

Case Report

Case report of COVID-19 positive new born with necrotizing enterocolitis (NEC)

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ABSTRACT

COVID-19 caused by SARS-Cov-2 virus has spread rapidly across the world. Children are just as like as adult to become infected with virus but have lesser symptoms and less severity of the disease. Necrotizing enterocolitis is one of the common gastrointestinal emergencies in neonatal intensive care unit. More than 85% of cases of NEC occur among preterm and very low birth weight. Preterm babies are vulnerable to develop NEC because of high incidence of perinatal distress factor, stasis of gut due to autonomic immaturity, poor barrier function of gut or immune defences, lack of feeding with human milk and higher incidence of nosocomial infections. During the current COVID-19 pandemic, no similar finding has been reported in the neonatal population to date. In this review we summarize the case report of two newborns admitted in our NICU who were COVID 19 positive presented to us with symptoms suggestive of necrotizing enterocolitis (NEC) and their outcome based on presence of comorbidity. Our case reports two case of two COVID-19 positive newborns admitted in our NICU with history, examination and investigations suggestive of necrotizing enterocolitis. Early initiation of antibiotics covering bowel flora, bowel rest and resuscitation, similar to our tried and true medical management of NEC, should be considered for initial management to avoid surgical intervention.

Keywords: Sepsis, COVID-19, RT-PCR, NEC, Pneumatosis intestinalis

INTRODUCTION

Coronavirus disease-2019 (COVID-19) caused by SARS-CoV-2 has had a drastic impact on our health care system, and providers are continuing to identify the spectrum of disease and symptoms across the age groups. In children, COVID-19 presents as wide spectrum of disease states, from asymptomatic infection to multisystem inflammatory syndrome.¹ The data evaluating COVID-19 in new-borns are sparse, but appears to highlight most neonates presents with mild symptoms and require minimal supportive care unless infant has significant co-morbidities such as congenital cardiac disease or prematurity.^{2,3} A NEC epidemic in the early 1980s was thought to be secondary to Coronavirus after electron microscopy discovered Coronavirus viral morphology in neonatal stool samples

and surgically resected specimens.^{7,8} However, recent reports have identified adults presenting with bloody stools and associated gastroenteritis secondary to COVID-19.⁹ In this review we summarize the case report of two newborns admitted in our NICU who were COVID 19 positive presented to us with symptoms suggestive of necrotizing enterocolitis (NEC) and their outcome based on presence of comorbidity.

CASE REPORT

Case 1

A 6 days old baby term 2.5 kg/AGA/Female - presented to us with history of diarrhoea and abdominal distension with COVID-19 RT-PCR positive. X ray erect abdomen

(Figure 1) was done suggestive of fixed dilated bowel loops, and the baby was managed on lines of grade-1 NEC and improved on IV antibiotics for 7 days. All investigations mention below (Table 1).

Table 1: Investigations of case 1.

Complete blood count	
Hb	14.2 gm%
RBC	4.60 mil/cu mm
PCV	46%
TLC	11,000
PLT	7.76
ESR	24
S. Electrolyte	
Na+	146
K+	5.4
Cl-	109
COVID Rt-PCR	Positive
Blood culture and sensitivity	Negative



Figure 1: X-ray erect abdomen s/o dilated bowel loop.

Case 2

A 18th day of life male baby late pre term/36week+4 days/2kg/SGA second born of twins: COVID positive (outside report) with history of gastroenteritis and COVID contact with mother was admitted in NICU. A diagnosis of COVID positive new born with gastroenteritis with pneumonia with septicemia was kept. X-ray erect abdomen (Figure 2) suggestive of pneumatosisintestinalis with other investigations (Table 2). USG whole abdomen suggestive of pneumatosisintestinalis.

As the baby was pre term / low birth weight with twin pregnancy with dysmorphism and congenital heart disease, the baby was managed aggressively and was given steroids, IVIg and Remdesivir, and ionotropes and required ventilatory support. Despite aggressive management patient’s condition deteriorated and could not be salvaged.

Table 2: Investigations of case 2.

Complete blood count	
Hb	10.4 gm%
RBC	3.21 mil/cumm
PCV	30.8%
TLC	3600/cumm,
PLT	13,000
S. electrolyte	
Na+	143
K+	3.9
Cl	104
S. ferritin	1461 ng/ml
LDH	471 Iu/L
S. ferritin	1461 ng/ml
COVID PT-PCR	Positive
IL-6	96.17 pg/ml
USG whole abdomen	Suggestive of PneumatosisIntestinalis.



Figure 2: X-ray chest and andomen. Suggestive of bilateral diffuse infiltrate with bilateral pneumonia with ARDS with pneumomediastinum and abdomen showing fixed dilated bowel loops with pneumatosisintestinalis.

DISCUSSION

From the clustered occurrence of numerous cases of necrotizing enterocolitis in new-borns, it was possible to associate this disease significantly with infections due to coronavirus like agent. Prematurity and low birth weight did not seem to affect the development of the disease, at least during the present epidemic. However associated gas producing bacteria could influence its severity and play role in appearance of pneumatosis.⁴

Our case describes new-borns diagnosed with COVID-19 who presented with history of loose stools and abdominal distension and imaging suggestive for NEC. It is well known that the incidence of NEC increases with decreasing birth weight and gestational age, with only 15%–20% of cases occurring in term infants.⁵

Additionally, term infants with NEC typically have associated comorbidities such as congenital cardiac disease and are formula-fed. Case series regarding COVID-19 in neonates has primarily identified mild disease with severe disease limited to neonates and infants with associated comorbidities of prematurity or congenital cardiac disease. Interestingly, our first case was a term baby with no significant comorbidities or risk factors to develop NEC.⁶

A NEC epidemic in the early 1980s was thought to be secondary to Coronavirus after electron microscopy discovered Coronavirus viral morphology in neonatal stool samples and surgically resected specimens.^{7,8}

During the current COVID-19 pandemic, no similar finding has been reported in the neonatal population to date. However, recent reports have identified adults presenting with bloody stools and associated gastroenteritis secondary to COVID-19.⁹

Our patient was treated according to the NEC protocol and resolved with medical therapy alone with supportive care with resuscitation and bowel rest; broad-spectrum antibiotics; and serial abdominal

examination, radiologic imaging, and laboratory analysis. Serial abdominal examination and radiologic imaging were supportive of continued medical therapy, instead of surgical intervention. Case 1 newborn was successfully discharged after 7 days of admission and case 2 newborn with risk factors (prematurity and CHD) had a poor prognosis.

A limitation of our report is our inability to collect stool samples or pathologic specimens to evaluate for the presence of SARS-CoV-2.¹⁰ Fortunately, in this case, the colitis did not progress and cause Perforation. Early initiation of antibiotics covering bowel flora, bowel rest and resuscitation, similar to our tried and true medical management of NEC, should be considered for initial management to avoid surgical intervention.

CONCLUSION

Our case report has two newborns who were COVID-19 positive with features of NEC. Our first case was term newborn with no significant comorbidity and second case was new born with comorbidity like preterm and low birth weight with congenital heart disease. The one with no comorbidity has good outcome and required only antibiotic therapy. But the newborn who has comorbidity has poor outcome.

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