Thyroid Functions in Lithium-Treated Psychiatric Patients
A Cross-Sectional Study

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ABSTRACT

In the present cross-sectional study, thyroid functions (viz. thyroid radioiodine uptake [RAIU] and serum T3, T4, and thyroid-stimulating hormone [TSH]) were evaluated in 24 healthy controls and 132 outdoor affective disorder patients. Eleven of these patients were to receive lithium (Li) and the remaining 121 patients were at different stages of Li treatment ranging from 0.7 to 240 mo. RAIU was found to increase significantly throughout the Li therapy and was associated with the corresponding rise in TSH levels. In totality, Li treatment induced subclinical hypothyroidism in 51/132 (39%) of patients. However, 8/51 patients who belonged to known iodine-deficient belt had abnormally high TSH (range 15.2–76.0 μIU/mL), low T4 (5.3 ± 2.5 μg/dL), and normal T3 and at least 4 of these 8 patients were clinically hypothyroid. T4 levels declined significantly (p < 0.05) with Li treatment ranging from 0.7 to 240 mo as compared to the corresponding values in the pre-Li group. The T3/T4 ratio was found to be significantly higher with Li treatment ranging from 0.7 to 6 mo in comparison with the pre-Li group and this value returned to base levels after long-term Li therapy. High T3 and T4 were observed in 13% and 12% of the patients, respectively, as compared to the corresponding control values.

Index Entries: Thyroid functions; affective disorder; lithium treatment.

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INTRODUCTION

Lithium (Li) has been shown to be a clinically effective agent in the treatment of biopolar affective disorder and also in recurrent depression (1,2). Currently, approved uses of Li by the US Food and Drug Administration extend beyond the treatment of acute mania and maintenance therapy of patients with bipolar disorder (3). Lithium augments the therapeutic effects of conventional antidepressants when used as an adjunct therapy and is particularly useful in patients with resistant depression. The efficacy of the drug in alcohol dependents has been a matter of controversy for several years, but the recent findings indicate that Li has limited use in this population (3).

The side effects of Li therapy, particularly those involving the thyroid, continue to generate concern (4). Since the discovery that Li treatment may alter the thyroid size and function (5,6), the frequency of such alterations has been the subject of many transverse and retrospective investigations. In 1971, few sporadic cases of clinical hypothyroidism in Li-treated psychiatric patients were first reported (7,8) and these observations encouraged extensive research envisaging effects of Li on the hypothalamic-pituitary-thyroid axis. These findings have depicted a variety of Li-induced thyroidal abnormalities in both clinical and experimental studies, and the abnormalities ranged from subtle changes in thyrotropin-releasing hormone responsiveness (9–11) to frank myxedema (12,13). Other studies (14–16) have suggested that autoimmune thyroid disease is frequently found in those Li-treated patients who do become hypothyroid. Crowe et al. (17), however, felt that an equal number of those who become hypothyroid are antibody negative and have only a transient and reversible biochemical defect induced by Li. On the contrary, occasional hyperthyroidism has also been related to lithium’s use (18,19). In different serial studies, the time for development of hypothyroidism has been reported (20) to range from a few months to several years, and the opinions vary on the frequency with which thyroid functions alter in Li-treated patients. Moreover, to the best of our knowledge, no study evaluating thyroid functions in Li-treated patients suffering from affective disorders is available in any population residing in the Asian continent. In this cross-sectional study, we have evaluated the effects of varying durations of Li treatment on the thyroid status in affective disorder patients.

MATERIALS AND METHODS

Patient Selection

One hundred thirty-two patients with affective disorder (AD) who met Research Diagnostic Criteria (DSM-III-R) for affective disorders were