Lactococcus lactis caused septicemia in total parenteral nutrition dependent child with ultra-short bowel syndrome

Case report

A.Rudzroga^{1,2}, I.Kaze³, I.Pukite³
¹Children's Clinical University Hospital, Clinic of Pediatrics, Riga, Latvia
²University of Latvia, Pediatric resident, Riga, Latvia
³Department of Pediatric gastroenterology, Clinic of Pediatrics, Children's Clinical University Hospital Riga, Latvia

BACKGROUND

Lactococcus does not normally colonize human tissue and is classified as a non-pathogenic. *Lactococcus lactis* is a spherically-shaped, facultative anaerobe, gram-positive, lactic acid bacterium widely used in industrial production of the fermented dairy products. [1] *Lactococcus lactis* is a commonly used probiotic to treat gastrointestinal symptoms such as diarrhea. [2] There are few reports where the bacterial infection has been caused by *Lactococcus* species in children, and the mechanism of the infection is unclear. Bacterial translocation from the gut is the most probable mechanism [3;4]

We report a case of a 3-year-old girl with the ultra-short bowel syndrome, duodenocoloanastomosis, Broviac catheter, portal hypertension and who is on a long-term home parenteral nutrition. Over the time, she has developed parenteral nutrition induced-cholestasis with cholelithiasis and recurrent pancreatitis. The girl was born at 24-25th gestation week (gravida 2, para 1) with a birth weight 750 g. On the 9th day of life her health condition deteriorated: she was presented with abdominal distention and decreased intestinal peristalsis. Acute abdominal surgery was performed – with a massive necrotic small intestine resection (1cm below the ligamen of Treitz including the ileocecal valve to *colon ascendens*) and a formation of duodenocoloanastomosis. From the first days of her life, the girl is parenteral nutrition-dependent. Moreover, until the age of 2 years and 8 months, she had been permanently hospitalized. However, currently she lives in the orphanage and is one of the participants of the Home Parenteral nutrition program and she has been implanted a *Broviac* type catheter.

At this episode, the girl had fever of 38°C two days before administration to the hospital and no other symptoms. At the Emergency Department, first dose of Cefuroxime was given as for a patient with an unknown bacterial infection (CRP 76.57mg/L). Blood cultures from both arms and a *Broviac* type catheter were taken. At the Pediatric Gastroenterology Department, the treatment was changed to Piperacillinum-Tazobactamum as for a high risk patient of catheter-related infection. At the 3rd day of administration, fever persisted and CRP increased to 112mg/L, the positive blood culture was identified as *Lactococcus lactis* without antibacterial sensitivity. As a result of the identification, the antibacterial treatment was changed to Vancomycine following the cases from medical research publications. Afterwards, only one fever episode was observed and Vancomycine was given for 14 days. Control blood cultures were taken on the 18th day of hospitalization, all negative. In the retrospective analysis, it was found out that she has been given some unknown probiotics contrary to the recommendations.

Day of hospitalization	1 st day	1 st day	3 rd day	4 th day	9 th day
Antibacterial agent	Cefuroxime	Piperacillinum/ Tazobactamum	Vacomycinum		
CRP (mg/l)	76.57		112.97		7.51
Fever (episodes per day)	2-3	1-2	1	0	0
Blood culture			<i>Lactococcus lactis</i>		

LEARNING POINTS/DISCUSSION

1. The case report suggests that we should be aware of mostly non-pathogenic bacteria causing serious infection in patients who are immunocompromised or who have a long-term intravenous catheter.
2. Probiotic use for patients with a long-term central venous catheter is prohibited due to a high risk of bacterial translocation from the gut.
3. A patient with a long-term catheter and fever episodes of unknown cause always needs to be regarded as a patient with catheter-related infection, immediate empiric antibacterial treatment must be administered.

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