

A unique case of Pancytopenia in the setting of severe Hypothyroidism

¹Dr. Suresh Kanna. S, ²Dr. Kunduru Dineshreddy, ³Dr. Kavuru Naga Siri, ⁴Dr. Mathisha Ebby Perin R, ⁵Dr. Goutham Kumar AP, ⁶Dr. Keerthana. I, ⁷Dr. Kosuri Akhila, ⁸Dr Roshini S

¹⁻⁸Department of General Medicine, Sree Balaji Medical College and Hospital, Chrompet, Pincode-600044.

Corresponding Author: Dr. Kunduru Dineshreddy, Department of General Medicine, Sree Balaji Medical College and Hospital, Chrompet, Pincode-600044.

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Abstract

Severe cases of hypothyroidism highly affects the red blood cells, leading to normocytic normochromic anemia. In this article, we present a case of severe Hypothyroidism affecting not only RBC's, but all blood cells causing Pancytopenia. The exact mechanism of the above is unclear, however has been attributed to the hypoplasia of bone marrow. Hypothyroidism severely affecting all blood cells is understood to be due to bone marrow hypoplasia and it resolved well with IV hormone replacement therapy.

Keywords: Pancytopenia, Anemia, Electrolytes.

Introduction

Hypothyroidism is a condition in which the thyroid gland cannot produce enough thyroid hormones and release it into the blood stream.¹ Usually, severe cases of hypothyroidism highly affects the red blood cells, leading to normocytic normochromic anemia.² In this article, we present a case of severe Hypothyroidism affecting not only RBC's, but all blood cells causing Pancytopenia.³

Case

A 79 year old woman, with known case of type 2 Diabetes mellitus and Hypothyroidism presented with history of slip and fall, admitted for Open reduction with internal fixation of displaced Right femur in the department of Orthopaedics. Patient has a long history of hypothyroidism and for which she was on regular medication - T THYRONORM 75mcg, but unknowingly discontinued two weeks prior to the presentation.

After thorough history and examination, necessary blood investigations were done. The complete blood count revealed HB 6mg/dl, Total WBC 3900 cells/mm³ and Platelets 1.39 lakhs/mm³. Thyroid function test showed TSH value 80 IU/ml and freeT4 was less than 0.12ng/dl. Serum electrolytes revealed Sodium 130mmol/L. However, iron panel, folic acid and vitamin B12 were within normal ranges.

Patient had mild changes mental status and was on the edge of developing Myxedema coma, with blood pressure of 100/50mmhg. Temperature was normal and no other signs of infection was seen.

Upon her condition, Rapid replacement therapy was initiated on day 5 of admission with IV LEVOTHYROXIN 750mcg, after which free T4 value was 1.03ng/dl.

Patient's condition well improved and she was cleared for surgery, ORIF was done and no complications were seen. After patient's post operative observation, she was discharged with regular dose of T.THONORM 75mcg.

Discussion

Severe Hypothyroidism may lead to anemia due to suppression of bone marrow, erythropoietin deficiency and other comorbidities. Thyroid hormones have important effects on erythropoiesis in vitro.⁴ Altered iron metabolism may also lead to anemia. However, severe Hypothyroidism affects the red cells commonly, causing normocytic normochromic anemia, hypochromic microcytic anemia and megaloblastic anemia in 60% of patients.⁵

Less than 10% cases have been reported of severe Hypothyroidism with Pancytopenia.⁶ And these unique cases are predominantly seen in the female population.⁷ The exact mechanism of the above is unclear, however has been attributed to the hypoplasia of bone marrow. The main concern in this case is hypothyroidism leading to Myxedema coma. And rapid treatment with thyroid hormone replacement therapy was successful not only in this case, but in majority of concerning similar cases.⁸

More research and case studies is required to understand the exact pathophysiology of hypothyroidism with Pancytopenia, risk factors, recurrence, etc for improving patient prognosis.

Conclusion

Hypothyroidism severely affecting all blood cells is understood to be due to bone marrow hypoplasia and it resolved well with IV hormone replacement therapy. Hypothyroidism with Pancytopenia, rare presentation to

be noted and seen as a differential diagnosis considering similar presentation.

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