

Short Communication

Lactococcus lactis Catheter-Related Bloodstream Infection in an Infant : Case Report

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SUMMARY: *Lactococcus lactis* is a gram-positive coccus that is nonpathogenic in humans. Herein, we present the case of a 1-year-old boy with Down syndrome and Hirschprung's disease (HD) who developed a catheter-related bloodstream infection with *L. lactis* after gastrointestinal surgery. The patient had been hospitalized in the pediatric surgery unit from birth because of HD, and had undergone the Duhamel-Martin procedure which caused recurrent diarrhea episodes and feeding intolerance. On the infant's 430th day of life, he had an episode of gastroenteritis and feeding intolerance. Because of clinical suspicion of sepsis, blood cultures were taken both from the central venous catheter and peripheral vein, and evidence of a growing microorganism was detected in 2 different central venous catheter blood cultures taken 2 days apart. The colonies were then identified by both the Vitek 2 and Vitek MS systems (bioMérieux, Marseille, France) as *L. lactis* spp. *lactis*. The central venous catheter could not be removed because of the absence of a peripheral venous line, and the patient was subsequently successfully treated with vancomycin. Therefore, although *Lactococcus* species is generally thought to be nonpathogenic, it should still be kept in mind as a potential pathogen in infants.

Catheter-related bloodstream infections (CR-BSIs) are an important source of morbidity and mortality worldwide. *Lactococcus* spp. are not recognized as important pathogens in humans, but the current literature provides evidence that they can cause infection, particularly in immunocompromised hosts (1). In this case study, we describe the second known case of CR-BSI caused by *L. Lactis* in an infant.

A 1-year-old boy with Down syndrome (DS) had been hospitalized in the pediatric surgical care unit since birth. Because of vomiting, abdominal distension, and meconium ileus, rectal biopsy was performed 14 days after birth, revealing the absence of ganglion cells, he was thus diagnosed with Hirschprung's disease (HD). An ileostomy was performed on his 30th day of life. When the patient was 1-year old, the definitive Duhamel-Martin procedure was performed. The patient could not be discharged because he required total parenteral nutritional support from a central venous line via an 8-cm Triple-Lumen 5.5-Fr ARROW Catheter inserted into the femoral vein.

On the patient's 430th day of life, he had an episode of gastroenteritis along with feeding intolerance, erosive diaper dermatitis, and a worsening clinical condition.

He was also hypotensive and hypotonic subfebrile rise in temperature. No pathogenic microorganisms were found on stool. The laboratory results showed a white blood cell count of 14,800/mm³ and C-reactive protein levels of 29.3 mg/L (0–5 mg/L). Furthermore, the infant's urinalysis was normal, his urine culture remained sterile and he had no signs of pneumonia.

Because of the clinical suspicion of sepsis, blood cultures were taken both from the central venous catheter and peripheral vein. Fourteen hours later, the BacT/Alert device (bioMérieux) indicated the growth of a microorganism in the catheter blood culture; however, peripheral vein blood cultures remained sterile. Gram-positive, alpha-hemolytic colonies were seen and were considered to be members of the viridans group streptococci. These were first detected by the Vitek 2 and Vitek MS systems (bioMérieux), and these were identified as *L. lactis* spp. *lactis* with a reliability of 92% and 99.9%, respectively. Because the peripheral blood cultures were still sterile, the catheter and peripheral vein cultures were repeated, and the same organism was identified. Empirical antibiotic therapy with vancomycin (60 mg/kg/24 h: Q6 h) was then initiated. The antibiogram test results on the second day of antibiotic therapy showed that the microorganism was susceptible to vancomycin, therefore, antibiotic therapy was continued for 10 days. On the third day of vancomycin therapy, control cultures were obtained, and they remained sterile. In addition, no heart valve vegetation was seen on echocardiography, and the infant's clinical condition continued to improve without the removal of the central venous catheter.

L. lactis is a gram-positive bacterium originally isolated from milk and plant surfaces, it is currently used in the dairy industry to make cheese and other fermented foods (2). In recent years, there have been case

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reports of infection with *L. lactis* in immunocompromised adults who presented with endocarditis, liver abscesses, septic arthritis, septicemia, cerebellar abscesses, deep neck infections, osteomyelitis, canaliculitis, and subdural empyema (3,4).

However, only 3 cases of infection with the *Lactococcus* species have been reported in infants. The first case involved a 19-month-old immunocompetent girl child with brain abscess caused by *L. lactis cremoris* (5). The second case was a newborn who developed bacterial meningitis and septicemia because of *L. lactis* (6). The third case was a 9-month-old girl child who developed catheter-related bacteremia with *L. lactis* and was treated with vancomycin and cefotaxime without removal of the catheter (7). To the best of our knowledge, our patient is only the second infant to have CR-BSI with *L. lactis*. Because infections caused by *L. lactis* are rare, a standard therapeutic regimen has not been well established. Elliot and Facklam investigated the antimicrobial susceptibility of 19 *Lactococcus* species in 1996 and observed no resistance to vancomycin but obtained differing results with clindamycin (8). For this reason, vancomycin therapy was continued after obtaining susceptibility results.

The route of *L. lactis* infection is not well understood (6,9). Bacterial translocation from the gut is a common source of bacteremia in patients with short bowel syndrome (10). Our patient was born with DS, which can cause a secondary immunocompromised status, he also had a colonic resection because of HD. Both these conditions could have been contributing factors in this infant. Because the patient was not fed any dairy products, the source of the bacterium in our patient was difficult to identify.

Our patient had been hospitalized since birth, and finding a peripheral vein line was extremely difficult. For this reason, we collected only a small blood sample for the peripheral vein culture, moreover, we used a multi-lumen catheter but could only obtain a blood sample from 1 lumen. However, because the 2 blood samples, which were taken from the catheter 2 days apart, yielded the same organism within the first 24 h, we did not consider that the results were due to contamination or colonarization.

We routinely employ both Vitek 2 and Vitek MS systems to identify and analyze isolates at our hospital, with the latter being used for accurate and rapid identification of various microorganisms from clinical samples, including viridans streptococci. According to the

manufacturer's instructions, a perfect match between the unique spectrum of a single organism or organism group would have a probability of 99.9% (good identification [ID]) (11,12), and our results matched this criteria.

In view of our patient's poor clinical status, we operated under the assumption that the organism was the pathogenic agent.

Although *L. lactis* is generally accepted as being non-pathogenic, it should be kept in mind as a potential pathogen in infants with underlying disease, especially those with short bowel syndrome.

Conflict of interest None to declare.

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