CASE STUDY OF A PATIENT WITH THALASSEMIA AND DIABETES MELLITUS

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ABSTRACT:
Introduction: Although regular blood transfusions and strict iron chelation therapy have increased the life expectancy of thalassemia patients in recent years, these patients nevertheless suffer various consequences, the most prevalent of which is cardiovascular. One of the life-threatening consequences of the chronic hypercoagulable state and thrombotic episodes that result from haemostatic attention in people with thalassemia, but they are more common in people with thalassemia intermedia. Thrombosis is a relatively uncommon condition. Thrombosis is a rare occurrence. We talk about a patient who had a splenectomy six years ago but did not keep up with her follow-up visits and ended up in our clinic with two months of steadily worsening exercise dyspnoea. In thalassaemia major [TM] patients, diabetes mellitus [DM] is a significant concern.
Main Symptoms and Important Clinical Findings: A 31-year-old case of thalassemia major with type 1 diabetic reported to rural hospital. CBC (complete blood count) and peripheral blood smear (PBS), hypochromic cells confirmed thalassemia.
The Main Diagnosis, Therapeutic Intervention, And Outcomes:A 31-year-old thalassemia major with type 1 diabetes who has come for treatment at a specialized centre that provides a comprehensive case for people with beta-thalassemia, including preparing treatment programmes. Treatment in such a centre ensured that a competent health care team would assess each client and family member. All procedures were completed as requested.
Conclusion: This study looked at improving public health and hospital-based health promotion programme. In TM patients, IFG and DM risk factors, as well as the volume of blood transfusions per occasion and splenectomy, are all aspects to consider.

Keywords : Endocrinology, thalassemia, consequences, anemia, Blood.

INTRODUCTION:

Thalassaemia is the most prevalent inherited anaemia that results from a disruption in normal haemoglobin synthesis. [1].Patients with severe forms of thalassaemia [TM or transfusion-dependent thalassaemia] require regular blood transfusions to maintain an appropriate haemoglobin level, although secondary haemosiderosis and organ dysfunctions such as cardiamyqudthies, endocrinopathies, gonadal insufficiency, and osteoporosis have improved significantly with regular blood transfusion. DM represents a common endocrinopathies Pathphysalogic background. While the mechanism causing DM in TM is unknown, some believe that iron-induced pancreatic cytotoxicity is the most significant factor, despite this long-held belief. According to a new notion, the loss of beta-pancreatic cells during a lengthy period of hyperinsulinemia may have a role in the development of DM in TM patients. .[2]. Studies demonstrate that TM patients had higher fasting insulin levels and beta-cell activity than non-TM patients. Studies show that TM patients had higher fasting insulin levels and beta-cell activity than non-TM patients. A large proportion of morbidity has been attributed to thalassemia-related diabetes mellitus. [3]. DM has been related to a higher incidence of cardiac issues and heart failure in TM. In fact, DM in TM patients may result in organ damage that persists despite chelation therapy. Understanding the risk factors linked with her thalassaemia-related DM is critical regarding DM prevalence and comorbidities.

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In Iranian TM patients, DM is a prevalent endocrinopathy, accounting for 11-13 percent of hospitalization cases.[4]. In previous investigations, DM was found to be present in 5-7 percent of Iranian TM patients. There are around 2000 registered TM patients in our region, Sistan and Baluchestan Province, with 10% of them residing in Sistan. However, no previous investigation on the prevalence of DM and IFG in TM patients had been conducted in our area. In this study, we and their associated factors in patients receiving care at Zabol's Imam Khomeini hospital (major city of Sistan).[5].

PATIENT INFORMATION :

A 31-year-old thalassemia major with type 1 diabetes mellitus and bilateral pneumonia (post covid stated) was tested with alternate fibrillation and came to our hospital for blood.

PRIMARY CONCERNS AND SYMPTOMS OF THE PATIENT:

A 31-year-old thalassemia major with type 1 diabetes has been on tab FA, capsule-PATD, and insulin combination for the past 12 days.

MEDICAL FAMILY AND PSYCHO-SOCIAL HISTORY :-

There was no history of bladder or bowel symptoms in her previous records. She was a thalassemia major with diabetes mellitus type 1 for 15 days on tab FA capsule PATD and Insulin mixture. She had a history of procedures done by the 2022 year. The patient is in a state used by occupation, and she hand resumed her work 15 days after the procedure.

CLINICAL FINDINGS : The patient was alert and oriented on general examination, which are high-risk indicators for thalassemia major and diabetes maltus.

Timeline:

The patient had thalassemia major and type 1 diabetes, and the procedure was completed within 15 days after her admission to the hospital. This timeline contains historical and current data from this episode of care. After admission, her x-ray and comprehensive blood examination were completed, and she began taking medication for thalassemia tab capsule-PAID.

Diagnosis Assessment:

Ultrasonography and x-rays were reported to have been performed, as well as all blood tests and urine tests. [6].

Diagnostic Challenges: There were no diagnostic difficulties

Diagnosis:Thalassemia major with diabetes mellitus type 1.

Prognosis: Thalassemia is not cured by blood transfusions or chelation. It can be fixed with a stem cell transparent, but it is a risky treatment that will not benefit everyone with the ailment. To help people with thalassemia, doctors and scientists are working on developing gene therapies and other treatments.

Therapeutic Intervention:

He received injection insulin mixed and tab Folic Acid.

Modifications in therapeutic interventions: There were no reported modifications in therapeutic intervention.

Follow-up: Patientis good, and the patient report is positive according to the test he was given, with no change in the 52 days of follow up. [7].He was advised to avoid doing heavy tasks. Advised that there is a total restriction for travelling if there is an issue. Advised to avoid constipation and controlled coughing, stay away from heavy lifting and heavy work.

Intervention Adherence And Tolerability: The intervention was well adhered to and well tested by the patient

Adverse And Unanticipated Events :Noadverse events were noted

DISCUSSION:

A scientific discussion of the significance and limitations of this case report. [8]. Diagnostic tests play an essential role in the evaluation and subsequent management plan because they also provide information about the patient's or client's abdominal status and uterine Plath. They have almost completely replaced procedures in assessing the patient or client. [9].In our research, age was revealed to be a significant contribution to the risk of any DM.[10].

The life expectancy in thalassaemia, the most frequent berditly cause of anaemia, has increased significantly over the last three decades; however, The rise in life expectancy has been accompanied by an increase in the rate of complications. However, until recently, the significance of thromboembolic events was overlooked, when an increase in the frequency of thrombotic events in thalassemia intermedia increased the detection of hypercoagulability in thalassemia patients. The incidence of the thromboembolic event has been recorded in above 4-5 percent of patients with thalassemia in a study [Turkish thalassemia research group done at 11 centres in our country].

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Thronboembolism occurred 3.27 percent of the time in patients with thalassaemia major or intermedia [11]. Chronic plating activation membrane alterations in red blood cells [RBCS] are the key cellular and molecular mechanisms that predispose hypercoagulability in thalassaemia intermedia, which has a milder anaemia than thalassaemia major. There is a need for in a recent study on 8860 cases with thalassaemia, which is one of the most extensive epidemiological studies, it was found that a chronic. Other pathologies linked to high coagulability include heart dysfunction, a terminal disorder such as hypothyroidism and linear dysfunction, and the presence of inherited thrombotic risk factors. A history of past thrombotic events, advanced age, and a positive family history are all factors that enhance the likelihood of thromboembolic events. A combination of these variables commonly causes thromboembolic events.[12].

Erythrocytes become more stiff and aggregate as a result of this.[13]. The reticuloendothelial system recognizes older erythrocytes by their increased PS content at the membrane's outer layer, and eliminates them.[14]. Furthermore, because phospholipids have a negative charge, they cause fibrinogen fibrin conversion, platelet activation, and thus thrombus formation via stimulating thrombin regeneration. [15].

Erythrocytes become more stiff and aggregate as a result of this.[16]. the system recognizes old erythrocytes by their more excellent PS content at the membrane's outer layer and eliminates them.[17]. Furthermore, because phospholipids have a negative charge, they stimulate thrombin regeneration, which leads to fibrinogen-fibrin conversion, platelet activation, and thrombus development.[18]. Monocytes and granulocytes also contribute to endothelial damage and a hypercoagulable condition in thalassaemia by increasing phagocytic function.[19].

In thalassaemia patients, splenectomy is another factor that increases the risk of a thromboembolic event.[20].This was assumed to be owing to a failure in the clearance of wounded erythrocytes from circulation caused by splenectomy, thrombocytosis, and an increase in the number of aberrant RBCs, and therefore a greater sensitivity to coagulate. Furthermore, in another study, pulmonary hypertension was seen in 68 percent of patients with thalassaemia major or intermedia compared to thalassaemia intermedia cases without splenectomy.[21]. Profound anaemia, a high platelet count, a high iron load, hypothyroidism, a history of splenectomy, and a lack of frequent transfusions resulting in increased haemolysis are regarded to be the factors that predispose thrombosis development in our situation.[22].

Although surgery is the preferred treatment for pulmonary hypertension.[23]. In situ microthrombus formation in the lungs is also aided by activation. The track BT was regular in our situation. Therefore we ruled out pulmonary emboli.[24]. Chronic, recurrent micro thromboembolism causes right ventricle dysfunction and right heart failure by rising pulmonary artery pressure.

In a prior study, pulmonary hypertension was found in 59.1% of patients with thalassemia who did not require or get a blood transfusion.[25]. Pulmonary hypertension was seen in another investigation in 68 percent of patients with thalassemia. Heart failure is the cause of death for the primary.[26-30].The most prevalent causes of heart failure include hemosiderosis, chronic anaemia, and chronic pulmonary thromboembolism.[31-33]. The patient's heart failure is visible in the clinical basal creps in this example due to diastolic dysfunction.[34]. It is well recognized that patients with thalassemia, particularly those with thalassemia intermedia, are more likely to develop pulmonary thromboembolism and hypertension. The most common causes of pulmonary hypertension include hemolysis and the resulting impairment in arginine metabolism, as well as endothelial dysfunction.[35]. Thromboembolic events are considerably reduced when blood is transfused regularly[36-37]. It is hypothesized that a lower number of pathogenic RBCs and a greater degree of membrane injury due to regular transfusion contribute to a lower risk of thromboembolic events.

CONCLUSION:

In the current investigation, older splenectomized TM patients had a higher risk of impaired glucose metabolism. It is used to identify patients who have IFG, DM, or thalassaemia. This is critical because clinical diabetes can be prevented by using suitable nutritional diets and administering frequent chelation therapy earlier.

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