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Case Report

Evans Syndrome: A Case Study with Substantial Comparison of Literature Review

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ABSTRACT

Evans syndrome is an autoimmune disease characterized by the presence of two or more cytopenias, most commonly Immune Thrombocytopenia (ITP) and Autoimmune Hemolytic Anemia (AIHA), regardless of immune neutropenia. Evans' syndrome is a rare condition and its prevalence rate is relative low (estimated prevalence to be around 0.5 to 1 case per 2 million). We describe a case of a 16-year-old female patient affected, who was admitted with complaints, of generalized weakness, pale skin and sever bleeding. The symptoms were controlled by treating with Tab. Azithromycin, Tab. Prednisolone, Tab. Pantoprazole, Tab. Folic Acid and through a blood transfusion. During the follow-up period, it was observed that the patient's platelet count, hemoglobin levels and white blood cell count remained lower than normal. This persistent abnormality suggested that the patient's condition fit the diagnosis of Evans, syndrome. Diagnosing Evans syndrome is crucial, as it helps identify and address the autoimmune disorder. Early diagnosis in this case may allow for timely medical intervention and reducing complications

Keywords: Evans Syndrome (ES), Autoimmune Hemolytic Anemia (AIHA), Immune Thrombocytopenia (ITP).

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INTRODUCTION

Evans syndrome is an uncommon autoimmune condition involving two or more cytopenias, a low count of blood cells. The most common cytopenias seen in Evans syndrome are Autoimmune Hemolytic Anemia (AIHA) and Immune Thrombocytopenia (ITP). AIHA is characterized by the destruction of red blood cells by the immune system, leading to anemia, while ITP involves the destruction of platelets, leading to a low platelet count.[1,2]

The Clinical presentation of Evans syndromes is characterized by the associated cytopenia of patient. This may include fatigue, weakness, pale skin, shortness of breath and increased susceptibility to infections, easy bruising or bleeding and excessive or prolonged bleeding from minor cuts.

Diagnosis of Evans syndrome involves thorough evaluation of the patient's past history, physical examination and lab results. CBCs are used to measure levels of RBC, platelets and WBC. Further tests are done to determine the presence of autoantibodies, which are antibodies that are formed against the body's own tissues.

Managing Evans syndrome requires professional team approach involving various healthcare professionals. Treatment options depend on the severity and type of cytopenias. In some cases, corticosteroids may weaken the immune system and prevent the death of RBC. Other immunosuppressant's, such as rituximab or cyclosporine, may also be used.[3-5]

A critical component and remedy liaison of the existing medical service system is blood transfusion. According to the recipient describing the bonding, it involves transferring blood or blood products extracted from donor in to vasculature. This is accomplished by inserting an IV needle or catheter into the patient, then using the blood products. However, because catheters can become more susceptible to microbes due to weakened immune system, they are used less frequently; nevertheless, other alternative can be splenectomy.[6]

In severe cases or when medical therapy fails to control the symptoms, further interventions may be necessary. These may include splenectomy (removal of the spleen) or hematopoietic stem cell transplantation.

Regular follow-up with healthcare professionals is essential for patients with Evans syndrome to monitor blood counts, manage symptoms and adjust treatment as needed. A professional team approach helps ensure comprehensive and coordinated care, providing the best possible outcomes for affected patients.

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CASE REPORT

A sixteen-year-old female patient was admitted for pediatric causality with clinical symptoms, of generalized weakness for 3-4 days, heavy menstrual bleeding for 10 days (using 5-6 sanitary pads per day) and pale skin with a low platelet count. According to medical history, the mother said that her child had met all of her developmental milestones on time and received all of her immunizations on schedule and had no other medical conditions. However, the subject had a notable history of suffering from the same symptoms two years prior, in 2021. The patient experienced her first menstrual cycle at the age of 14 with a regular cycle of 6 months and sudden menorrhagia, which occurred during the Corona period. The patient lost consciousness soon after receiving the COVID vaccination; she was rushed to the nearby clinic and instructed to undergo a CBC examination. Where lab CBC analysis was done on the following dates as mentioned in Table 1 and based on the lab parameters, the physician suspected for anemia and immune thrombocytopenia. Another specific differential diagnosis test was done, including a blood count and morphology examination that showed a dimorphic blood picture: normocytic normochromic with microcytes, ovalocytoma and polychromasia. DIRECT ANTIGLOBULIN (COOMBS) Test: Positive (+) test result indicating Evans syndrome. The RBC morphology test impression showed a microcytic hypochromic blood picture with thrombocytopenia. A bone marrow aspirate examination revealed solid cellular marrow with poor cell traits and adequate megakaryocytes. Histopathology showed mild hyper cellular marrow with adequate trilineage hematopoiesis.

So, on the basis of clinical laboratory findings that confirmed Autoimmune Hemolytic Anemia (AIHA), neutropenia with thrombocytopenia and a positive Coombs test, the diagnosis of Evans syndrome was confirmed. Further clinical symptoms of the patient were managed by Tab Azithromycin 50 mg TID, Tab Prednisolone 40 mg OD, Tab Pantoprazole 40 mg OD, Tab Folic acid BD, Tab vitamin+thiamine+minerals complex (10 mg OD), following injection of imidocarb dipropionate, 2500 g s/c once a week for 4 weeks and a blood transfusion of 350 mL, after which the patient was stable. In 2022 patient received a blood transfusion (2 -point PCV) For similar complaints and then referred to causality where patient was treated with IV fluids DNS +5cc KCL (dextrose with normal saline+potassium chloride), Injection Lasix (furosemide) 50 mg IV BD, Injection Tranexamic acid 10 mg/kg/dose TDS, Tab Pause BD with a blood transfusion of 350 mL twice and a platelet transfusion of 49 mL 4 times.

Clinical and laboratory remission were observed after therapy and the follow-up program. Nevertheless, at first follow up Hb count was 8.4 g/dL, along with the PCV to 31%, WBC was normal 8800/cu mm and platelet count decreased to 56000/uL with RC% as 5%. One month after completion of therapy the Hb was 10.4 g/dL, PCV 34.5%, MCH 25.4 Pg, MCHC 30.1 g/dL and RC% of 6%, WBC decreased to 10500/cu mm and low platelet count discovered 23000/uL as a result patient was referred to causality, where the lab test showed decline in Hb count 5.6 g/dL, PCV 22.8%, MCHC 25.4 g/dL, WBC to normal 9500/cu mm and platelet count decreased, indicating that the patient is not responding well to treatment. The patient's caretaker was advised to have a surgery based on lab test results, but the patient's attender did not want to have surgery on the child and instead chose to stay in casualty, undergo short- term therapy and requested discharge (Table 1 and Figure 1).

DISCUSSION

We review various research studies and patient data on Evans syndrome across pediatric and adult age groups. Where F. Porcaro reported a case of a 14-year-old girl who presented with petechial and bruising symptoms on her skin, along with laboratory results indicating severe thrombocytopenia, which was also present in

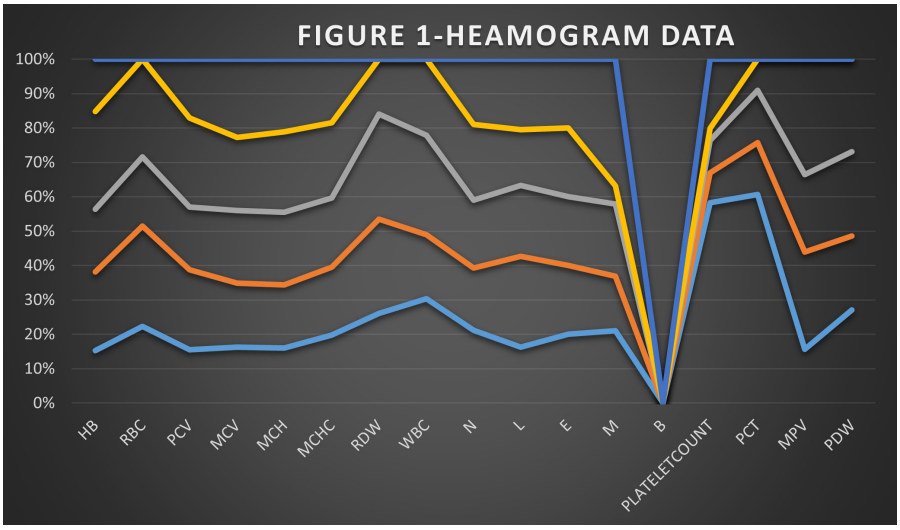

Figure 1: Analysis of Complete blood count test during different follow up.

the current study. The patient was treated with immunoglobulin 8 g/kg, tab methyl prednisolone 30 mg and tab prednisolone 2 mg/kg/day, which are comparable to steroids given in our study. The patient showed recovery after 1 month of treatment.[1] In a study conducted by Zachary D, a 63-year-old female patient with a medical history of DVT for 20 years and a severe blockage in multiple veins was diagnosed with Evans syndrome based on lab reports imprisoned as thrombocytopenia. She was treated with IV steroids, intravenous immunoglobulin and platelet transfusions-all of which were not used in the study mentioned above. With three weeks of therapy, the patient made a full recovery.[2] The review involved six patients aged range between 9-30 years who had been experiencing clinical symptoms for weeks, including purpura, petechiae, mucosal bleeds and signs of anemia. Hematological testing indicated a decrease in HB counts, no signs of thrombocytopenia, a bilirubin level of 5.5 mg/dL and a positive Coombs test, for which the patients were treated with immunoglobulin and steroids whereas in contrast to present case lab reports showed presence of thrombocytopenia, with low HB counts and positive for coombs test. Matthew described males in their 20s with symptoms of jaundice, lethargy and shortness of breath for 1 day. Whereas the symptoms were identical to those found in the current study like jaundice and generalized weakness. HB was seen to decrease with an increase in neutrophils on blood examination. In this study, the subject had a history of liver transplants, ITP since 2016 and Crohn's disease. The current condition was recovered within 3 months using treatments such as steroids, blood transfusion, r and rituximab, which were not used in the above-mentioned Studies.[7,8]

Furthermore, in comparison with other studies, it was shown that the severity of the condition lengthened the recovery period. Similar to previous studies, this study was done on a 16-year-old female patient who came with complaints of heavy menstrual bleeding (requiring six pads per day), pale skin, lethargy and signs of jaundice for 1 week. The patient had a similar medical history of ITP for 2 years. On medical examination it was found that the patient's HB count was decreased, followed by decreased platelet count indicating thrombocytopenia and a positive Coombs test. The symptoms of the patient were managed by treatment with steroids and blood transfusion, along with other

Table 1: Patient lab data on complete blood count.

Blood test components	DATE				
	07-09-2021	21-09-2021	01-10-2022	31-10-2022	07-08-2023
HB	5.6	8.4	6.7	10.4	5.6
RBC	3.23	4.23	2.92	4.12	0
PCV	20.6	31	24.3	34.5	22.8
MCV	63.8	73.3	83.2	83.7	89.4
MCH	17.3	19.9	22.9	25.2	22.9
MCHC	27.2	27.1	27.6	30.1	25.4
RDW	28.3	29.7	33.1	17.3	0
WBC	14400	8800	13700	10500	9500
N	76	65	71	79	68
L	19	31	24	19	24
E	1	1	1	1	1
M	4	3	4	1	7
B	0	0	0	0	0
PLATELET COUNT	377000	56000	61000	23000	130000
PCT	0.2	0.05	0.05	0.03	0
MPV	5.4	9.8	7.8	11.6	0
PDW	15	11.9	13.6	14.9	0
RETICULOCYTE COUNT					
DATE	07-09-2021	21-09-2021	01-10-2022	31-10-2022	07-08-2023
RC %	5%	15%	10%	6%	----
ARC	161.59 billion/L	634.50 billion/L	292.0 billion/L	247.20 billion/L	----
CRC	2.29%	10.53%	5.40%	4.60%	----
RPI	4.58	13.30	10.80	6.90	----

Table 2: A substantial comparison of literature review on Evans Syndrome.

References	Age/gender	Clinical features	Onset of symptoms	Laboratory investigation	Patient history	Treatment	Recovery time
F. Porcaro, 1 M. Valenzise, 1 G. Candela.	14-years old/ Female.	Petechial and bruising on the skin.	----------	Severe thrombocytopenia (Platelet counts -<10,000/mmc.	----------	Immunoglobulin was given at 08 g/Kg. methyl prednisolone (30 mg/Kg/day for 3 days) and Tab prednisone (2 mg/Kg/day).	1 month after treatment.
Zachary D. Otaibia C, Rohit Raob.	63-year-old/ Female.	Phlegmasia cerulea dolen.	Cold associated with pitting edema since a week.	WBC of 5.81×103/ µL, HB of 13.3 g/dL and a platelet count of 3.0×103/µL.	DVT ES since 20 years.	IV steroids, intravenous Immunoglobulin (IVIG) and platelet transfusions.	3 weeks.
Kajal Kiran Dhingra 1, Deepali Jain 1.	9 to 30 years/4 Femals,2 Males	Purpura, petechial, ecchymosis, mucosal bleeds and signs of anemia.	Pale skin, jaundice.	Platelet count -50 6 109/L. Pallor was present in all, mean HB was 5 g/dL. Bilirubin of 5. 5 mg%. The LDH was (mean: 424 U/l), Heptoglobin levels -(mean: 7/dL). Urinalysis dark yellow urine and Coombs test positive.	-----	Steroids and intravenous immunoglobulin.	----------
Matthew Dominic McCarthy, A G Mohamed Fareeth.	Male in 20s.	Jaundice, lethargy and shortness of breath.	Since 1 day.	HB -66 g/L., WBC-13.7×109/L, neutrophils at 8.4×109/L.	Liver transplant ITP since2016 Crohns disease.	Steroids, Tacrolimus Red blood cell transfusion, rituximab.	3 months.
Sanam Dhakal, 1 Sulochana Neupane.	50-year-old/ female.	Bleeding, Bluish Patches on Skin.	Since 7 days.	Platelet count decreased, Peripheral blood smear report showed anisopoikilocytosis with the presence of microcytic, four RBC/100 WBCs, neutrophilic leukocytosis.	----------	Packed blood cell transfusion, steroids, blood transfusion , rituximab.	8 weeks.
Current case.	16 years/ female.	heavy menstrual bleeding (6 pads/day) with flow, pale skin, lethargy and jaundice.	Since 1 week.	HB -8.4 g/dL PCV to 31 %, WBC -8800/ cu mm and platelet count decreased to 56000/uL. Coombs test positive.	ITP Since 2 years.	Steroids, blood transfusion.	----------

treatments such as tab azithromycin 50 mg, injection imidocarb dipropionate, 2500 mg once a week, IV fluids and tab/injection Tranexamic acid 10 mg/kg/day, which were not used in the above studies. The severity of the patient condition was not recovered completely, but was managed. The research showed that immunoglobulin, blood transfusions and steroids were the main treatments for Evans syndrome. Nevertheless, the course of treatment may vary according to the severity of the illness and other external factors (Table 2).

CONCLUSION

The concurrent or sequential development of immune thrombocytopenia and autoimmune hemolytic anemia are the marker of Evans syndrome. While there are many triggers for Evans syndrome, like viral infections, drugs, or other autoimmune disorders, they are frequently the first to cause it. In the above-mentioned case, it is observed that despite the course of treatment provided, the patient's condition has not improved. To ensure safe health and well-being, a long-term solution is essential since there is a high likelihood of developing other autoimmune problems and hypogammaglobinemia. Medication compliance should be encouraged. It is essential for the patient to stay up-to-date with their vaccinations, as certain infections can trigger a relapse of Evans syndrome. The patient and caregivers should monitor for signs of relapse and maintain a healthy lifestyle, balanced nutrition and adequate sleep to minimize stress and manage potentially trigger relapses effectively.

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CONFLICT OF INTEREST

The authors declare that there is no conflict of interest.

ABBREVIATIONS

ES: Evans Syndrome; **AIHA:** Autoimmune Hemolytic Anemia; **ITP:** Immune Thrombocytopenia; **HB:** hemoglobin; **PCV:** Packed cell volume; **MCH:** Mean corpuscular hemoglobin; **MCHC:** Mean corpuscular hemoglobin concentration; **WBC:** White blood cell; **RC:** Reticulocyte count; **DVT:** Deep vein thrombosis; **CBC:** Complete blood count; **OD:** Once a day; **BD:** Twice a day; **TD**: Trice a day.

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