

An Outbreak of *Serratia marcescens* in a Moroccan Neonatal Intensive Care Unit

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Abstract

Introduction: Nosocomial infections in neonatal intensive care unit still represent a public health problem by the morbidity and mortality that they engender. The most incriminated pathogens are Enterobacteriaceae that belong to the Gramnegative bacillus (GNB) family, especially in developing countries, and they can represent 51.5% of the cases. Among the GNB, *Serratia marcescens* (*S. marcescens*) is a ubiquitous opportunistic pathogen, whose eradication of the environment is very difficult. Nosocomial infections with *S. marcescens* are rare in newborns and often described as outbreaks. Infection can occur in the newborn as pneumonia, bacteremia, conjunctivitis, urinary tract infections, and even gastroenteritis. Outcome of these infections is often serious, with a heavy morbidity and mortality; whence, the importance of initiating, as soon as the diagnosis of this germ is made, control measures before the propagation which can be spectacular. Aim of this study is to share our experience of nosocomial infections due to this germ, to show the gravity of this germ, with a review of the literature.

Background: Nosocomial infections in neonatal intensive care units are a public health problem because of their heavy consequences on morbidity and mortality and the important cost they generate. *S. marcescens* has emerged as a currently recognized pathogen for nosocomial infection in neonates, especially in epidemic form, which has also been reported in our experience. We collected 8 cases of *S. marcescens* bacteremia for 2 months. A similar report was published in 2010 by Gulcin Bayramoglu et al., comprising 9 cases, in neonatal intensive care unit over a period of 36 days.

Method:- This is a descriptive retrospective study, performed in the neonatal intensive care unit (NICU) of Mohammed VI University Medical Hospital, Marrakesh, Morocco. During the epidemic period of this germ, July and August 2016, the population in our study included neonates hospitalized in the NICU, whose postnatal age ranged from 0 to 28 days with the diagnosis of nosocomial infection of *S. marcescens*, which was made by the positivity of bacteriological samples at least 48 hours after admission to our NICU. Data collection was done using an individual record. The literature review was done on PubMed including writings describing *Serratia marcescens*

outbreaks in neonates in the NICU.

Results: We collected eight cases, which were included during the study period, July and August 2016, which corresponded to the epidemic period of *S. marcescens* bacteremia. The epidemic began in early July 2016 in a premature 33.9 GA admitted for hyaline membrane disease, which showed after 3 days of his hospitalization signs of sepsis with isolation of *Serratia marcescens* in the blood culture, and other cases were diagnosed throughout the July period. The mean gestational age of our patients was 36 weeks (wk), with extremes ranging from 33.2 to 40.8 wk. Newborns were premature in 75% of cases. The sex ratio (boy/girl) was 3. The weight ranged from 1130 grams to 3600 grams with an average weight of 1853 grams. Hyaline membrane disease was the most diagnosis of hospitalization in 62.5% of cases and neonatal pulmonary infection in 37.5% of cases. On admission, all patients were treated with ceftriaxone and gentamicin antibiotics, and 87.5% of cases were artificially ventilated. The diagnosis of nosocomial infection was made over an average of 7 days of hospitalization, with extremes ranging from 3 days to 12 days. The diagnosis was made in the presence of clinical signs and/or biological abnormalities on the hemogram or ascension C-reactive protein with *S. marcescens*-positive blood cultures. Isolated *S. marcescens* strains were susceptible in 75% of cases to 3rd generation cephalosporins and all susceptible to imipenem, to ciprofloxacin, and to aminoglycosides (amikacin and gentamicin), but all were resistant to colistin. After diagnosis of nosocomial *S. marcescens* infection, all patients were treated with imipenem and amikacin. The outcome was favorable in 37.8% of the cases, and the death was reported in 62.5%. The average hospital stay was 22.75 days, with extremes ranging from 12 days to 34 days.

Biography:

Abdellatif Daoudi is working in a Neonatal Intensive Care Unit, Mother-Child Center, Mohammed VI University Medical Hospital of Marrakesh, Morocco.

This work is partly presented at 3rd Annual Congress & Medicare Expo on Primary Healthcare, Clinical & Medical Case Reports, April 17-19, 2017 Dubai, UAE