

# Wound infection with *Serratia marcescens* in HIV patient from a developing country

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## Abstract

*Serratia marcescens*, a member of Enterobacteriaceae family, Tribe Klebsialle is a commensal of the intestine. It is also present in water and soil as a saprophyte. Once considered a commensal of intestine it has now been regarded as an opportunistic and nosocomial infection, hence reported increasingly as a nosocomial pathogen.<sup>1</sup> Hospital acquired *Serratia* species infection is more frequently than community acquired infection, which account for 1-3% of hospital acquired infection. This is now significantly related to A.I.D.S., neutropenia and sepsis. Very few reports of wound infection with *Serratia* species are available in the Indian literature.

**Keywords:** Wound infection, *Serratia marcescens*.

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## INTRODUCTION

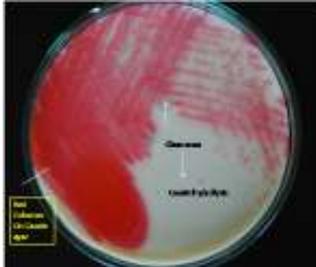
*Serratia marcescens* is a gram negative, aerobic, motile bacillus, a member of Enterobacteriaceae family. Once considered a commensal of intestine it has now been regarded as an opportunistic and nosocomial pathogen. Hospital acquired infections by *Serratia* species is more frequently than community acquired infection, which account for 1-3% of hospital acquired infection. Very few reports of wound infection with *Serratia* species are available in the Indian literature.

## CASE REPORT

A thirty year old patient was admitted in Krishna hospital with history of fall from electric pole. The patient electrician by occupation hit by electric shock and fell from the electric pole and had sustained injuries after fall,

with no h/o of vomiting, seizure or nasal bleeding. He had 5% superficial to deep thermal burns on the left occipital region of his head. On admission all physical and clinical parameters were within normal limit. A routine blood and urine investigation were within normal limit. Serology for HIV status was positive only for HIV-1 antibody. Wound swab was sent to microbiology laboratory from the site of thermal burn (left occipital region). Culture was done on Blood and MacConkey's media and incubated aerobically at 37<sup>o</sup> c for 24 hours. Blood agar showed red mucoid colonies. Culture was then repeated on Nutrient agar and King's B medium, which was showed dark red colonies, the pigment of was non diffusible into the medium. Standard procedure as recommended by Cowan and Steel manual was used for identification of *Serratia Marcescens*.<sup>3</sup> Biochemical test (photo. no-2), like Methyl red and Voges -Proskauer, growth at 37<sup>o</sup> C for 2 days and 5 days was also done. Special test like gelatine liquefaction, lipase activity, casein hydrolysis (photo. no-1), and sugar fermentation viz glucose, salicin, raffinose, starch, lactose, maltose, xylose, ducitol, cellobiose, arabinose sorbitol were performed. Biochemical reaction showed fermentation of sorbitol with acid production, no fermentation of arabinose. Voges- Proskauer and gelatine liquefaction test were positive within 24 hours at room temperature this differentiates *Serratia Marcescens* from other species.<sup>1</sup> Based on this result the organism was

identified as *Serratia Marcescens*. Antimicrobial susceptibility test (photo. no-3) was performed with Kirby- Bauer technique and found to be sensitive to Amikacin Ciprofloxacin, Gentamicin. Patient was treated with Amikacin. He responded well to the treatment and was discharged from the hospital in ten days.



## DISCUSSION

*Serratia marcescens* is a well documented nosocomial pathogen. Other red pigmented species like *Serratia marinorubra* and *Serratia plymuthica* have also been isolated less frequently from human specimens.<sup>4</sup> In the present case a detailed identification of organism was done by doing extended biochemical tests. Although, *Serratia* species is seldom a cause of primary infection, they are also notorious nosocomial pathogens and colonizers. In hospitals, reservoirs for the organism include health care personnel, food and milk items (neonatal units), wash sinks, respiratory equipments, pressure monitors (medical apparatuses), IV solutions, medication vials, blood products (e.g. platelets), lotions, irrigation solutions and even disinfectants. Infection results from either direct inoculation (e.g. via IV fluids) or person to person contact which ensues colonization of the respiratory tract<sup>2</sup>. The respiratory tract, the genitourinary tract, intravascular devices and surgical

wounds are the most common sites of *Serratia* infections and origins of bacteremia. Soft tissue infections, post-procedure infections, contact lens associated keratitis, endophthalmitis, septic arthritis and effusion related bacteremia's occur less commonly. Recently two cases of pulmonary infections by *Serratia marcescens* were reported in 35 year old man<sup>5</sup> and 2 year old child.<sup>6</sup> *Serratia marcescens* is now responsible for appreciable morbidity among patients with HIV disease especially when a low CD4 cell count, neutropenia and hospitalisation. Deodhar L.P., reported 16 strains of *Serratia marcescens* from patient's clinical sample in a period of one year<sup>7</sup> and Manfredi R.; also reported *Serratia marcescens* from clinical samples in hospitalised HIV infected patients.<sup>8</sup> When clinicians and the microbiologist, face severely immune compromised HIV infected patient with suspected bacterial disease should consider *Serratia* species and their resistant strains. In fact rapid diagnosis (culture) and timely treatment (antibiotic susceptibility test) should always be sought before instituting any empirical antimicrobial therapy. So it can further avoid disease relapses and mortality.

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