Pink Breast Milk: *Serratia marcescens* Colonization

Cipatli Ayuzo del Valle, MD1 Emilio Treviño Salinas, MD, PhD2

1 Colegio de Pediatría de Nuevo León México, University of Nuevo León Mexico, Monterrey, Nuevo León, Mexico
2 Division of Gynecologic Oncology, University of Nuevo León Mexico, Monterrey, Nuevo León, Mexico


**Abstract**

**Background** Breast milk can turn pink with *Serratia marcescens* colonization, this bacterium has been associated with several diseases and even death. It is seen most commonly in the intensive care settings. Discoloration of the breast milk can lead to premature termination of nursing. We describe two cases of pink-colored breast milk in which *S. marcescens* was isolated from both the expressed breast milk. Antimicrobial treatment was administered to the mothers. Return to breastfeeding was successful in both the cases.

**Conclusions** Pink breast milk is caused by *S. marcescens* colonization. In such cases, early recognition and treatment before the development of infection is recommended to return to breastfeeding.

Breast milk can turn into a pinkish color due to colonization by *Serratia marcescens*, a species of rod-shaped gram-negative bacteria that produce a reddish-orange tripyrrole pigment called prodigiosin1 that has been related to a variety of diseases and even newborn deaths.

We describe two cases of pink colored breast milk in which *S. marcescens* was isolated from both the samples.

**Cases**

**Case 1**

A 29-year-old primigravid woman underwent a normal vaginal delivery at 37.5 weeks gestation. A healthy baby girl was delivered that weighed 2.7 kg. Both mother and the baby were discharged home. One week postpartum, her baby was readmitted for phototherapy.

At her 5th week of checkup she reported a bright pink coloration of cloth towels used for breastfeeding (►Fig. 1). She denied fever, mastitis, nipple trauma or any other pertinent symptom. However, despite her baby presenting normothermic, the mother reported poor oral intake. The mom was treated with ciprofloxacin empirically. Culture from the expressed breast milk showed several colonies of *S. marcescens*, in addition, *Enterobacteria* spp. was isolated from the infant’s oropharynx that was then treated with trimetoprim and sulfametoxazol. Stool and urine cultures were negative. She was advised to pump and discard the milk while using antibiotics. Repeat cultures were negative and she returned to breastfeeding without any incident.

**Case 2**

A 33-year-old woman chose to exclusively breastfeed her infant. The male infant was delivered at term by an elective cesarean section. There were no complications associated with the pregnancy and delivery. Ten weeks postpartum, she noticed pink stains on cloth towels used during breastfeeding (►Fig. 2). Breast pump was never used and there was no nipple trauma reported. The baby was closely monitored with no signs or symptoms noted on the history and physical examination.

Cultures of the mother’s breast milk tested positive for *S. marcescens*, henceforth she was subsequently treated with cephalosporin. The baby’s cultures were all negative. She returned to breastfeeding exclusively as soon as the breast milk culture was reported negative (►Fig. 3).

**Discussion**

*S. marcescens* is a gram-negative bacillus in the Enterobacteriaceae family. Several outbreaks have been linked to
Laupland et al conducted an extensive survey of S. marcescens infections in Canada and found that 65% of all infections caused by S. marcescens were community based. S. marcescens produces a characteristic brightly colored pigment, prodigiosin, that was once used as a tracer organism by investigators in medical fields and even in combat zones.

The first time S. marcescens was described in cloth towels was in 1958 by Waisman and Stone, who described the “red diaper syndrome,” the appearance of S. marcescens in soiled diapers of a female baby born in Wisconsin. The parents noticed that soiled diapers that have been rinsed with plain water turned red. The stool of the infant was cultured and S. marcescens was recovered. Although, the baby never had signs or symptoms or illness, physicians treated her with oral sulfasuxidine.

A survey from 1997 data on SENTRY Antimicrobial Surveillance Program isolates from the United States, Canada, and Latin America showed that Serratia species were the 12th most common organisms associated with bloodstream infections.

Although, the actual number of organisms excreted in milk is unknown, it is unlikely that an infant taking milk directly from his mother’s breast will ingest enough organisms to cause disease. However, improper handling and storage of milk may enable organisms/pathogens to multiply to numbers sufficient to cause disease, especially in infants at higher risk for infection, such as those born preterm. Contamination with > 1,000 gram-negative bacilli per milliliter is associated with feeding intolerance, whereas higher levels of contamination (> 1,000,000/mL) can be associated with sepsis.

In the two cases that we have presented there were no breast pumps associated with infections, even though several cases have been described previously in the literature. Even though our first case could have been infected on her 4th day of hospitalization, the second case could have been community acquired as described by Laupland et al.

Although, there are no clear recommendations for women with S. marcescens colonization, and due to high risk of sepsis associated with this bacteria, treatment with antibiotics is highly recommended. Returning to breastfeeding is safe after cultures of both the mother and the baby are negative.

Conflict of Interest
The authors declare no conflict of interest.

References
Waisman HA, Stone WH. The presence of Serratia marcescens as the predominating organism in the intestinal tract of the newborn; the occurrence of the red diaper syndrome. Pediatrics 1958; 21(1):8–12


