Content available at: https://www.ipinnovative.com/open-access-journals

IP International Journal of Medical Microbiology and Tropical Diseases

Journal homepage: https://www.ijmmtd.org/

Case Repoert

Chromobacterium violaceum causing neonatal osteomyelitis – A case report from Kerala

Rafeeda K M[1],*, Geethanjali M[1]

[1] *Dept. of Microbiology, Travancore Medical College Hospital, Kollam, Kerala, India*

ARTICLE INFO

Article history:
Received 26-04-2021
Accepted 03-08-2021
Available online 01-09-2021

Keywords:
Chromobacterium violaceum
Neonatal osteomyelitis

ABSTRACT

Chromobacterium violaceum is facultative anaerobic, motile, oxidase positive gram negative bacilli which is a normal inhabitant of soil and stagnant water of the tropical and subtropical areas. Human infections caused by *Chromobacterium violaceum* is very uncommon with only a few cases reported in the literature, the first case being described by JE Lesslarin in 1927 in Malaya. In humans, infections ranging from life threatening sepsis with metastatic abscesses to skin infections and urinary tract infections can be caused by *Chromobacterium violaceum*. High mortality rates are associated with these infections. So it is very essential to diagnosis and treat with appropriate antibiotic at the earliest. Here we report a case of neonatal osteomyelitis by *Chromobacterium violaceum* and could prevent sepsis by adequate antibiotic therapy and intensive treatment.

1. Introduction

Chromobacterium violaceum is widely distributed in natural aquatic environments and is temperature sensitive. Usually it produces an antioxidant pigment called violacein which is responsible for the purple color.[1] At 30 °C to 45 °C, it grows on Nutrient agar, Blood agar and Mac Conkey agar media producing distinctive smooth low convex colonies with a dark violet metallic sheen in the typical pigmented strain.[2] It is an emerging pathogen and only few cases of osteomyelitis were reported yet.[3]

2. Case Report

A seven day old baby boy was referred to our Hospital with history of fever and excessive crying for two days. The baby was term, average gestational age and delivered by LSCS. On fourth day of delivery, baby developed fever and treatment was taken from local hospital. On current admission, the patient was febrile and was in shock. On examination pain while moving left lower limb was noted. X-ray revealed a fracture and periosteal reaction on fibula of left lower limb. Ultrasound scan was suggestive of acute osteomyelitis. CRP was 53 and total count was elevated. The baby was ventillated for 3 days and started on Cefoperazone –Sulbactam and Neomycin. But fever was persisting. Provisional diagnosis of osteomyelitis left lower end of fibula was made.

Incision and drainage was done and the pus aspirate was sent for culture and sensitivity. Blood culture was also done by BacT Alert. Gram stain from the aspirated sample showed plenty of pus cells and gram negative bacilli. Sample was inoculated into Blood Agar and Mac Conkey Agar. After 24 hours of incubation, heavy growth of smooth, convex, round, violet coloured beta haemolytic colonies on Blood agar and Mac Conkey Agar was grown. The organism was motile, gram-negative rod. It was catalase and oxidase positive. Biochemically, indole, methyl red, and Voges-Proskauer test were negative.

* *Corresponding author*.
E-mail address: rafeedakm@gmail.com (Rafeeda K M).

https://doi.org/10.18231/j.ijmmtd.2021.043

The organism fermented glucose (producing acid but no gas) but did not ferment lactose or mannitol. Triple sugar iron medium showed an alkaline slant and acid butt (K/A) without gas and H2S production. Citrate was utilized and nitrate was reduced. Arginine was decarboxylated but not lysine and ornithine. Sensitivity test done in Meuller Hinton agar showed that the organism was sensitive to Piperacillin/Tazobactam, Amikacin and Ciprofloxacin and was resistant to Ceftazidime, Cefepime and Cefoperazone /Sulbactam. Vitek 2 (Biomereaux) also identified as *Chromobacterium violaceum*. As per our report the antibiotic was changed to Piperacillin - Tazobactam and Amikacin and was continued for 28 days. Patient responded well on antibiotics. Patient was investigated for immunodeficiency .But no evidence of immunocompromised diseases were found. Fortunately blood culture was sterile and the patient was improved on follow up visit.

3. Discussion

Chromobacterium violaceum is a facultative anaerobic, motile, oxidase positive gram negative bacillus.[1] Only a few case reports are available in the literature even though the organism is ubiquitous in distribution. Typically the disease starts with a localized skin infection or localized lymphadenitis following contact with stagnant water or soil and later it progresses to fulminating septicemia, with necrotizing metastatic lesions and multiple abscesses in the liver, lung, spleen, skin, lymph nodes, and brain, leading to fatal multiorgan failure.[4] *Chromobacterium violaceum* infection presenting as chronic granulomatosis, osteomyelitis, cellulitis, and periorbital and ocular infections are also reported in literature. A characteristic feature of *Chromobacterium* infection is rapid progression to sepsis and multi organ dysfunction. Of the total infections caused by *Chromobacterium violaceum*, it has been seen as localized abscess was found in more than 50 %.[5]

The entry of the bacilli to the body is mainly through minor skin trauma or through ingestion of contaminated water and seafood. Unusual routes of exposure include infection after scuba-diving or near drowning.[6] In the present case, the baby probably had a fracture in fibula leading to osteomyelitis. The exact source could not be found. Importance of early diagnosis and proper antimicrobial therapy can never be neglected to avoid progression to sepsis. Quick diagnosis, accurate bacterial identification, and specific treatment is very important because *C violaceum* may cause serious infection in healthy people. The major complications of the cases with fatal outcome seem to be sepsis, multiple liver abscesses, and diffuse pustular dermatitis. Some studies have reported instances of untreated *C violaceum* causing brain abscess and diarrhea.[7] Prolonged antimicrobial treatment is recommended in Chromobacterium infection, as relapse of the disease has been documented and postulated to be due to the presence of internal organ abscesses.[8] Our patient did not develop any complications due to the institution of early and proper antibiotic regimen.

4. Conclusion

C. violaceum is considered as an emerging pathogen in view of the recent climatic changes. Increasing reported cases with Chrombacterium violaceum infection has been noticed in recent decades. It has a propensity to develop into fatal septicemia unless appropriately treated. Thus it is required that the clinician must be aware of the sensitivity pattern and duration of treatment required for this infection.

5. Conflict of Interest

The authors declare that there are no conflicts of interest in this paper.

6. Source of Funding

None.

References

1. Sneath PH, Whelan JP, Bhagwan SR, Edwards D. Fatal infection by Chromobacterium violaceum. *Lancet*. 1953;265(6780):276–7. doi:10.1016/s0140-6736(53)91132-5.
2. Kumar MR. Chromobacterium violaceum: A rare bacterium isolated from a wound over the scalp. *Int J Appl Basic Med Res*. 2012;2(1):70–2.
3. Tucker RE, Winter WG, Wilson HD. Osteomyelitis associated with Chromobacterium violaceum sepsis. A case report. *J Bone Joint Surg Am*. 1979;61(6A):949–51.
4. Slesak G, Douangdala P, Inthalad S, Silisouk J, Vongsouvath M, Sengduangphachanh A, et al. Fatal chromobacterium violaceum septicaemia in northern laos, a modified oxidase test and post-mortem forensic family G6PD analysis. *Ann Clin Microbiol Antimicrob*. 2009;8:24. doi:10.1186/1476-0711-8-24.
5. Ray P, Sharma J, Marak SK, Singhi S, Taneja N, Garg RK, et al. Chromobacterium violaceum septicaemia from North India. *Indian J Med Res*. 2004;120(6):523–6.
6. Starr AJ, Cribbett LS, Poklepovic J, Friedman H, Ruffolo EH. Chromobacterium violaceum presenting as a surgical emergency. *South Med J*. 1981;74(9):1137–9. doi:10.1097/00007611-198109000-00031.
7. Dutta S. Multidrug resistant Chromobacterium violaceum: An unsual bacterium causing long standing wound abscess. *Indian J Med Microbiol*. 2003;21(3):217–8.
8. Sirinavin S, Techasaensiri C, Benjaponpitak S, Pornkul R, Vorachit M. Invasive Chromobacterium violaceum infection in children:case report and review. *Pediatr Infect Dis J*. 2005;24(6):559–61. doi:10.1097/01.inf.0000164761.81491.3f.

Author biography

Rafeeda K M, Associate Professor

Geethanjali M, Associate Professor

Cite this article: Rafeeda K M, Geethanjali M. *Chromobacterium violaceum* causing neonatal osteomyelitis – A case report from Kerala. *IP Int J Med Microbiol Trop Dis* 2021;7(3):213-214.