

# Effects of Short-term and Long-term Use of Lithium on Thyroid Function Tests in Patients with Bipolar Disorder

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## Background

Lithium has been used by most psychiatrists as a long term effective therapy for the treatment of bipolar disorder as well as reducing the risk of suicide and short term mortality in patients. However, some studies have also reported varying degrees of thyroid abnormalities in lithium treated patients, but it is unclear whether there is significant association with duration of therapy. We aimed to determine the effect of long term use of lithium on thyroid function tests and possible prevalence of hypothyroidism in women and men with bipolar disorder.

## Methods:

This cross-sectional study was conducted in 75 bipolar disorder patients (24 males, 51 females) treated with lithium and equal number of controls. Diagnosis of bipolar disorder was made by psychiatrist according to ICD-10-DCR guidelines and DSM-IV criteria. Serum fT3, fT4 and TSH were measured by enhanced chemiluminescence immunoassay. Statistical analysis was performed using SPSS 20.0 version.

## Results:

The prevalence of primary hypothyroidism and subclinical hypothyroidism were found significantly increased in lithium treated group (12% and 17% respectively) which were further increased with duration of treatment, showing no significant difference of subclinical hypothyroidism in sex (17.6% female vs. 16.6% male), but primary hypothyroidism cases were only observed in female (17.6%) not in male. The mean fT3 level of lithium treated group was decreased as compared to control group ( $5.61 \pm 1.35$  vs.  $6.02 \pm 1.1$ ,  $p=0.051$ ), also showing decreased level of fT4 ( $17.57 \pm 6.35$  vs.  $19.71 \pm 4.56$ ,  $p=0.019$ ). But mean TSH level was found significantly ( $P<0.001$ ) higher in lithium treated group than that of control ( $9.67 \pm 12.47$  vs.  $3.41 \pm 3.69$ ).

## Conclusion:

Our findings indicate that use of lithium therapy is associated with higher degree of primary hypothyroidism and subclinical hypothyroidism which is being increased with duration of lithium therapy. These results also show slightly higher prevalence of hypothyroidism in female but statistically not significant.



## Biography

Gupta has his expertise in clinical biochemistry. He has been awarded by "Nepal Bidhya Bhusan" (greatest academic award of Nepal) from President of Nepal in 2016 for outstanding performance in clinical biochemistry. His major research interests are metabolic syndrome, obesity, thyroid dysfunction, bipolar disorder, vitamin D deficiency, geriatric biochemistry, and relation of leptin- obesity- heart disease. Mr. Gupta has published many research papers in national and international journals. He has written, "Text Book of Medical Laboratory Technology" Volume 1 & 2, which are recognized as text books for Tribhuvan University undergraduate students. He has also written "Text book of Basic Pathology" for students of clinical laboratory science. Mr. Gupta received an IFCC travel scholarship in 2016 to attend the APFCB conference in Taipei, Taiwan. He has also presented his research paper at the IFCC World Lab 2017 in Durban, South Africa. Mr. Gupta is currently working as Medical Lab Technologist (quality control officer) in ministry of health and population, Nepal government. He is also Asst. professor of biochemistry at Yeti Health science Academy, Purbanchal University.

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