.25%)	1 (3.13%)	
	>40	13 (92.86%)	1 (7.14%)	0	0	0	

Among the depression cases, 92% were normal, as evidenced in almost all studies carried so far in thyroid status and depression. 4% cases were of Subclinical hypothyroidism, which is similar to the findings of sham et al, 2014 but bit less than the findings of Hazarika J et al, 2017. Overt Hypothyroidism was almost with earlier Studies. Prevalence of Subclinical Hypothyroidism is higher (4%) in unipolar depressive patients. ^{(1),(5),(6)}

Comparison of the thyroid profiles among unipolar and bipolar reveals that overt hypothyroidism was more prevalent among unipolar (2.7%) compared to bipolar group. The distribution of subclinical hypothyroidism was also more (5.4%) among unipolar, than to bipolar. However, Subclinical hyperthyroidism was less in unipolar group compared to bipolar group (7.69%).

It confirmed that there might be higher prevalence of thyroid dysfunction in patients with both unipolar and bipolar depression and that those two diagnostic groups differed in terms of frequency and direction of thyroid dysfunctions.

There were certain limitation of our study, that we had no data of subtypes of bipolar disorders. The study was single Hospital based study and consisted of a limited numbers of newly diagnosed depressed subjects. Further studies with larger number of depressed subjects will be beneficial in elucidating the relationship between thyroid profile and depression, so that TFTs can be considered as an integral part of evaluation of newly depressed subjects.

CONCLUSION

The observations made in this study, propose that thyroid hormones play an important role in neuropsychiatric manifestations, such as mood disturbances. This study concludes that differences exist in the thyroid response among the unipolar and bipolar depression group, more numbers of hypothyroidism in unipolar group. The diagnosis of subclinical or clinical hypothyroidism must be considered in every patient with depression. Thus follow-up of these patients with regard to the development of diseases may be beneficial.

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