Hypothyroidism in Vitiligo Patient: A Case Report

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ARTICLE INFO

Article History
Submitted: 30 January 2024
Accepted: 14 March 2024
Published: 8 August ,2024

Source of support: None
Conflict of Interest: None

ABSTRACT

Hypothyroidism is a disease condition in which thyroid hormones in the body are low. Vitiligo is the condition in which there is autoimmune loss of melanocytes resulting in depigmented lesions. Different genetic factors and certain environmental factors triggers have been found to initiate the disease process. The prevalence of hypothyroidism is around 32% in vitiligo patients. Autoimmune thyroid disease is present in around 34% of vitiligo patients. Here we present a case of a 40-year-old male with a history of vitiligo who came with reports of whole body examinations along with history of facial puffiness, bilateral lower limb swelling, generalized body weakness, weight gain, and was diagnosed as hypothyroidism after doing thyroid function tests. The patient was started on Tab thyroxine which was gradually tapered. The patient was symptomatically better after the treatment. Conclusion based on the study is vitiligo patients should be screened for thyroid disease for early detection and earlier management of complications.

Keywords: Case Reports; Hypothyroidism; Vitiligo

INTRODUCTION

Hypothyroidism is a condition in which there is low circulating level of thyroid hormones and is a common problem. In clinical hypothyroidism, thyroid stimulating hormone is above the reference range whilst free thyroxine level is below the normal range. Subclinical hypothyroidism on the other hand has Thyroid-stimulating hormone in a higher range and free thyroxine level in the normal range.[1] Vitiligo is an autoimmune skin condition in which there is a reduction in the number and function of melanocytes resulting in hypopigmented skin lesions.[2] Autoimmune thyroid disease is present in around 34 % of vitiligo patients. Study in India has found the prevalence of hypothyroidism in 32 % out of 50 vitiligo patients.[3] Here we present a case of a young male with an extensive history of vitiligo who was diagnosed with hypothyroidism at outpatient department of Kathmandu Model Hospital. Since vitiligo usually precedes hypothyroidism the aim of the study is that thyroid parameters and thyroid autoantibodies test shall be included in the routine investigations of the vitiligo patients for the early detection of thyroid disorder. If we fail to detect the disease then the patient might develop complications in the long run or we might solely focus on those complications and other comorbidities which might dim the clinical suspicious for thyroid assessment.

CASE REPORT

A 40-years male presented in the outpatient department of Kathmandu Model Hospital with reports of whole-body examinations. On asking detailed history patient gives history of facial puffiness and bilateral lower limb swelling for two weeks, pitting type. The patient also gives a history of around 4 kg of weight gain within 6 months which is associated with fatigue and generalized body weakness. The patient states that he has had a tingling sensation in bilateral upper limbs for the last week. Past medical history revealed that Vitiligo was diagnosed when the patient was 9 years of age, for which he received intermittent treatment from age 11 years and the patient failed to continue the treatment

at 15 years of age, as his vitiligo was progressively increasing and was not responding to treatment.

Figure 1: Hand of patient revealing vitiligo

On clinical examination, the patient was well built with a body weight of 83 kg, height of 171cm, and BMI of 28.7 kg/m2. The patient's blood pressure was 140/100 mmHg, bilateral lower limb swelling was present over the leg which was a pitting type, and mild facial puffiness was also present. Extensive depigmented white patches were present in body, face, upper and lower extremities. Other systemic examination was grossly normal. Initial Laboratory studies showed urea 4 mmol/l, creatinine 113 mg/dl, normal complete blood counts, electrolyte and urine report. Electrocardiography was normal sinus rhythm and Echo was also normal. The patient was advised to have regular blood pressure monitoring for 3 days, for dietary modifications, and regular exercise. The patient was called for a follow-up in 3 days with reports of Thyroid stimulating hormone level, repeat urea, creatinine level, total protein albumin, calcium, phosphorus, uric acid, vitamin D, vitamin B12, and ultrasound of the abdomen and pelvis.On follow up patient's blood pressure was 130/100 mmHg. Thyroid stimulating level 81.1 mmol/l, Vitamin B12 159 umo/l, Vitamin D 12.6 U, Total protein Albumin, Calcium, phosphorus, and uric acid were normal. Ultrasound of the abdomen and pelvis showed fatty liver with prostatomegaly grade I. Based on the findings patient was diagnosed with hypothyroidism with vitamin B12 and vitamin D deficiency. The patient was started on Tab Thyroxine 75 mcg od, Vitamin D once a week, and Methylcobalamin 1500 mcg od and was called for follow-up in 3 days with Anti-Thyroid peroxidase and USG neck report. Anti- thyroid peroxidase level was 464.5(upper limit). Ultrasound of the neck showed Mildly enlarged bilateral thyroid glands with heterogeneous parenchymal echotexture and increased vascularity with a differential diagnosis of Thyroiditis. The patient is on regular follow up with the last Thyroid stimulating hormone report being 7.23uIUl/m, FT3 3.9 pg/ml and FT4 1.21ng/dl. The dose of Tab Levothyroxine was gradually tapered last being 25 mcg. After treatment Patient's Blood pressure was 120/80 mmHg, facial puffiness, and bilateral lower limb swelling was resolved. The patient is symptomatically better and is on regular follow-up.

DISCUSSION

Vitiligo is a skin condition in which melanocytes are selectively lost which results in skin depigmentation, and non-scaly, chalky-white lesions. It is found to affect 0.5 % to 2 % of the world population. 4 Vitiligo is associated with several autoimmune diseases among which autoimmune thyroid disease is most extensive. The association between these two diseases is not just due to autoimmune or oxidative stress-mediated toxicity but also due to the biochemical similarity of the original molecule thyroxine and melanin which is tyrosine. 5A meta-analysis study performed between 1968 and 2012 showed that in patients affected with vitiligo, the prevalence of thyroid disease was 15.1 % and autoimmune thyroid disease was 14.3 %. The presence of anti- thyroglobulin (Tg), anti-thyroid peroxidase, and anti-thyrotropin receptor (TSHR) was found in 20.8%. [6] The presence of antithyroid antibodies was detected in 77 out of 79 patients with vitiligo which suggests a relatable pathogenesis between the two entities.[7] In a study done in India out of 50 subjects around 32% have been found to have subclinical hypothyroidism.3 In our case, the Patient is a 40-years male with a history of vitiligo since his 9 years of age and not under any medications currently, and was diagnosed with hypothyroidism.

Hypothyroidism patients usually have symptoms of malaise, weight gain, fatigue, dry skin, constipation, cold intolerance, bilateral pedal edema, and facial puffiness. A high prevalence of diastolic hypertension has been found in a patient with hypothyroidism.[8] Reduced glutathione level causes to increase oxidative stress in myocardial tissue causing myocardial injury in hypothyroid patients.[9] Our patient presented with a history of fatigue, malaise, weight gain, and bilateral pedal edema, facial puffiness, and hypertension. Most of the symptoms were resolved once the hypothyroid medicine was started. The patient's blood pressure was also normal in follow-up examination. A low level of vitamin D in our patient could be due to decreased exposure to the sun as his skin is more sensitive to sunlight. Vitamin D has been found to increase tyrosinase activity and melanogenesis thus it

might help pigmentation in vitiligo patients. [10] Though the exact cause of vitamin B12 deficiency in our patients is not clear, we acknowledge it could be due to decreased dietary intake. Studies have shown vitamin B12 and folic acid supplement along with sun exposure induces repigmentation in vitiligo patients. 10 Detail research on the benefit of Vitamin D and Vitamin B12 in the treatment of vitiligo patients is indispensable.

Our patient received thyroxine, vitamin D supplement, and vitamin B12 supplement. Thyroxine was gradually tapered as the last Thyroid stimulating hormone level was 7.23uIU/ml, FT3 and FT4 being 3.9 pg/ml and 1.21 ng/dl respectively. Vitamin D supplement and Vitamin B12 supplement were stopped as they were in normal range in serum. As it was highlighted above, a Hypothyroid state may cause myocardial injury, which can be seen as several cardinal manifestations; pericardial effusion and decreased cardiac output. It can also manifest as congestive cardiomyopathy. Thus, early diagnosis of the disease state and starting therapy may prevent the damage. Timely evaluation and management can prevent the complications that a vitiligo patient with hypothyroidism might develop in the future.

CONCLUSION

After the case study it became evident that, thyroid function tests and nutritional assessments should be incorporated into vitiligo patient's standard assessment to enhance the treatment process and ensure better prognosis. Hypothyroidism if untreated leads to complications and vitiligo if treated early improves the quality of life of the affected individual. It is recommended that thyroid levels should be checked periodically and any nutritional deficiencies should be treated in this patient population to ensure that they are in good health. More research is required to understand how autoimmune diseases, nutrition and skin conditions are related in vitiligo patients.

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