



RECURRENT EPISODE OF DEPRESSION IN A FEMALE PATIENT DUE TO HYPOTHYROIDISM: A CASE REPORT

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INTRODUCTION

Clinical as well as Subclinical Hypothyroidism can cause depression. This is commonly seen in many patients who have been diagnosed with hypothyroidism. Here we report a case of recurrent episode of depression due to hypothyroidism.

CASE REPORT

A 37-year old female presented to the clinic with feeling of hopelessness and worthlessness. On further elaborating the history, the patient complained of having no energy in doing house hold chores. She also complained of over eating and over sleeping. She said that she slept for about 10 hours at night and 2-3 hours in the day. She also complained of recent weight gain. She had these complaints for about the last 2 months. She denied suicidal ideations and feeling of guilt. No recent stressor identified in her life. Patient also complained of thinning of hair and cold temperature intolerance.

In the past, the patient had a previous episode of major depressive disorder that was successfully treated with Sertraline 50 mg raised to 100mg once a day for 6 months. This episode was present when the patient was 23 years old. The patient had a MDD episode as her mother had passed away during that time. Her mother passed away when she was 22 years old, but she still had complaints of depression after one year. Therefore, normal bereavement was ruled out, and the patient was successfully treated for this episode.

Currently, on physical examination, the thyroid gland was enlarged. Complete thyroid panel workup was done. TSH was 14 mIU/L. Free T4 was 0.4ng/dl and free T3 was 0.5ng/dl. Thus it showed Hypothyroidism. The patient was started on Levothyroxine 0.025mg and also Sertraline 25 mg. The patient improved after 1 month of treatment. Sertraline was discontinued after 3 months.

The patient continued to feel better. Levothyroxine was continued to treat the hypothyroidism. There was no recent stressor and so the cause of depression was believed to be the recent onset of hypothyroidism.

COMMENTS

It is well researched that hormonal imbalances in thyroid function may significantly change the mental status including emotion and cognition. Both high and low amounts of thyroid hormonal imbalances can cause mood abnormalities, including depression that usually can be reversible with sufficient thyroid hormonal correction. Most common abnormalities which came in to light associative with depression were: elevated T4 levels, low T3 levels, elevated rT3^[1], subnormal TSH response to TRH, and positive for antithyroid antibodies. Numerous research outcomes examining total and free plasma T4 levels in patients with depression have not been consistent totally, serum T4 levels in the upper range of usually range have been seen in patients with depression as compared to healthy or psychiatric controls. An absent normal nocturnal TSH surge has been detected in depression as well as subnormal basal TSH has been detected in major depression as opposed to non-major depression. Research shows increased serotonin levels in the cerebral cortex after T3 administration and decreased serotonin synthesis in the brain with hypothyroidism. Depressive patients have more probability of having 'low T3 syndrome.'^[2] Hypothesis has postulated that depression leads to inactivation of the D2 enzyme responsible for conversion

of T4 to T3 due to hike in body Cortisol levels. Various clinical research studies have been done in regard of assessing blood flow and metabolism in depression. Majority of the outcome shows hypo perfusion in anterior cortical structures. This has been able to be reversed after psychotherapy and other pharmacological intervention. Besides frontal hypo perfusion, rise in perfusion has been observed in various limbic regions especially the Amygdala. Some theories postulate that Serotonin also has an inhibitory effect on thyrotropin-releasing hormone (TRH) secretion suggesting a feedback loop, which allows activation of the hypothalamus-pituitary-thyroid axis when serotonin levels in the brain are low. The effort of expressing strong relationship between mood disorders and thyroid hormone status has been a long battle for many years. 1 to 4% of patients with affective disorders are found to have overt hypothyroidism while subclinical hypothyroidism occurs in 4 to 40% of these patients.^[3] More research has proved thyroid hormones to be an effective supporting treatment for depression. Patients with thyroid disorders are more prone to develop depressive symptoms compared to general population. Many co- relations have been studied and made over decades using various clinical and cohort studies. American Association of Clinical Endocrinologists suggests diagnosis that subclinical or clinical hypothyroidism must be considered in every patient with depression.^[4]

Thyroid binding inhibitory immunoglobulin levels were higher in depressed patients in comparison to controlled subjects in few selected cohort studies. Depressed patients may have an altered thyroid-stimulating hormone response to thyrotropin-releasing hormone (TRH), an abnormally high rate of anti-thyroid antibodies, and elevated cerebrospinal fluid (CSF) TRH concentrations. Many times studies conclusively proved the tri-iodothyronine levels to augment the efficacy of various anti-depressants. Within a patient's status, change of thyroid function is determined by the severity and duration of illness as well as the presence of mitigating influences that are associated with the specific underlying disorders. Most patients that have depression fall under the category of Euthyroid status. However, the correlation of hypothyroidism and Depressive disorder is stronger compared to the general population. Most recent advances in biochemical, genetic and neuro imaging fields have opened new insights in to the depression - thyroid relationship, especially psychiatric mood. Severe forms of hypothyroidism may mimic symptoms that are of melancholic depression and dementia.^[5] One of the recent journals of Italian population shows a prevalence of 63.5% of depressive symptoms in a subclinical hypothyroidism conditions. The prominent role and understanding of thyroid hormone transporters and iodothyronine deiodinases that delivers the hormones to where they have their actions. This plays a key factor in establishing the blurry relation between MDD and thyroid status. The extended release of TRH in

depression is seen as a compensatory response to the decreased 5HT function and maintenance of normal thyroid hormone levels. However, 15% or more of depressed patients have minimal thyroid insufficiency with proof of an autoimmune thyroid disease. Therefore, pointing towards brain hypothyroidism, without the presence of systemic hypothyroidism.

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