# Case of Autoimmune Haemolytic Anaemia (Aiha) in an Immunocompetent 1-Month-Old Child with Congenital Cytomegalovirus (cCMV) Infection

Tahniat Shakil[1], Saima Gillani[1*], Sohail Khan[1] and Saad Hussain[2]

[1]*Ayub Medical College, Abbottabad, Pakistan*
[2]*Fauji Foundation Hospital, Abbottabad, Pakistan*

## Abstract

Here we report a case of congenital CMV infection with rare presentation as haemolytic anaemia in a 50-day-old infant. Clinical manifestations of our patient were pallor, jaundice, hepatosplenomegaly, and a deranged coagulation profile. Congenital CMV being the most common viral congenital infection should be suspected in every neonate and infant presenting with haemolytic anaemia. It is also the most common non-genetic cause of SNHL and not much is yet there for its prevention except for primary prevention as the role of immunoglobulin is still under trial.

**Keywords:** *CMV, congenital cytomegalovirus infection, hemolytic anemia, autoimmune hemolytic anemic AIHA, salt and pepper degeneration of the retina.*

## INTRODUCTION

Congenital cytomegalovirus infection (cCMV) represents the most prevalent viral congenital infection affecting 0.2–2.0% of all live-born neonates. The risk of intrauterine transmission is 30 -35% among women with primary CMV infection and 1 - 1.7% in cases of non-primary infection. Prevalence of cCMV is similar (1%) irrespective of maternal CMV seroprevalence which is higher in developing countries (90%) as compared to Europe (40 – 60%) [1]. Congenital CMV can be categorized as symptomatic or asymptomatic based on symptoms at birth. Approximately 11% of patients are symptomatic with symptoms that can range from one or more of the following including small for gestational age, microcephaly, petechiae or purpura, blueberry muffin rash, jaundice, hepatomegaly, splenomegaly or hearing loss [2]. We discuss a case of cCMV with rare presentation.

**Table 1:** Lab workup of patient.

| Investigations | Value | Reference Range |
|---|---|---|
| Hb(g/dl) | 5.1 | 11.5 - 17.5 |
| TLC*10e3/uL | 24.6 | 11 - 6 |
| Platelet*10e3/uL | 175 | 150 - 450 |
| Total Bilirubin(mg/dl) | 4.9 | 0.1 - 1.0 |
| LDH(U/L) | 2400 | <248 |
| Ferritin(ng/ml) | 503.0 | 23.9 - 336.2 |
| Triglyceride(mg/dl) | 169.0 | <150 |
| Retic Count (%) | 5 | 0.5 - 2.5 |
| Serum Alpha-Fetoprotein (ng/ml) | 1000 | 0 - 40 |
| Peripheral Smear | Haemolytic Anaemia | |
| ABGs | Respiratory Alkalosis | |

**Corresponding author: Saima Gillani, Ayub Medical College, Abbottabad, Pakistan, Email: drsaimagillani@gmail.com*
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A 50-day-old infant presented to the paediatric department with three days history of refusal to feed, breathing difficulty, abdominal distension, per rectal bleed, and sepsis-like features. The perinatal course of the mother and infant was unremarkable. The patient had a history of prolonged neonatal jaundice of 15 to 20 days and hematoma formation at the site of the first IM vaccine injection however there was no hospital admission during neonatal age. Upon examination, the infant had microcephaly, having a front-occipital head circumference of (FOC) 32cm was lethargic, tachypneic with severe pallor, jaundice, multiple bruises, and obvious abdominal distension with a liver span of 8cm and spleen 6cm BCM. Initial investigations are in Table **1**.

CBC and peripheral smear showed a dimorphic blood picture with increased poikilocytosis and anisocytosis, raised reticulocyte count, and positive direct coombs test confirming haemolytic anaemia. The initial coagulation profile was severely deranged with a failed-to-clot sample. All other inflammatory markers were raised too. Our initial differentials were Sepsis with DIC, TORCH infections, and Haemophagocytic lymphohistiocytosis (HLH). Intravenous antibiotics and supportive treatment started in the form of Blood and FFP transfusion. Meanwhile TORCH profile turned positive for CMV and CMV IgM titers were raised to 4.77IU/ml. Blood cultures came back negative. Alpha-fetoprotein levels were raised. The diagnosis of cCMV was supported by salt and pepper retinopathy on fundoscopic examination. CT Brain revealed mild frontal brain atrophy for the age of the patient however there were no intra-cranial calcifications (**Fig.1a&1b**). The patient was curatively treated with repeated fresh frozen plasma and red cell concentrate transfusions and IV Ganciclovir therapy for 28 days and was discharged from the hospital with follow-up advice.

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The patient improved on his first follow-up after 1 month and there were no active complaints however they were lost to follow-up in further visits.

PCR of the patient and mother could not be done for confirmation of diagnosis due to delayed presentation after 3 weeks of life and affordability issues with the patient's attendants.

These findings of haemolytic anaemia though rare with cCMV are supported by the case series of cCMV with a rare haematological presentation where 2 out of 4 infants also had a similar presentation with autoimmune haemolytic anaemia [3]. Other nonspecific inflammatory markers of our patient were raised too but they did not fulfill the criteria for HLH [3]. In the largest series of paediatric AIHA patients, Aladjidi et al., [4] evaluated 265 children with AIHA and reported six patients with Cytomegalovirus as the causative agent for AIHA [4]. cCMV also affects the retina in various ways. In a cohort study of 16 patients with cCMV, most of the children had normal fundus 43.75%, 18.75% had retinal depigmentation, 25% with salt and pepper degeneration, and 12.5% with widespread depigmentation [5]. Fundi examination in our patient also showed pale discs with salt and pepper retinopathy.

One study reported a child having Acute CMV infection associated with a refractory warm Coombs-positive haemolytic. The study quoted that although severe haemolysis is rare, it can be a potentially life-threatening complication of CMV infection mostly found in association with immune-compromised adults and children. It concluded that while devising a differential diagnosis for Autoimmune haemolytic anaemia, CMV should be considered as well [6].

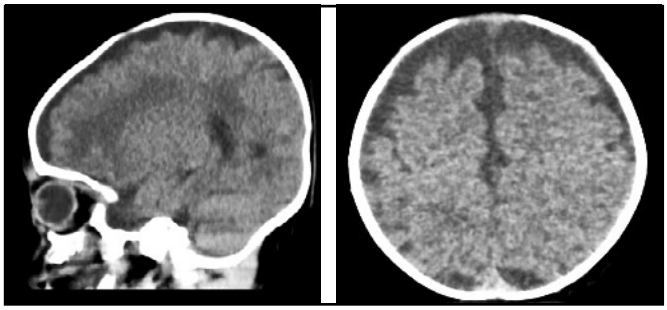

**Fig. (1a-b):** CAT SCAN brain without contrast showing brain atrophy.

## CONCLUSION

In paediatric cases of AIHA, CMV should be considered in the differential diagnosis. Clinical signs are often non-specific so proper diagnostic measures and consultations are essential for high-risk neonates and infants presenting with haemolytic anaemia.

## SUGGESTIONS

Prevention of primary maternal CMV infection can only be done through frequent hand washing, as exposure to the source of CMV can be through multiple ways like contact with saliva and urine of children with CMV infection or sexual activity. A commonly recommended step to decrease the spread of infections is regular hand washing, particularly after changing diapers may reduce exposure to CMV. Currently, treatment with immunoglobulins or antiviral therapy to prevent intrauterine transmission of CMV in pregnant women with primary CMV infection is not recommended as studies have not yet conclusively shown benefit [2]. Awareness of healthcare workers regarding the education of mothers for the prevention of primary CMV infection is essential.

## CONSENT FOR PUBLICATION

Written informed consent was taken from the participants.

## CONFLICT OF INTEREST

The authors declare no conflict of interest.

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Declared none.

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