

# Example of hypothyroidism case study

[Health & Medicine](#), [Body](#)



## **Community Health Nurse**

Hypothyroidism is a clinical syndrome in which there is either deficiency or absence of thyroid hormone in the body. This manifests as a decrease in the metabolic rate in the body, which is seen as a slowing in physical and mental activity in the body. (Orlander, 2013)

Thyroid function is controlled by two other organs, the hypothalamus and the pituitary gland. A defect in function of any of these two organs can lead to hypothyroidism. Moreover, localized disease of the thyroid gland itself can also lead to hypothyroidism. Hypothyroidism is usually a primary pathology in which there is inability of the thyroid gland to produce amounts of thyroid hormone that is sufficient for the normal body function. (Orlander, 2013)

Moreover, hypothyroidism can also be secondary in which there is no pathology with the thyroid gland itself but rather, there is insufficient stimulation by thyroid stimulating hormone, produced by the pituitary gland. Tertiary hypothyroidism can also occur in which there is insufficient amount of thyrotropin-releasing hormone is produced by the hypothalamus. (Orlander, 2013)

## **Etiology**

Iodine deficiency is the worldwide foremost cause of hypothyroidism.

Autoimmune thyroid disease is the most common cause of hypothyroidism in the United States. It is called Hashimoto Disease. It is more common in women. There are antibodies directed towards the thyroid tissue, causing damage and malfunction. The prevalence of these antibodies increases with advancing age. Symptoms of hypothyroidism include constitutional

symptoms like fatigue, loss of energy, lethargy, weight gain, decrease in appetite, cold tolerance, dryness of skin. Other symptoms include hair loss, sleeplessness, muscle pains, joint pain, and weakness in the extremities. Patients can also present with depression, instability of emotion or even mental impairment. Other symptoms, which the patient can present with, include menstrual irregularities, impairment of fertility, decreased sweating, blurring of vision, decreased hearing, hoarseness of voice. As can be seen above, hypothyroidism can present with a wide range of symptoms, depending on the level of the deficiency and individual differences. (Orlander, 2013)

## **Diagnosis**

Diagnosis of hypothyroidism is made by a combination of history and findings on physical examination.

The most sensitive tool for screening for primary hypothyroidism is the assay of Thyroid stimulating hormone. If the level of the thyroid stimulating hormone is above the normal reference range (4.5 - 10 mIU/L), an assay of the level of the free Thyroxine is done. (Orlander, 2013)

In a patient with hypothyroidism, generally there would be elevated TSH and decreased level of Thyroxine. In this index patient, a diagnosis of Hypothyroidism was made from the history and examination findings. From the presented history, irregular menstruation, weight gain, decrease in energy and constipation are all consistent with the symptomatology of Hypothyroidism. There is also a family history of thyroid disease in the patient's mother. Moreover, from the physical examination, the patient is overweight with a body mass index of 26.09 kg/m/m. Computed

Tomography also shows enlargement of the thyroid gland without the presence of any nodule. The blood chemistry also shows an increased serum level of Thyroxine, which is a prohormone, and the inactive form of The Thyroid hormone and a concomitant increase in the level of Thyroid stimulating hormone.

## Questions

1. List specific goals of therapy for M. E.

The treatment goals for the management of hypothyroidism include reversing the clinical progression of hypothyroidism by abolishing the clinical signs and symptoms. The other aim of treatment is the correction of metabolic derangements that would have manifested together with the clinical signs and symptoms of hypothyroidism. (Orlander et al, 2013).

In addition, with the elevated blood pressure that M. E has and with the positive family history of Hypertension in both the patient's parents, I would give the patient agents that would help normalize the blood pressure.

(Schrage, 2013)

2. What drug therapy would you prescribe and at what dose?

The drug of choice in the treatment of primary hypothyroidism is Levothyroxine. The usual dose of Levothyroxine is 50 - 100 micrograms daily. This initial dose can be increased to 25-50 micrograms every month until a normal metabolism is achieved in the patient. The dose of Levothyroxine can be reviewed every 6-8 weeks until the desired reference range of thyroid hormone is achieved. (Schrage, 2013)

3. What are the parameters for monitoring the success of M. E. therapy?

In monitoring the success of the therapy, a clinical evaluation is also done to

assess the patient. The disappearance of the clinical signs and symptoms of hypothyroidism means that the patient's Thyroxine levels are back to normal. Moreover, serum Thyroid stimulating hormone and Thyroxine levels are monitored until the desired levels are reached. The target is to have levels within the normal reference limit for both Thyroid Stimulating hormone and Thyroxine. (Raid et al, 2005)

4. Discuss specific patient education for therapy for hypothyroidism.

The patient is warned about the development of symptoms of hyperthyroidism. The patient would begin to feel symptoms like muscle cramps, hyper-motility of the gastrointestinal tract manifesting as diarrhea, nervousness, tremors and palpitations. It is important to educate the patient to discontinue the drug and present at the hospital whenever these symptoms set in.

6. What would be the choice for second line therapy?

Liothyronine is another synthetic analogue of Thyroxine that can be used to treat hypothyroidism. It is used as a second line agent in Thyroxine replacement (Ross, 2013).

5. List two adverse reactions for the prescribed therapy that would cause to change the drug

Some patients display severe allergic reaction to the drug. When a patient presents with a rash, body itching or swelling, severe dizziness or when the patient has trouble breathing, these are indications that the medication should be switched to the second line agent.

Liothyronine would be considered in patients in which there is need for rapid action of Thyroxine for instance in cases of severe hypothyroidism.

Also, in cases when the conversion of Levothyroxine to lithothyroine is impaired in the peripheral tissue.

7. What is if any, OTC or complementary and alternative medicine would be appropriate for M. E.?

Alternative treatments that can be useful in the treatment of hypothyroidism include consumption of foods rich in nutrients such as selenium, iodine and folic acid.

Supplementation of these nutrients can be useful however; it should not be a substitute for the drug therapy which is Thyroid hormone replacement.

In order to maintain body vitamin D level at the optimum, the patient is advised to get adequate sun exposure in the early mornings and late afternoons.

Emotional Stress has also been documented to worsen hypothyroidism.

Therefore the individual is advised to resolve most outstanding emotional stressors that can serve as precipitant to hypothyroidism.

8. Describe two drug/drug and drug-food interactions for the selected treatment

Drug-drug interactions could arise if Levothyroxine is administered to patients who are on anticoagulant therapy either warfarin or heparin. This is because there is an exaggeration of the anticoagulant effect by pharmacodynamic synergism. This could lead to dangerous bleeding tendency. (Ross, 2013)

Another drug-drug interaction is the decrease in effect of the positive inotropic agent digoxin. The mechanism by which this occurs is not understood.

9. As a nurse practitioner, summarize the follow-up care plan for M. E.  
(include dietary and

It is important to educate the patient to take the Levothyroxine tablets on empty stomach because the presence of food in the intestines interferes with the absorption of Levothyroxine in the intestines. The drug should be taken about two hours before food. (Ross, 2013)

**In addition, caffeine also inhibits the absorption of Levothyroxine in the gastrointestinal tract.**

On discharge, the patient is counseled on all the medications she is taking, including the dosage and side effects and potential drug interactions.

The patient is instructed to count her pulse at least twice in a week and report to the physician if the pulse rate goes above 100 beats per minute.

I would also like to see the patient every 6 weeks to review the medications with a view to increasing or reducing the dosage in response to the current physical signs and symptoms, which the patient has until an adequate serum Thyroxine level is achieved. (British Thyroid Society, 2013)

The patient is also educated that symptoms of hyperthyroidism can appear at any time and she should report to the physician as soon as they do.

(British Thyroid Society, 2013)

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