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Original Article

Occurrence of thyroid dysfunction in patients with psychiatric disturbances - A hospital based retrospective study

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Abstract:

Introduction: The TFT results of psychiatric patients are frequently abnormal. Though the inter relation of neural networks & the interference of the drugs are known, our quest is to examine whether any pattern exist in TFT results of psychiatric patients.

Methods: All patients belonging to the Psychiatry department of a tertiary care Hospital in Coimbatore for whom thyroid functions are evaluated during the period for six months period, are included in this study. Ethics clearance was obtained from Institutional Human Ethics Committee. Details of patients including age, gender, ICD10 based diagnosis, TFT results, treatment given and associated co-morbidities were noted from their medical records.

Results:

- Age distribution is mainly between 18 to 70 years.
- Most of the patients (93%) belong to 3 groups – F3 69%, F2 14% & F4 10%.
- Female predominance is seen in F2, F3 & male predominance in F1, F4.
- Dysthyroid status is common in F3(Hypo 14%, Hyper 6%) and F2 (Hypo 15% & Hyper 2%) as shown in Figs: 5,6 & 7.
- Interestingly, only 1 out of 43 patients on Lithium had TSH above 10mIU/Ml.

Conclusion: Form this study , we conclude , in F3 mood disorders both hypothyroidism and hyperthyroidism plays a confounding role. F2 Schizophrenia is associated with hypothyroidism and Lithium doesn't affect thyroid status much.

Keywords: Thyroid hormones, Lithium

Introduction

The TFT results of psychiatric patients are frequently abnormal. Though the inter relation of neural networks & the interference of the drugs are known, our quest is to examine whether any pattern exist in TFT results of psychiatric patients. The psychiatric disturbances which accompany hyperthyroidism and hypothyroidism, the two commonest thyroid disorders, mimic mental illness. People with an overactive thyroid may exhibit marked anxiety and tension, emotional liability, impatience and irritability, distractible over activity, and fluctuating depression with sadness and problems with sleep and the appetite. In extreme cases, they may appear schizophrenic, losing touch with reality and becoming delirious or hallucinating. An underactive thyroid can lead to progressive loss of interest and initiative, slowing of mental processes, poor memory for recent events, fading of the personality's colour and vivacity, general intellectual deterioration, depression with a paranoid flavor, and eventually to dementia and permanent harmful

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effects on the brain. In instances of each condition, some persons have been wrongly diagnosed, hospitalized for months, and treated unsuccessfully for psychosis.[1]

On the other hand, psychiatric illness through the neuronal interaction could affect the hypothalamus-hypophysis-thyroid axis. As a consequence of this, there is an increase in TRH, TRH- stimulated thyrotropin blunting, nocturnal TSH blunting and relative increase in iodothyronines. Due to deficient thyroid hormones secretion, presynaptic nor-adrenaline release is increased & post-synaptic β-adrenergic receptor number is decreased. Hypothyroidism is conversely associated with decreased β receptor number. As TRH is increased, its normal function in regulating neuronal excitability gets affected. Lithium increases antithyroid antibodies, interferes with the production of thyroid hormones by inhibiting iodine uptake & iodination and release of T3 & T4. It also interferes with adenylate cyclase and blocks the effect of thyroid stimulating hormone.[2]

Aim and objective:

Aim

To find out the relation between psychiatric illness (ICD 10 classified) and thyroid function (TSH, FT4, FT3).

Objectives

1. To find the frequency of hypo and hyper thyroidism in different classes of psychiatric illness.
2. To look for any pattern of TFT results in psychiatric illness
3. To find the association of lithium therapy on thyroid status

Materials and method:

All patients belonging to the Psychiatry department in a tertiary care Hospital in Coimbatore for whom thyroid functions are evaluated for six months period, are included in this study. Ethics clearance was obtained from Institutional Human Ethics Committee. Details of patients including age, gender, ICD10 based diagnosis, TFT results, treatment given and associated co-morbidities were noted from their medical records. Our clinical Biochemistry laboratory uses Electrochemilumunescence method (Cobas 6000) for estimating TSH, FT3 and FT4. IBM SPSS is used for statistical analysis.

ICD-10 classification of psychiatric illness is as follows: [3]

F0	ORGANIC DISORDERS, , INCLUDING SYMPTOMATIC, MENTAL DISORDERS
F1	MENTAL & BEHAVIUORAL DISORDERS D.T PSYCHOACTIVE SUBSTANCES
F2	SCHIZOPHRENIA
F3	MOOD DISORDERS
F4	NEUROTIC & SOMATOFORM DISORDERS
F5	BEHAVIOURAL SYNDROMES
F6	DISORDERS OF PERSONALITY & BEHAVIOUR IN ADULTS
F7	MENTAL RETARDATION
F8	DISORDERS OF PSYCHOLOGICAL DEVELOPMENT

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F9	EMOTIONAL & BEHAVIOURAL DISORDERS WITH ONSET IN CHILDREN & ADOLESCENCE
E0	ENDOCRINE & METABOLIC DISORDERS
G0	DISEASES OF NERVOUS SYSTEM

Results:

Thyroid function test was performed in 327 patients of Psychiatric department were included and analyzed in the study.

FIG:1 AGE DISTRIBUTION IN DISEASE CLASSIFICATION

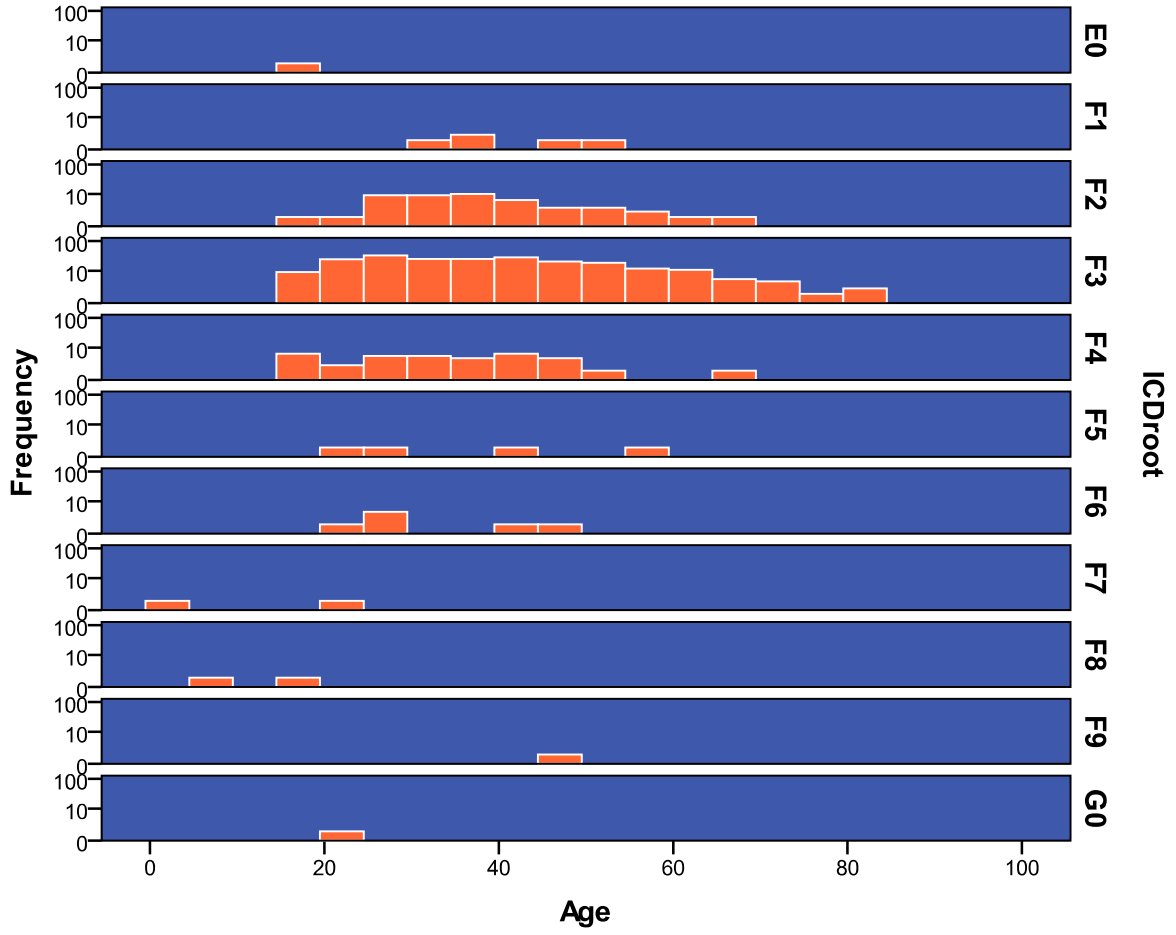

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FIG:2 SEX DISTRIBUTION IN DISEASE CLASSIFICATION

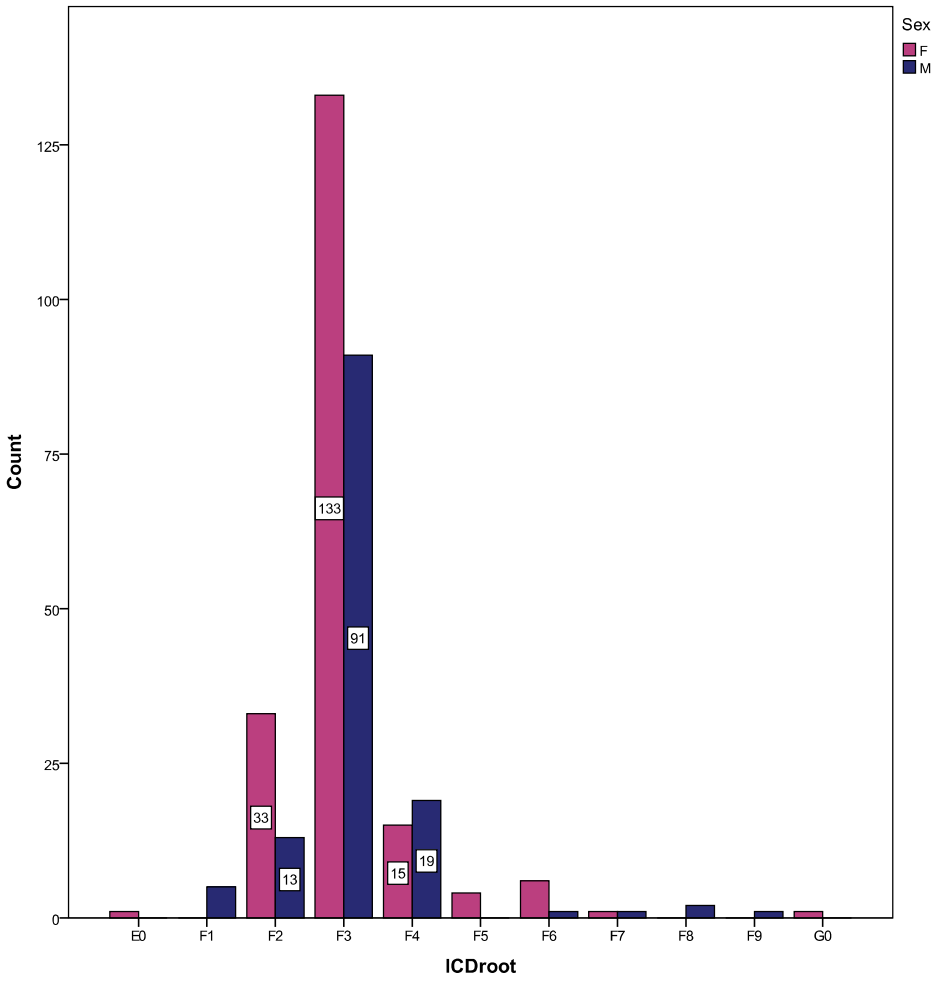

FIG:3 THYROID STATUS IN PSYCHIATRIC DISORDERS

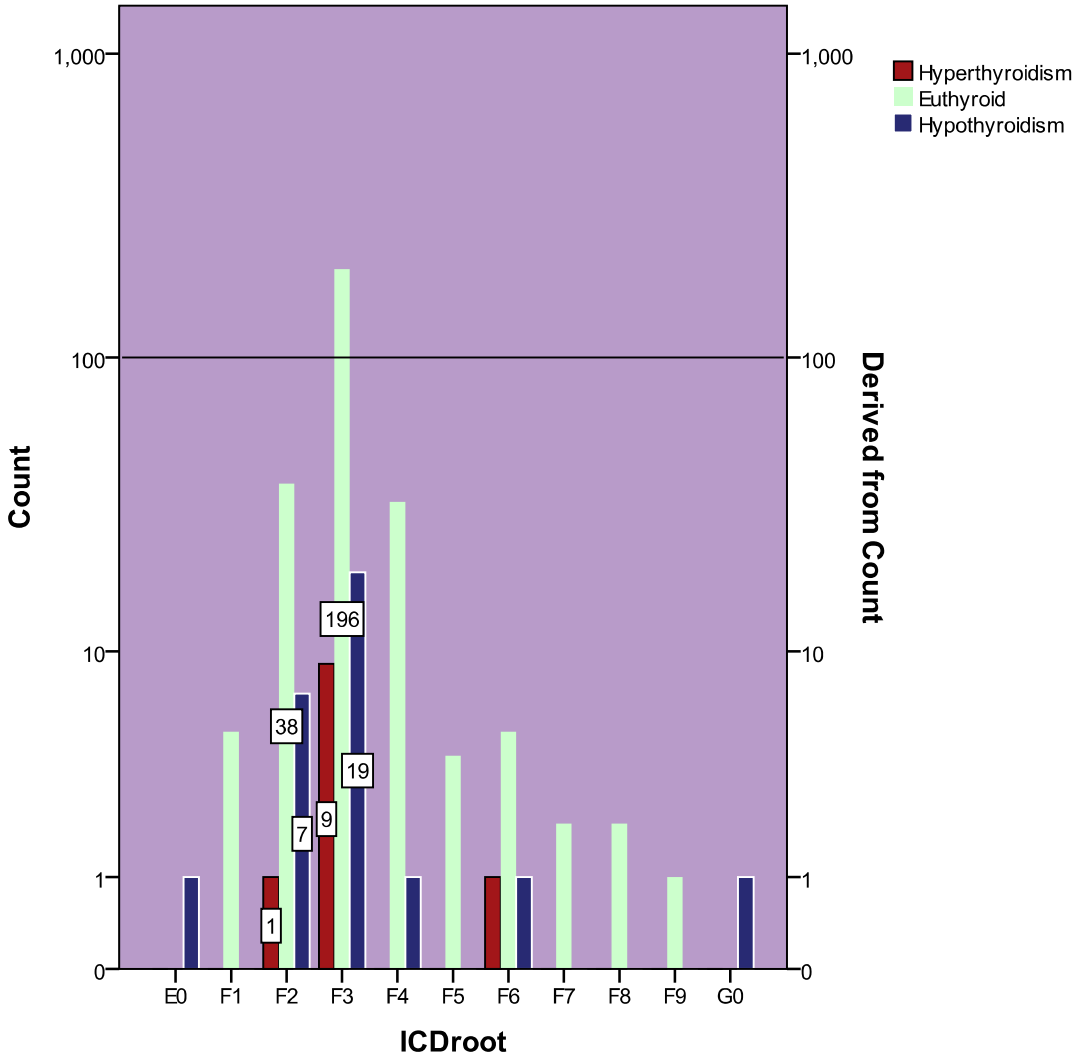

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FIG:4 TSH LEVELS & LITHIUM MEDICATION

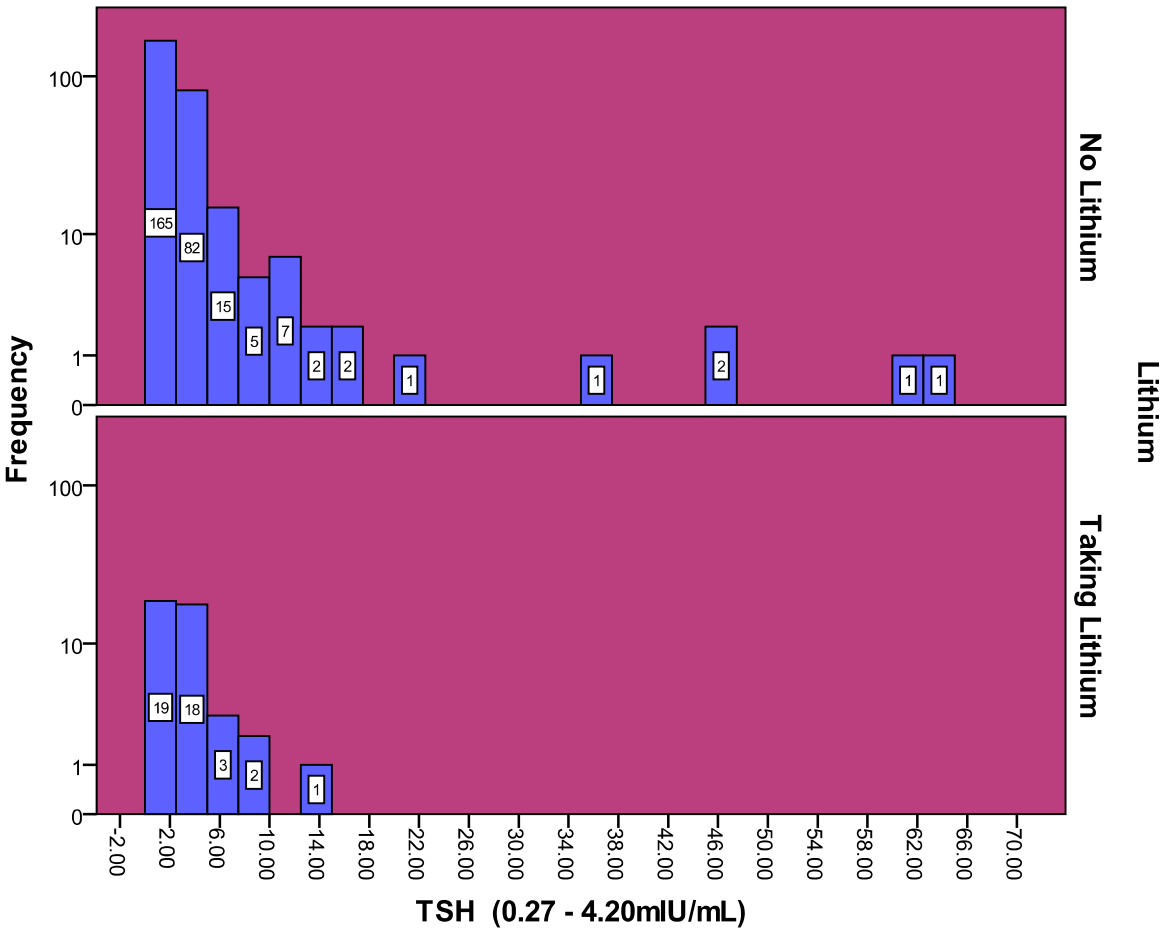

FIG:5 TSH LEVELS IN PSYCHIATRIC PATIENTS

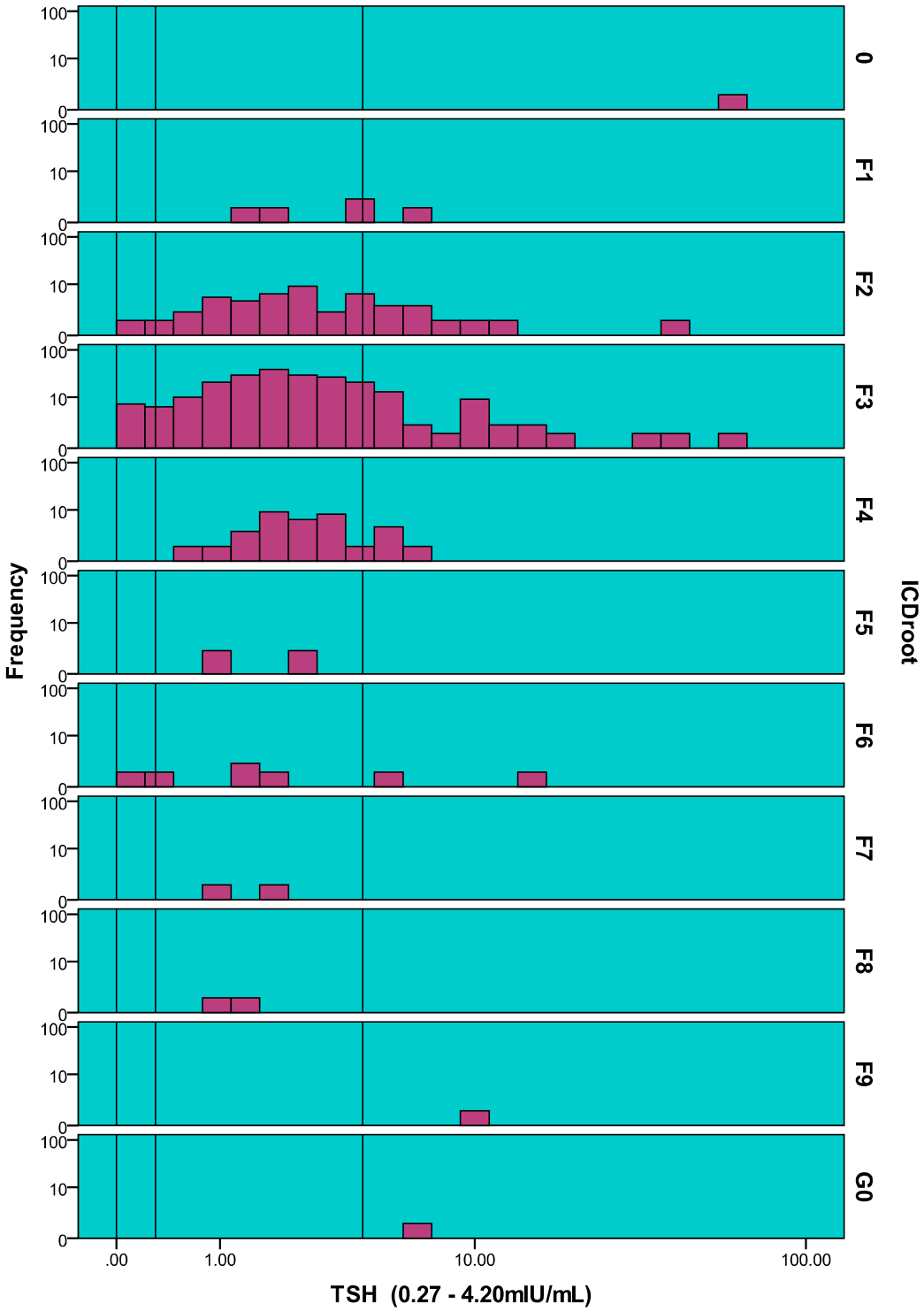

FIG:6 fT3 LEVELS IN PSYCHIATRIC PATIENTS

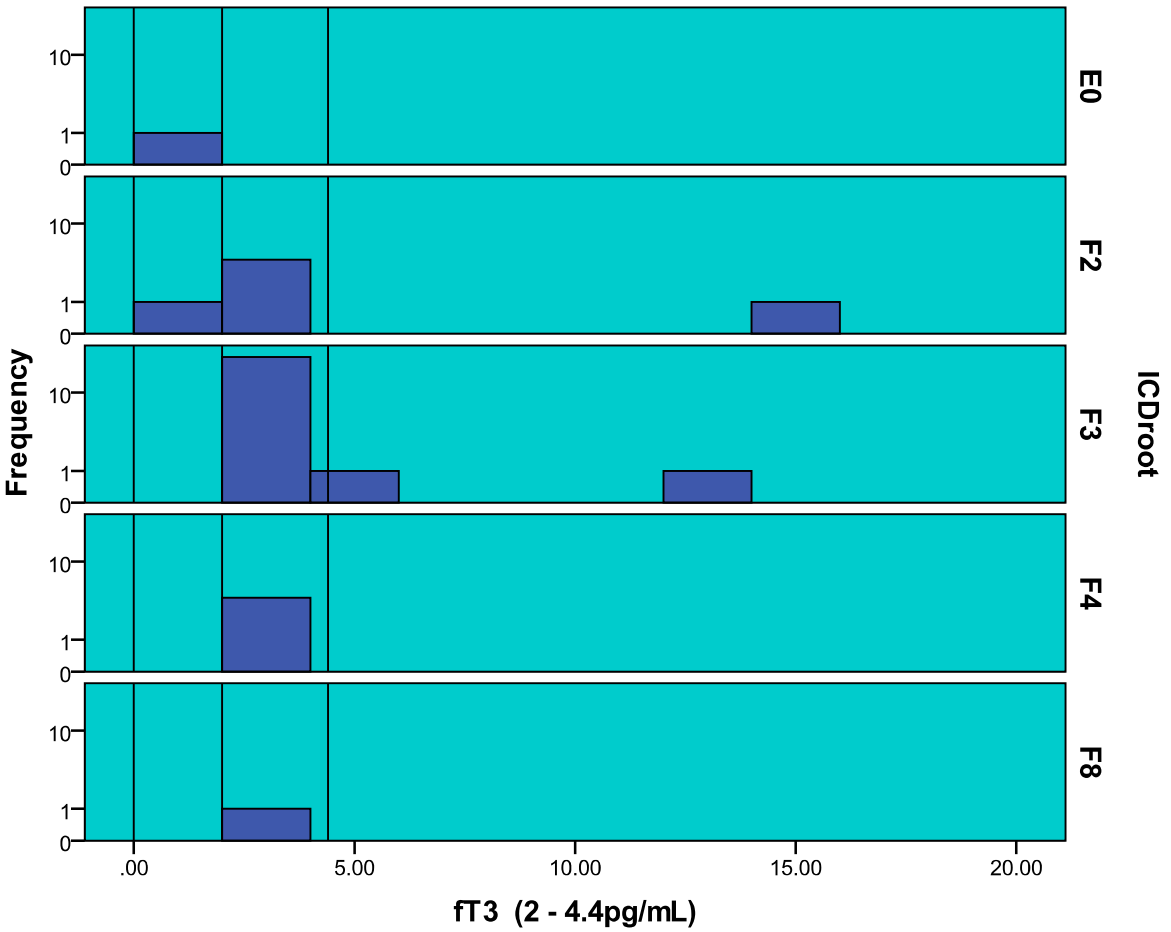

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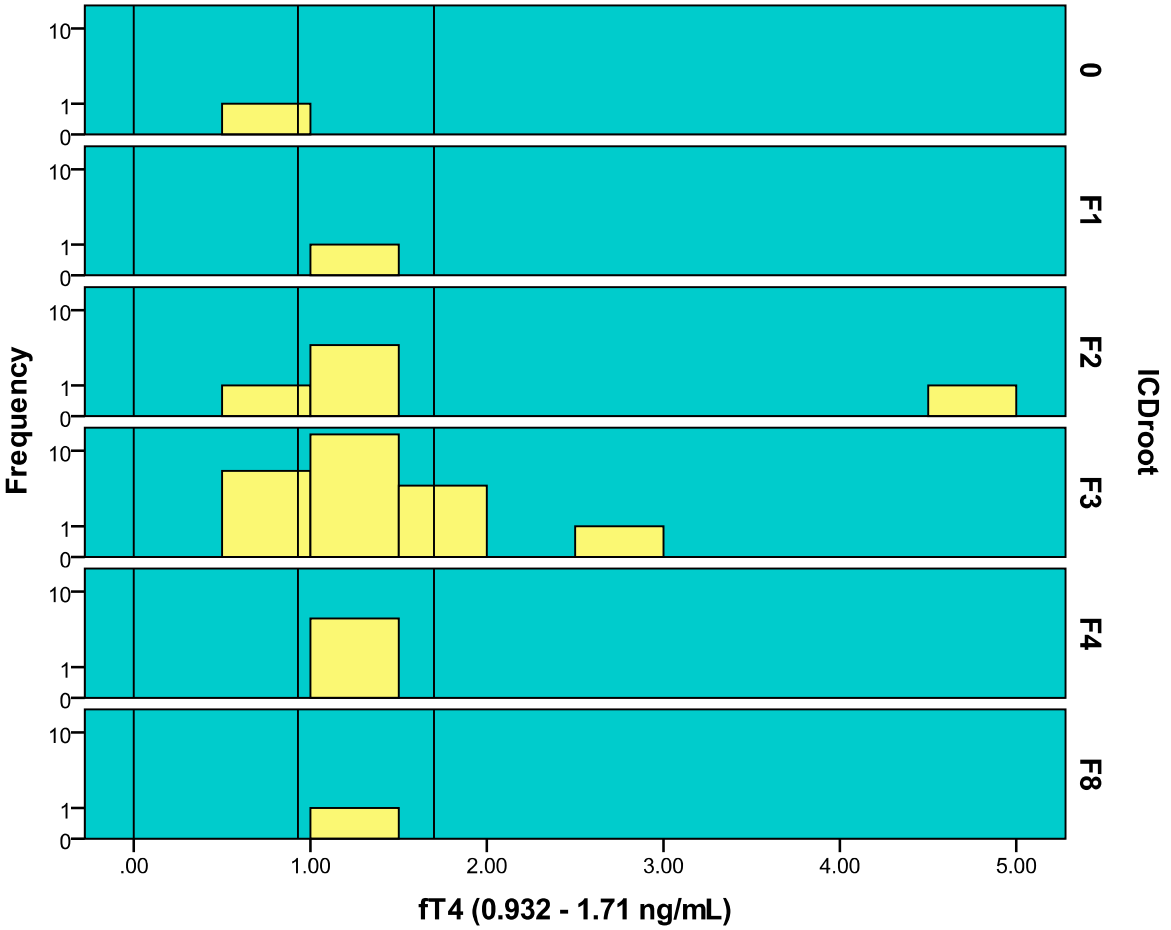
FIG:7 fT4 LEVELS IN PSYCHIATRIC PATIENTS



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- Interestingly, only 1 out of 43 patients on Lithium had TSH above 10mIU/Ml.

Discussion:

In our study, thyroid dysfunction is common in F3 Mood disorders and F2 Schizophrenia. This is consistent with previous study done by Rajiv Radhakrishnan et al which states that abnormal thyroid hormonal status in general, and presence of hypothyroidism and hyperthyroidism, in particular were seen in 29.3, 25.17 and 4.08 per cent patients with schizophrenia spectrum disorders, respectively and comparable to the rates in patients

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with mood disorders (23.24, 21.62 and 1.62%, respectively).[4] The relation between hypothyroidism and F3Mood disorder is evident in many other studies also.[5]

In the review of the interactions between lithium treatment and thyroid function by Alberto Bocchetta and Andrea Loviselli observed the following a) lithium definitely affects thyroid function as repeatedly shown by studies on cell cultures, experimental animals, volunteers, and patients; b) inhibition of thyroid hormone release is the critical mechanism in the development of hypothyroidism, goitre, and, perhaps, changes in the texture of the gland which are detected by ultrasonic scanning; c) compensatory mechanisms operate and prevent the development of hypothyroidism in the majority of patients; d) when additional risk factors are present, either environmental (such as iodine deficiency) or intrinsic (immunogenetic background), compensatory potential may be reduced and clinically relevant consequences may develop e) hypothyroidism may develop in particular during the first years of lithium treatment, in middle-aged women, and in the presence of thyroid autoimmunity; f) thyroid autoimmunity is found in excess among patients suffering from affective disorders, irrespective of lithium exposure; g) in patients who have been on lithium for several years, the outcome of hypothyroidism, goitre, and thyroid autoimmunity do not differ from those observed in the general population; h) hyperthyroidism and thyroid cancer are observed rarely during lithium treatment.[6] But surprisingly in our study patient on lithium didn't show any remarkable tendency for hypothyroidism

Conclusion

- In F3 mood disorders both hypothyroidism and hyperthyroidism plays a confounding role.
- F2 Schizophrenia is associated with hypothyroidism.
- Lithium doesn't affect thyroid status much.

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