**Case report**

**DELVING AUTOIMMUNE HEMOLYTIC ANEMIA IN TODDLER AND ASSOCIATED COMPLICATIONS: A RARE CASE REPORT**

**ABSTRACT**

Autoimmune hemolytic anemia (AIHA) refers to a rapid breakdown of red blood cells, leading to a decrease in hemoglobin and hematocrit levels. In pediatric patients, it is less a rare condition. A 03 year old male patient was admitted in a tertiary care hospital with complaints of fever since the last day morning, vomiting since previous day of 5 episodes, containing mostly mucus material, abdominal pain, decreased appetite for 2 days, yellowish discoloration of eyes and dark colored urine noted, and decreased urine output. History of travel to Dubai, ate cheese for the first time. The serology showed positive in Direct Coombs Test (DCT) with decrease in Hemoglobin, Hematocrit, MCH, MCHC with Blood Picture showed as features of Hemolytic Anemia. CRP, Bilirubin, AST, ALP, Serum LDH levels were increased. This confirmed Autoimmune Hemolyic Anemia associated with liver enzyme elevation potentially due to severe hemolysis, a rare condition with an estimated incidence of 0.2 per one million individuals younger than 20 years. Plan of care was primarily with IV corticosteroids, blood transfusion, folate supplements. Other supportive medications were also given. The condition improved during the course of time in hospital and was discharged with oral medications.

**KEYWORDS:** Direct Coombs Test (DCT), Autoimmune Hemolytic Anemia (AIHA), Liver Enzyme, hemolysis, corticosteroids

**INTRODUCTION**

Autoimmune Hemolytic Anemia (AIHA) is a rare but clinically significant disorder in which the immune system produces antibodies that target and destroy the body’s own red blood cells, leading to hemolysis and anemia. This condition is more common in adults but remains relatively rare in pediatric populations. AIHA can be classified into two main types: warm autoimmune hemolytic anemia (WAIHA), where antibodies react at body temperature, and cold agglutinin disease (CAD), where antibodies are active at colder temperatures. In children, AIHA can be primary (idiopathic) or secondary, often associated with infections, autoimmune diseases (such as systemic lupus erythematosus), or hematologic malignancies (e.g., lymphoma or leukemia) [1][2].

Pediatric AIHA often presents with clinical features such as pallor, jaundice, fatigue, and splenomegaly, and it can be triggered by viral infections like Epstein-Barr virus or Mycoplasma pneumoniae, or as part of an underlying autoimmune condition. Diagnosis is confirmed through laboratory tests, including a direct Coombs test, reticulocyte count, and peripheral blood smear, which show evidence of hemolysis and antibody-coated red blood cells [3][4].

The management of AIHA in children depends on the severity of the disease and may include corticosteroids, intravenous immunoglobulin (IVIg), or, in more refractory cases, rituximab, azathioprine, or splenectomy. Early diagnosis and treatment are essential to prevent severe anemia, hemolytic crises, and potential organ damage [5][6].

Although AIHA in children is uncommon, it remains an important condition to consider in the differential diagnosis of unexplained anemia. Further research into the pathophysiology and optimal management strategies for pediatric AIHA is needed to improve patient outcomes [7][8].

Autoimmune Hemolytic Anemia (AIHA) is considered a rare condition, particularly in pediatric populations. While the overall incidence of AIHA in children is not precisely established, it is generally estimated to account for less than 1% of all cases of anemia in children. The incidence rate for AIHA in children is thought to be around 0.1 to 0.2 cases per 100,000 children per year. This rarity is reflected in the overall low frequency of autoimmune-related hematologic disorders in pediatric populations compared to adults. Despite its rarity, AIHA is important to recognize because, in some cases, it can lead to significant morbidity or mortality if not promptly diagnosed and treated. The condition may be idiopathic or secondary to infections, malignancies, or autoimmune disorders, but its exact incidence is difficult to pinpoint because of its heterogeneous nature and the overlap with other causes of anemia in children

Here we are reporting a case of wrong dosage form and monitoring of DMARDs induced Abdominal Uterine Bleeding with endometrial polyp followed by severe anemia[9][10].

**CASE REPORT**

A03 year old male patient was admitted to Pediatrics department with the complaints of fever, 5 episodes of vomiting with mucus content, yellowish discolouration of eyes and dark coloured urine noted on a day before admit. Abdominal pain, decreased appetite for last 2 days.

 The patient was conscious, oriented with icterus, heart sounds were heard, chest was clear, was able to move all limbs and was having abdominal distension. He was immunized upto age, well nourished and attained all milestones upto age. The weaning was at 1.5 years age. He was taken SYP. CEFIXIME 2 doses was taken on last day from outside clinic. History of travel to Dubai and ate cheese for first time. The provisional diagnosis was food poison or cheese allergy. During admission, she had a Pulse Rate of 72 beats/min, Respiratory Rate of 20 breaths/min, Blood Pressure of 120/80mmHg. Her laboratory investigation showed an elevation in CRP (71.0, 71.0, 45.0 mg/L), Bilirubin (4.96 mgldL), AST (97 U/L), ALP (146 U/L), Serum LDH (1843 U/L) and the declined parameters were Hemoglobin (4.9, 7.0 g/dL), Hematocrit (50.1%), MCH (23.9 pg), MCHC (28.7 fL). Direct Coombs Test was positive. Blood picture showed features of hemolytic anemia. USG Abdomen showed borderline hepatomegaly. Based on these investigations, he was diagnosed as Autoimmune Hemolytic Anemia (AIHA).

Initially 20 PRBC given to manage the severe anemia. To manage the autoimmune condition, IV Corticosteroids were given (INJ. METHYL PREDNISOLONE 40 mg IV OD ), then converted to oral form (T. PREDNISOLONE 10 mg P/O 1-1-1. To prevent the infection condition IV antibiotics were given (INJ. CEFOTAXIME SODIUM 100 mg, IV Q8H) and later converted to oral form (SYP. CEFIXIME 5 ml P/O BD). To prevent the gastric irritations H2 blockers were given (INJ. RANITIDINE 50 mg IV BD) and then converted to oral form (SYP. RANITIDINE 5 ml P/O BD). To improve the GI motility ( SYP. SUCRALFATE 5 ml P/O BD) were added. To manage the iron deficiency, (T. FOLIC ACID 5 mg P/O 0-1/2-0) were given. To prevent the thrombophlebitis condition, (THROMBOTAS OINTMENT L/A 1-0-1) were given. On 9th day of admission, the patient was symptomatically stable and was discharged with T. PREDNISOLONE 10 mg P/O 1/2-1/2-1/2, T. FOLIC ACID 5 mg P/O 1/2-0-0, SYP. RANITIDINE 5 ml P/O 1-0-1.

**DISCUSSION**

 Autoimmune Hemolytic Anemia (AIHA) is a rare condition in pediatric patients, where the immune system attacks and targets own blood cells for destruction, leading to anemia. Prognosis largely depends upon cause of AIHA and patient response to therapy, with early intervention being key to preventing complications like organ damage or chronic anemia. Proper monitoring would be required regularly for preventing further complications in future.[11][12]

Here it is a rare case representing the condition. The prevalence is 0.2 per million induviduals younger than 20 years. Complications observed in this case were severe anemia, hyperbilirubinemia, borderline hepatomegaly, thrombopheblitis.

**CONCLUSION**

This rare case of autoimmune hemolytic anemia (AIHA) in a pediatric patient highlights the importance of a comprehensive approach to diagnosis and management, particularly when secondary causes are suspected. First-line treatment with corticosteroids was initiated, with close monitoring for any signs of hemolytic crises or complications. Given the patient’s response to therapy, the prognosis remains favorable, though ongoing follow-up is necessary to ensure complete recovery. This case emphasizes that while AIHA is rare in children, it should be considered in the differential diagnosis of unexplained anemia, especially when accompanied by jaundice, splenomegaly, or a recent viral infection. Early diagnosis and appropriate management are crucial for preventing complications and improving outcomes.

**REFERNCE**

1. <https://pubmed.ncbi.nlm.nih.gov/32280062/>

2. <https://pmc.ncbi.nlm.nih.gov/articles/PMC7828053/#:~:text=Abstract,complement%20at%204%20%C2%B0C>.

3.  <https://onlinelibrary.wiley.com/doi/abs/10.1111/j.1537-2995.2007.01062.x>

4. <https://www.sciencedirect.com/science/article/abs/pii/000293437490751>

5. <https://www.mdpi.com/2077-0383/10/3/423>

6. <https://www.tandfonline.com/doi/abs/10.1586/ehm.11.60>

7. <https://pubmed.ncbi.nlm.nih.gov/35971316/>

8. <https://karger.com/tmh/article-abstract/42/5/294/301351/Treatment-Options-for-Primary-Autoimmune-Hemolytic>

9. <https://www.sciencedirect.com/science/article/abs/pii/S1246782020300380>

10. <https://pmc.ncbi.nlm.nih.gov/articles/PMC7445306/>

11. <https://www.tandfonline.com/doi/abs/10.1586/ehm.11.6>

12. <https://www.sciencedirect.com/science/article/abs/pii/S1246782020300380>