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ROLE OF PROLACTIN AND THYROID HORMONE IN PSYCHIATRIC DISORDERS

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***ABSTRACT**--The psychiatric disorder is classified based on subjective behavioural, mental criteria, which are diagnosed clinically. So, it is difficult to diagnosis and treatment for clinicians. By using of biomarkers; can improve to help and diagnosis disorder.[1] Prolactin (PRL) is known versatile hormones. Due to its important role it is considered in the modulation of the stress response, during pregnancy and lactation. The creation of highly sensitive immunometric assays for thyroid-stimulating hormone (TSH) has provided a clearer understanding of thyroid hormone control but has paradoxically led to the kaleidoscopic nature of the thyroid function test variability in hospitalized patients with psychiatric disorder.Role of Prolactin and Thyroid Hormone (T3, T4, TSH) in Psychiatric Disorders.The present study includes total 90 subjects that include 30 healthy individual, 30 Mild Depressive patients and 30 Severe Depressive Patients. Blood samples were collected from the subjects were obtained for Prolactin and Thyroid hormone (T3, T4, TSH) estimation, from Psychiatric Wards. The level of prolactin was statically significant in depressive cases. The mean level of TSH was statistically nonsignificant but the level of total T3 was and total T41 was statistically significant as compared to the controls and that the difference was statistically significant. As per our study findings a research strategy for prolactin studies have important role in the identification of neurotransmitters involved in psychological disorders. Thyroid dysfunction thyroid dysfunction was more commonly seen in patients suffering from Anxiety disorders, Panic disorders, Social phobia, Depression, Bipolar disorders compared to mood disorders and normal subjects. Finally, the inclusion of the prolactin and thyroid profile test among the psychiatric patients may be helpful in the proper management of the cases for clinician.*

***KEYWORDS**--anxiety, depression, social phobia, prolactin, TSH, T3 and T4*

I. INTRODUCTION

The psychiatric disorder is classified based on subjective behavioural, mental criteria, which are diagnosed clinically. So, it is difficult to diagnosis and treatment for clinicians. By using of biomarkers; can improve to help and diagnosis disorder.[1] Mental illness are health problems involving changes in mood, emotion, thinking and

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behaviour. Mental illnesses are associated with problems functioning in social, work, addiction of internet in day to day activities that adversely affect and family activities[2].

There are many different categories of mental disorder, like Anxiety disorders, Panic disorders, Social phobia, Depression, Bipolar disorders and many different facets of human behaviour and personality that can become disordered.

More knowledge of what depression is, and how it can be treated, can help reduce the social and psychological stigma associated with the disorder and help lower the disease-related morbidity and mortality. If we can every suicide death in depression, we will be successful[3]. In clinical practice, prospective studies are needed to explore the clinical significance of macrocytosis among patients with depression and psychosis[4].

Prolactin is a protein in nature, and it is synthesized and secreted by the anterior pituitary gland. Dopamine and serotonin are play important role in the control of its secretion. In recent years prolactin has been the main subject of much psycho-endocrine research. Prolactin (PRL) is known versatile hormones. Due to its important role it is considered in the modulation of the stress response, during pregnancy and lactation. In the brain, PRL acts as a neuropeptide to promote physiological responses related to reproduction, stress adaptation, neurogenesis, and neuroprotection.[5] As per some authors review the implications of the main results relate to schizophrenia, affective disorders, premenstrual syndrome, and disorders related to alcohol and discuss its possible usefulness to clinicians. [6,7]

Thyroid hormones play a major role in the development of organ, in metabolism and the functioning. Numerous multidisciplinary studies documented a high prevalence of mood disorders, particularly depression, among the patients with thyroid dysfunction. Although the role which is played by the thyroid hormones in the pathophysiology of mental disorders is not clear, it has been suggested that small changes in the thyroid hormone levels, even within the normal range, may be related to the altered brain function in depression and cardiovascular complications.[8,9]

II. MATERIAL AND METHODS

The study is conducted in the Department of Biochemistry and Department of psychiatry at Datta Meghe Medical College, Shalinitai Meghe Hospital and Research centre, Wanadongri, Hingna, Nagpur in collaboration with Jawaharlal Nehru Medical College, AVBRH (Datta Meghe Institute of Medical College) Sawangi, Wardha, Maharashtra.

Mild and Severe Depressive Patients for Group-2 and 3 respectively are enrolled from Department of Psychiatric ward, Psychiatric OPD and for healthy individuals Group-1 from general population as well as relatives of patients in Medicine OPD. Total 90 subjects were enrolled and grouped as mentioned ahead.

5ml of blood is collected from each subject by venepuncture with standard blood collection technique in a plane vial for serum separation. Serum is used for Prolactin, Total T3, Total T4 and TSH estimation. Prolactin was estimated by One-step immunoenzymatic ("sandwich") assay method[10], T3 was estimated by Competitive binding immunoenzymatic assay method[11], T4 was estimated by Competitive binding immunoenzymatic assay method[12] and TSH was estimated by Two-site immunoenzymatic ("sandwich") assay method. [13]

III. OBSERVATION AND RESULTS

Table 1: Age Wise Distribution of Depressive Cases

AGE GROUP (YRS.)	MILD DEPRESSIVE	SEVERE DEPRESSIVE	TOTAL
20-29	7(23.33%)	7(23.33%)	14(23.33%)
30-39	9(30%)	11(36.67%)	20(33.33%)
40-49	9(30%)	9(30%)	18(30%)
50-59	5(16.67%)	3(10%)	8(13.33%)
TOTAL	30(100%)	30(100%)	60(100%)

Table no 1 shows the age wise distribution of patients. Out of the 60 patients, 30 patients had mild and 30 had severe grades of depression. There were more depressive patients (n = 20) in the 30-39 yrs age group. 23.33 % (n=7) of the mild depressive cases were seen in the 20-29 years age group and 30 % (n=9) were seen both the 31-39- and 40-49-years age group. 16.67% (n=5) of the mild depressive cases were seen in the 50-59 years age groups. The 30-39 years age group included most the severe cases, i.e. 36.67 % of the cases (n=11). 23.33 % (n=7) of the severe depressive cases were seen in the 20-29 years age group. The 40- 49 years age group included 30 % (n=9) of the severe depressive cases and 10 % (n=3) of the severe depressive cases were seen in the 50-59 years age group.

Table 2: Comparison of Thyroid Profile between Controls and Mild and Severe Depressive Cases

PARAMETERS	CONTROL GROUP	DEPRESSIVE CASES	
		MILD DEPRESSIVE	SEVERE DEPRESSIVE
PROLACTIN	14.06±4.52	29.45±9.56	42.19±12.73***
TSH	3.33±0.59	3.40±1.42#	2.96±2.50#
TOTAL T3	1.52±0.16	1.32±0.12**	0.97±0.19***
TOTAL T4	6.90±1.93	8.28±0.75	9.28±1.72***

non-significant; ** = $p < 0.01$; *** = $p < 0.001$

The level of prolactin in control group was 14.06±4.52 and in mild and severe cases were 29.45±9.56 and 42.19±12.73 respectively. It showed statically significant in depressive cases. The mean value of TSH was 3.33±0.59 mIU / L in the controls. There was no statistically significant difference between the mean value of TSH in the control and the depressive groups (Mild: 3.40±1.42# and severe: 2.96±2.50#). The mean value of Total T3 was 1.52 ± 0.16 ng/mL in the controls. It was evident that the mean levels of Total T3 were at a lower range in the mild (1.32± 0.20 ng/mL) and the severe depressives (0.97 ± 0.19 ng/mL) as compared to the controls and that the difference was statistically significant ($p < 0.01$). The mean value of Total T4 was 6.90 ± 1.93 µg/ dL in the controls. It was observed that the mean levels of Total T4 were elevated in the mild (8.28 ± 0.75 µg/dL), and the

severe depressives (9.28 ± 1.72 µg/dL) as compared to the controls and that the difference was statistically significant ($p < 0.01$).

IV. DISCUSSION

In our study there was no statistically significant difference between the mean value of TSH in the control and the depressive groups (Mild: 3.40±1.42 and severe: 2.96±2.50). **Joffe and Levitt (1990)**[14] found significantly lower total triiodothyronine (T3) and significantly higher thyroid stimulating hormone (TSH) in patients with psychotic depression as compared to nonpsychotic depression.

Mahendra T. Kamble et al (2013)[7] The mean value of the Thyroid Stimulating Hormone (TSH) in our study did not show a significant difference between the depressive cases and the control group.

The level of total T3 and Total T4 is significantly higher in mild and severe depressive patients as compared to control group. Our study is supported by the **Vinod Kumar Chopra et al (2001)**[15]**. Mahendra T. Kamble et al (2013)**[7] showed, the mean value of total triiodothyronine (T3) was significantly lower in the depressive patients as compared to that in the controls. This agreed with the findings of many previous studies which were done. We also found elevated levels of total T4 in the depressive cases. **Vinod Kumar Chopra et al (2001)**[15] The most significant finding of the study was elevated levels of total thyroxin (T4) in the depressive patients in the acute phase of illness as compared to healthy controls. This agrees with most of the earlier studies.

V. CONCLUSION

As per our study findings a research strategy for prolactin studies have important role in the identification of neurotransmitters involved in psychological disorders. Such psychiatric patients desperately need early detection and adequate assistance to avoid more suicides[16].

Thyroid dysfunction thyroid dysfunction was more commonly seen in patients suffering from Anxiety disorders, Panic disorders, Social phobia, Depression, Bipolar disorders compared to mood disorders and normal subjects. Finally, the inclusion of the prolactin and thyroid profile test among the psychiatric patients may be helpful in the proper management of the cases for clinician.

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