

LETTER TO EDITOR (VIEWERS CHOICE)

SERRATIA MARCESCENS SEPSIS OUTBREAK CAUSED BY CONTAMINATED AMINO ACID SOLUTION

Senthil Kumar A, Kaviyarasan G, Ramalingam R, Raeshmi R, Javeed Khan M.

Department of Pediatrics, Ramalingam Hospital, Salem, Tamil Nadu, India

KEYWORDS

Neonatal Sepsis, *Serratia marcescens*, abscess

ARTICLE HISTORY

Received 7 July 2020

Accepted 21 November 2020

A 1-day old female neonate weighing 2.3 kg was hospitalized for meconium aspiration syndrome. On admission, oxygen saturation in room air was 50%, improved to 90% after surfactant. Echocardiography was suggestive of severe pulmonary hypertension. She received inotropes and oral sildenafil. She was ventilated for 8 days and was then put on CPAP (continuous positive airway pressure) for 2 days. Sepsis workup at admission revealed C-reactive protein (CRP) of 172 mg/L and platelet count of 38,000/cu mm. First blood culture grew coagulase-negative staphylococcus. She received parenteral nutrition through umbilical venous catheter (UVC). On day 8, she had altered gastric aspirate, CRP increased from 3 mg/L to 116 mg/L (Table 1), and developed fever spikes on day 12. Echocardiography revealed an intracardiac thrombus measuring 0.44 cm×0.3 cm located in the right atrium. UVC was removed immediately, tip sent for culture. Blood culture grew *Serratia marcescens*. She received intravenous (IV) ciprofloxacin and IV amikacin. Repeat CRP after 14 days of IV antibiotics was negative and platelet count improved to 3,50,000/cu mm. Serial echocardiography revealed a decrease in pulmonary pressure and spontaneous resolution of intracardiac thrombus. Neurodevelopmental follow-up 9 months was normal.

A 5-day old male neonate presented with bilious vomiting. Ultrasound (USG) abdomen was suggestive of malrotation. Ladd's procedure was done. Postoperatively he had significant bilious aspirate, hence started on partial parenteral nutrition. He developed an abscess at the IV prick site in the right forearm after 2 days of parenteral nutrition (Figure 1). Platelet dropped from 3,40,000/cu mm to 11,000/cu mm and CRP increased to 60 mg/L (Table 1). Blood culture and pus culture grew *Serratia marcescens*. He had diarrhea due to secondary lactose intolerance. He received IV antibiotics (meropenem and amikacin) for 14 days.

In both the patients, *Serratia marcescens* was isolated in same the period, hence 11 environmental samples

were sent. *Serratia marcescens* was isolated in humidifier water and amino acid solution. The amino acid stock was taken away from NICU and sterile humidifier water was changed every day. Preventive measures such as strict hand hygiene and educating NICU sisters about central line-associated bloodstream infection (CLABSI) were taken to control the outbreak.

Serratia marcescens is widespread in the environment causing nosocomial sepsis. Sources of infection include the hands of healthcare workers, infected neonates, contaminated medical devices, etc. The major site of infection includes bloodstream, respiratory, and gastrointestinal system. It is difficult to treat because of resistance to many antibiotics and can cause high mortality and morbidity.¹ *Serratia marcescens* is associated with hospital-acquired infections among infants in NICU. Late-onset *Serratia marcescens* sepsis has occurred in NICU infants from medical equipment, hands of caregiver, milk bottles, antiseptic solutions, and parenteral fluids.^{2,3,4} Studies have identified total solution administration as a statistically significant risk factor for *Serratia* sepsis.⁵ In our patients also, *Serratia marcescens* was isolated from an amino acid solution. These two cases are presented to highlight the association of *Serratia marcescens* sepsis and parenteral nutrition.

Figure 1. Abscess in right forearm



CONTACT Dr. Senthil Kumar Arumugam

Email: drsenthil_salem@yahoo.com

Address for Correspondence: Dr. Senthil Kumar Arumugam, Consultant Neonatologist, Ramalingam Hospital, Salem-636004

©2020 Pediatric Oncall

Table 1. Serial laboratory parameters in both patients

Laboratory parameters	Patient 1						Patient 2		
	D1	D3	D4	D6	D8	D21	D1	D11	D14
Hemoglobin (gm/dl)	15	14.4			13.6		17		9.3
White cell count (cells/cumm)	8010	8520			38930		10910		19500
Platelet (X10 ³ /cumm)	38	20	67	99	166	350	343	11	160
CRP (mg/L)	172			3	116	4	2	60	11

Compliance with Ethical Standards**Funding** None**Conflict of Interest** None**References:**

1. Maragakis LL, Winkler A, Tucker MG, Cosgrove SE, Ross T, Lawson E, et al. Outbreak of multidrug-resistant *Serratia marcescens* infection in a neonatal intensive care unit. *Infect Control Hosp Epidemiol.* 2008;29:418-423
2. Berthelot P, Grattard F, Amerger C, Frery MC, Lucht F, Pozzetto B, Fargier P. Investigation of a nosocomial outbreak due to *Serratia marcescens* in a maternity hospital. *Infect Control Hosp Epidemiol.* 1999;20:233-236
3. Cullen MM, Trail A, Robinson M, Keaney M, Chadwick PR. *Serratia marcescens* outbreak in a neonatal intensive care unit prompting review of decontamination of laryngoscopes. *J Hosp Infect.* 2005;59:68-70
4. Zaidi M, Sifuentes J, Bobadilla M, Moncada D, Ponce de León S. Epidemic of *Serratia marcescens* bacteremia and meningitis in a neonatal unit in Mexico City. *Infect Control Hosp Epidemiol.* 1989;10:14-20
5. Maltezou HC, Tryfinopoulou K, Katerelos P, Ftika L, Pappa O, Tseroni M, et al. Consecutive *Serratia marcescens* multiclonal outbreaks in a neonatal intensive care unit. *Am J Infect Control.* 2012;40: 637-642