

Vibrio Cholera Diarrohea in Neonate: A Case Report

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Abstract Neonatal cholera is a extremely rare in neonate. Colostrum may offer potent protection among breast fed neonates mediated by specific immunoglobulin IgA. Occurrence of cholera in a new born reflects the poor hygienic condition of the family and bad child rearing practice. As rehydration therapy and antibiotics is the main stay of treatment of this particular condition, the broader perspective is to counsel the population about hazards of prelactal feed, top feeding and good hygienic measures. We report two cases of neonatal cholera with severe dehydration.

Keywords: *vibrio cholera, neonatal cholera, prelactal feed, rehydration therapy*

Cite This Article: Rajkumar M. Meshram, and Ashwini Patil, "Vibrio Cholera Diarrohea in Neonate: A Case Report." *American Journal of Medical Case Reports*, vol. 4, no. 7 (2016): 238-239. doi: 10.12691/ajmcr-4-7-5.

1. Introduction

Cholera is an acute debilitating diarrhoeal disease causing morbidity and mortality among lower socioeconomic status people in tropical countries. Newborns are at increased risk of complications related to diarrhoea due to immaturity of the systems that regulates fluid homeostasis and immunologic response [1]. Cholera rarely occurs under two years of age and it is extremely rare in neonate [2]. We report two cases of neonates who had clinical features consistent with cholera.

2. Case 1

A 4 day old male neonate born to 23 years old, booked and immunized G2P1 mother with term pregnancy with no sepsis by cesarean delivery was transferred to maternity ward. Baby was average birth weight (2.9Kg) and ready to accept breast feeding. In first 48 hours, there was less secretion of milk. In spite of counseling, formula feed was given in first 48 hours. On 4th day of life, he developed loose watery stool, 10-15 times, curdy white and had fishy odour with 6-7 episodes of vomiting. There was a history of abdominal distension, reduced urine output, lethargy and refusal to feeds. On further inquiry grandparent told that water was used from restaurant for dilution of formula.

On examination, baby was irritable with sunken eyes, depressed anterior fontanelle and dry oral mucus membrane. There was prolonged capillary filling time and feeble peripheral pulses with HR-168/min and RR-64/min.

Blood investigation showed evidence of leucocytosis and hyperglycemia with no azotemia and dyselectrolytemia. CRP and blood culture was negative. Stool sample was sent for hanging examination and culture. Stool examination showed darting motility on hanging drop

method and stool culture revealed growth of *Vibrio Cholerae* on TCBS medium. Baby was immediately resuscitated with Ringer lactate and was treated with Ciprofloxacin.

3. Case 2

A 3 day old female neonate was born to 27 years old booked, immunized G3P2L1 mother with term pregnancy without intrapartum maternal infection by vaginal delivery. Baby was low birth weight (2.3Kg) with mild respiratory distress which was resolved by oxygen supplementation. At 72 hours of life, she developed loose watery stool and vomiting leading to severe dehydration. There was a history of honey water offered by relative as a prelactal feed.

On examination, baby was in severe dehydration with signs of peripheral circulatory failure. Possibility of early onset sepsis with *E Coli* was kept and correction of severe dehydration done with Vasopressor agent and antibiotics.

Blood investigation showed leucocytosis with high neutrophil count, platelet was adequate, CRP-positive with normal electrolyte and slightly raised renal function. Blood culture was sterile. Stool routine microscopy showed darting motility suggestive of *Vibrio cholera* which was later confirmed on culture.

Baby was well respond to treatment and discharge on 14th day of life. No other baby had diarrhoea in Nursery subsequently.

4. Discussion

Cholera may be clinically indistinguishable from other causes of severe diarrhoea in neonates like Enterotoxigenic *E. Coli*. It should be suspect in newborns with high purge rate of diarrhoea, typically rice water stool and vomiting especially in endemic areas [3]. Cholera rarely occurs

under two years of age and it is one of the rare entity in neonate [2]. Colostrum may offer potent protection among breast fed neonates mediated specific immunoglobulin IgA [4]. In India, youngest age reported is a one day old newborn from New Delhi [3].

Vibrio Cholerae once ingested in significant amount especially in an environment where gastric acidity is compromised, colonises upper small intestine. Here it produces enterotoxins (cholera toxins) which stimulate adenylate cyclase resulting in raised c-AMP level causing decrease absorption of sodium and chloride by intestinal villi and increased active secretion of chloride by crypt cells, hence resulting in high voluminous diarrhoea [5].

Transmission can be during labor, through symptomatic mother/ asymptomatic carrier mother, holy water, top feeds, prelactal feeds, family members (chronic carrier) or nosocomial (hospital staff). Cholera spread from person to person through hands, bed sheets and other linen or from food which has been handled by a carrier. Contaminated water can transmit the disease as there is no maternal transmitted immunity [2]. It has never been found to be transmitted by mother's milk [3]. In our case report source of infection was contaminated water which was used for dilution of top feed and honey as a prelactal feed.

The incubation period varies from 6 hours to 5 days. Baby may present with low grade fever, vomiting and diarrhoea. Diarrhoea in severe cases is profuse, painless, rice water in consistency with fishy odour with occasionally flakes of mucus. Babies present with tachycardia, tachypnea, irritability, sunken anterior fontanelles, poor skin turgor and may even progress to stupor, circulatory collapse and renal failure. The most important presenting feature in symptomatic patient is massive loss of fluids and electrolytes [6].

Culture in selective media Tellurite taurocholate gelatin agar (TCBS) remains the gold standard however it cannot be awaited for initiation of treatment. Hanging drop with darting motility has positive predictive value of 100% [7].

Rehydration is the mainstay of therapy. The drug used for specific treatment are tetracycline, doxycycline, trimethoprim-sulphamethoxazole, erythromycin, furazolidine and quinolones. In developing countries like India, where ease of getting ciprofloxacin is high as well as with the recent studies supporting its use and safety in neonate [8], ciprofloxacin is the drug of choice for treatment of cholera [3,9] and hence was treated with Ciprofloxacin.

Diarrhoea in newborn should be investigated as the infection can cause bacteremia which has grave prognosis. Various studies have shown stormy clinical course

including death if the neonates presents with bacteremia [4]. It is best to isolate the baby to prevent outbreak. Close monitoring of status of hydration and severity of purging is desired. Efforts should be made to identify the source to limit the outbreaks. Nursery staffs do not need prophylaxis but must be particularly careful about washing hands and all contaminated clothing. Cholera can be prevented by phenol-killed bivalent cholera vaccine, but in tropical and developing countries personal and environmental hygiene is the only method to prevent this dreaded disease. With early and adequate treatment, case fatality rate is about 1% while it is 50% without adequate treatment.

5. Conclusion

Though neonatal cholera is rare, it should be suspect in newborn with high purge rate of diarrhoea and vomiting especially in endemic areas. Baby Friendly Hospital Policy should be strictly follow in hospital so prelactal feed and top feed can be avoided as these are the source of organism. Personal and environmental hygiene is the key method to prevent such a dreaded disease.

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