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Case Report

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Critical diagnosis of HCMV induced enterocolitis in a preterm neonate admitted at a tertiary care hospital of Eastern India

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Abstract

Human Cytomegalovirus (HCMV) is the most common cause of congenital viral infection worldwide. In this case report we have presented a unique case of HCMV induced enterocolitis mimicking as general necrotizing enterocolitis in an infant admitted to the neonatal intensive care unit. This article will be the first reported evidence from India to discuss the potentiality of congenital HCMV infection causing severe gastroenteric complications in neonates and highlight the need for improved medical resources in a lowermiddle income country like India to timely diagnose and combat this dreaded virus.

Keywords: Human Cytomegalovirus; Enterocolitis; Gancyclovir; Colitis.

Introduction

Human Cytomegalovirus (HCMV) is the most common cause of congenital viral infection, affecting 0.2 to 2.3% of all live births in developed countries [1]. Congenital Human Cytomegalovirus has transpired itself to be one of the major health issues concerning the current population of India. HCMV infection in pregnant women is very common in poor economic hubs and impoverished resource setting, largely visible in many south Asian countries including India [2]. Newborns with very low birth weight are at higher risk of symptomatic HCMV infection, both primary and secondary through breast milk [3]. Gastrointestinal involvement is rare in acquired HCMV infections, but it could be an important manifestation of postnatal infection in preterm infants admitted to neonatal intensive care units [4]. In neonates, viral culture of urine, saliva or tissue sample and DNA PCR are the primary diagnostic tools [5]. Congenital HCMV is diagnosed if the virus is isolated from urine or other body fluids taken within the first 3 week of life [6]. Beyond 3 week, positive cultures may indicate either perinatal or congenital HCMV infection. HCMV infection of the gastrointestinal tract in infants is an unusual manifestation and had only been reported infrequently [7]. Clinical presentations may mimic other neonatal diseases, such as neonatal necrotizing enterocolitis or Hirschsprung's disease, leading to delayed diagnosis and treatment [8]. Here in this article we have presented a very challenging and unique case of a neonate with HCMV enterocolitis rendering from a poor resource setting and discussed the parameters of disease burden along with the attempted medical manoeuvres to overcome those barriers.

Case presentation

An 18 days old female child of a 27 year old mother from her first normal pregnancy was admitted to the neonatal intensive care unit with severe abdominal distension and recurrent convulsions followed by blood streaked frothy stool. Assertive

asthenia and high fever in the mother highly complicated the course of pregnancy through second trimester. The labor was complicated by rupture of membrane for a prolonged period of 36 hours, and was covered with intravenous administration of penicillin and amikacin. The neonate was born by vaginal delivery with vacuum extraction due to prolonged second stage of labor. The child was born preterm weighing 2012 gms and her apgar scores were both 9 at 1 and 5 mins. She was born at a gestational age of 38 weeks and was feeding on fresh maternal breast milk when admitted. 5 days post admission the child presented severe symptoms like protein losing enteropathy, diarrhoea, and hypernatraemic dehydration. An initial diagnosis of necrotising enterocolitis was made by the clinicians, but the infant did not showed any radiological signs of intestinal or hepatic portal pneumatosis. Abdominal X-rays showed prominent bowel loops with foamy appearance over the left side. There was no acidosis or thrombocytopenia. However C-reactive protein (CRP) was greatly increased to 22.3 mg/L. Blood and stool cultures were negative for any pathogenic bacteria or fungi. As necrotizing enterocolitis (NEC) was the most plausible choice so the doctors started treatment for managing the case as such. Non-surgical treatments including bowel rest and antibiotics with ampicillin, gentamicin and metronidazole were started.

Her general condition deteriorated after 5 days and she developed high fever and mild abdominal distension. Abdominal X-ray showed haziness over left side of bowels. CRP was elevated to 31.2 mg/L. Computed tomography of abdomen revealed only prominent sigmoid and rectum and no intra-abdominal collection. He was managed as recurrent NEC and treated again with bowel resting and antibiotics vancomycin with meropenem. The fever initially subsided and CRP level progressively decreased to 17.1 mg/L. However, there was worsening of condition again on day 12. Abdominal distension was noted along with high fever, convulsion and diarrhoea. The blood from the infant was screened for TORCH infections which gave highly positive result for HCMV but negative results for HSV, Rubella and Toxoplasma. High HCMV viral load was found in the newborn child's blood (4.9×10^3 copies/mL) suggesting acute HCMV infection. Bacterial and fungal infections were found to be negative. Liver capacity was abnormally deranged with raised ALT or SGPT (214 IU/L) levels and AST or SGOT (209 IU/L) levels. Other abnormalities included raised C-reactive protein (49 mg/L) and conjugated hyper-bilirubinemia (total serum bilirubin 4.8 mg/dL). Upon further investigation the clinicians ascertained the probable cause to be HCMV induced enterocolitis.

Intravenous gancyclovir treatment (8 mg/kg/d) was initiated immediately following HCMV detection and continued for approximately 3 weeks. After about 2 weeks treatment improvement was observed and gradually the abdominal distension, fever and diarrhoea subsided. HCMV viral load in blood serum was almost negligible which suggested rapid subsidence of the infection. Laparotomy was performed in view of intestinal obstruction. Colostomy and colonic stricture was performed. Postoperative recovery was satisfactory. She was kept under observation for 2 more weeks and then released.

Discussion

This article will be the first reported evidence from India to discuss the potentiality of congenital HCMV infection causing severe gastroenteric complications in neonates. In reality studies linking the generality of enterocolitis with acute HCMV infection are exceptionally constrained in India and henceforth the prevalence of such infections with critical manifestations infections remains difficult to ascertain [9]. Gancyclovir and valgancyclovir are the main anti-HCMV drugs that have been used in India with considerable success though the exact benefits of this mode of treatment and the effective duration in case of congenital HCMV infection still remain controversial [10]. HCMV enterocolitis is rare in newborns according to literatures and is frequently overlooked [11], although some studies have demonstrated the role of HCMV in hepatic cholestasis [12]. Gastrointestinal manifestations of HCMV infection can vary from mild diarrhoea to clinical picture similar to necrotizing enterocolitis. HCMV enterocolitis differs from NEC in that it presents with ulceration progressing to stricture, rather than gangrene and perforation. The suspicion of HCMV related gastrointestinal disease is often overlooked until a more severe complication arises. In our case the patient initially presented a clinical picture mimicking recurrent necrotizing enterocolitis and intestinal obstruction. Initial diagnosis was wrong and the medical treatment failed. This case report therefore urges the clinicians to be more aware of this unusual clinical manifestation for timely diagnosis and treatment. The true incidence of HCMV enterocolitis in infants might be higher than previously thought because screening of HCMV is not routinely performed for neonates with refractory necrotizing enterocolitis and the diagnosis is often overlooked by clinicians. We suggest non-invasive screening such as stool and urine PCR examination for HCMV, and blood for HCMV antigen be considered early in all refractory enterocolitis in the neonatal population in order to establish an earlier diagnosis of HCMV enterocolitis and be able to initiate earlier antiviral treatment to minimize devastating complications and long-term sequelae of bowel stricture.

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