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Letter to Editor

Internal Medicine Section

Sickle Cell Anaemia with Antiglobulin Positive Autoimmune Haemolytic Crisis

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Dear Editor,

Immune-mediated haemolytic crises can worsen congenital anemias, and although autoantibodies have been identified, they are not frequently associated with overt Autoimmune Haemolytic Anaemia (AIHA) [1]. Sickle Cell Disease (SCD) is characterised by the presence of haemoglobin S (HbS), an abnormal type of haemoglobin that can form polymers in erythrocytes and distort the structure of Red Blood Cells (RBC). This can lead to intravascular sickling, haemolytic anaemia, and vaso-occlusive crisis caused by persistent narrowing of the tiny blood arteries. Autoimmune disease can result from various mechanisms, including the alteration of RBC membrane antigens, molecular mimicry, the propagation of hidden epitopes, and the destruction of innocent bystanders [2].

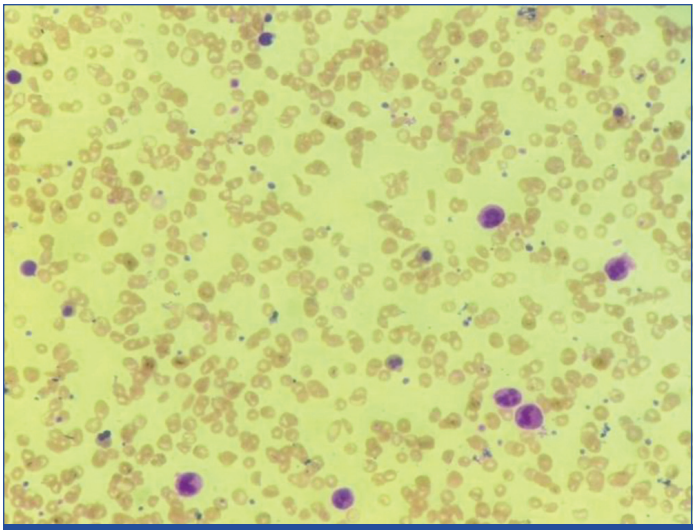
This letter describes the case of a 25-year-old female who presented with fever, breathlessness, and severe myalgia and bone pain for ten days. She had been diagnosed with sickle cell SS pattern 15 years earlier and was taking tablet Hydroxyurea 500 mg once daily, tablet folic acid 5 mg per day, and tablet zinc 50 mg per day. The patient had a history of recurrent crises and had been hospitalised four times in the previous year.

Upon examination, the patient had a pulse of 110/min, blood pressure of 130/90 mm/Hg, respiratory rate of 22/min, raised jugular venous pressure to 11 cm of H_2O, pallor, and mild icterus. Abdominal examination revealed tender hepatomegaly, but the spleen was not palpable. Respiratory system examination showed reduced bilateral air entry at the base. Severe anemia was detected (haemoglobin of 4.5 gm/dL) upon investigation, along with sepsis, raised serum Lactate dehydrogenase and total bilirubin [Table/Fig-1,2]. Chest radiography revealed bilateral minimal pleural effusion. The patient was diagnosed with SCD with vaso-occlusive crisis and treated with three units of blood transfusions, intravenous antibiotics, fluids, and supplemental oxygen. By the third day of admission, the patient's condition had slightly improved as her haemoglobin levels increased to 6.5 gm/dL [Table/Fig-1].

On the fourth day, the patient complained of breathlessness and palpitations, and blood parameters were repeated, showing further derangement and haemolysis [Table/Fig-1]. As three blood transfusions had been performed, an antiglobulin test was done to rule out the possibility of a transfusion reaction. The test was positive, and further transfusions were withheld. The patient was started on methylprednisolone 40 mg twice daily, and serial monitoring of haemogram, liver function, serum lactate dehydrogenase, and other parameters was done. The patient's condition clinically improved over the next few days. Her haemoglobin levels stabilised, and her total serum bilirubin and serum LDH declined [Table/Fig-1].

	On admission		Post transfusions	Exacerbation of symptoms followed by initiation of injectable steroid therapy	Improvement in blood parameters following steroid therapy	Patient discharged on oral steroids
Day	0		3	4	7	10
Haemoglobin (gm/dL)	4.5		6.5	4.4	5.9	7.1
WBC count (cells/mm^3)	3,400	Blood transfusion given on Day 0, 1 and 2	22500	12300	13,700	12,100
Serum lactate dehydrogenase (U/L)	340		392	2872	1034	310
Total bilirubin (mg/dL)	3.5		3.8	7.2	4.5	2.9

[Table/Fig-1]: Trend of blood profile during the course of hospital stay.



[Table/Fig-2]: Peripheral smear showing normocytic normochromic red blood cells with nucleated RBC's, tactoids, occassional target cells and fragmented red cells. (High power view, 40x).

The patient was discharged on day 10 in stable condition, with oral prednisone in tapering doses, zinc 50 mg per day, and tablet hydroxyurea 500 mg once a day. Patients with underlying haemoglobinopathies are susceptible to a condition known as autoimmune haemolysis. One of the most popular hypotheses for the cause of this condition is "bystander haemolysis", which occurs when both native and donated RBCs go through haemolysis caused by complement activation [3,4]. Other hypotheses include the reduction of erythropoiesis, increased expression of phosphatidylserine, and an increase in haemolysis by activated macrophages following transfusion [5]. To help stop further haemolysis and aid in the patient's recovery, corticosteroids and Intravenous Immune Globulin (IVIG) can be used [6]. Additionally, Rituximab and Eculizumab are C-5 convertase inhibitors that inhibit complement activity, which can help stop complement-mediated destruction [7].

Red cell transfusion is usually the first step in treating these patients, but it can be challenging due to red cell incompatibility. The transfused red cells will be destroyed no less- but no more- than the patient's own red cells. This approach is frequently used in such situations and requires close communication and comprehension between the clinical unit caring for the patient and the serology lab.

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