Fatal Septicaemia due to *Chromobacterium violaceum*

M Manjunath

ABSTRACT

Human infection caused by Chromobacterium violaceum *is rare but when it occurs, it is associated with a high mortality rate. This is a report of a young adult male who presented as a surgical emergency and succumbed soon after. The most common feature of this infection is sepsis, followed by cutaneous involvement and liver abscesses. Chromobacterium infection as a differential in a case of sepsis is important for clinicians to suspect, especially in tropical countries.*

Septicemia Fatal Debido a *Chromobacterium Violaceum*

M Manjunath

RESUMEN

La infección humana causada por chromobacterium violaceum *es rara, pero cuando ocurre, se halla asociada a una alta tasa de mortalidad. El presente trabajo reporta el caso de un varón adulto joven que se presentó con una emergencia quirúrgica y murió poco después. El rasgo más común de esta infección es sepsis, seguida de compromiso cutáneo y abscesos del hígado. La infección por* chromobacterium *como diagnóstico diferencial en un caso de sepsis, es un importante elemento de sospecha para los médicos clínicos, sobre todo en los países tropicales.*

West Indian Med J 2007; 56 (4): 380

INTRODUCTION

Chromobacterium violaceum was identified in 1881(1) and first described as a human pathogen in Malaysia in 1927(2). Even though it is rarely isolated, it can be easily identified on conventional culture media by its striking deep violet pigment (1, 3). There are several reports of this infection in the tropics and subtropics. Infections with *C violaceum* are potentially fatal, but if detected early, can be treated with appropriate antibiotics.

CASE REPORT

A previously healthy male labourer of 20 years with a history of abdominal pain for three days presented to the Accident and Emergency (A&E) Department, Port-of-Spain General Hospital, Trinidad and Tobago. The pain was around the umbilicus and upper right quadrant of the abdomen. On examination, he was febrile, dehydrated and the abdomen was rigid suggesting an acute abdomen. No lacerations or cutaneous lesions were noted.

From: Bacteriology Division, Department of Pathology, Port-of-Spain General Hospital, Port-of-Spain, Trinidad and Tobago, West Indies.

Correspondence: Dr M Manjunath, Bacteriology Division, Department of Pathology, Port-of-Spain General Hospital, Port-of-Spain, Trinidad and Tobago West Indies. Fax: (868) 624-6255, e-mail: smmadhura@yahoo.co.in.

On arrival at hospital, he received 1gm intravenous ceftriaxone and 500 mg intravenous metronidazole. An emergency exploratory laparotomy was performed. Surgeon's findings were: fibrinous exudates in the peritoneal cavity, multiple liver abscesses on the right lobe, 10 ml frank pus was drained, mildly inflamed appendix and normal spleen, stomach, duodenum, pancreas, small and large bowel.

The patient could not be revived from general anaesthesia. He required ventilator support and subsequently died after a few hours. The source of his infection could not be identified.

Microbiological diagnosis

Specimens received for bacteriological culture and sensitivity were pus from the abdomen and blood. Direct Gram stain of the pus showed numerous pus cells and no organisms. Deep purple to black mucoid shiny colonies were isolated on blood agar, chocolate agar and MacConkey agar after incubation aerobically at 37°C (Figure). Gram stain of colonies showed gram negative bacilli in short chains. Some of the biochemical reactions were: catalase +, nitrate +, esculin -, urease -, indole-, motility +, O/F +/+, glucose A/nogas (acid formed with no gas produced during sugar fermentation tests), sucrose A/no gas, lactose, maltose, mannitol and xylose were not fermented. The purple

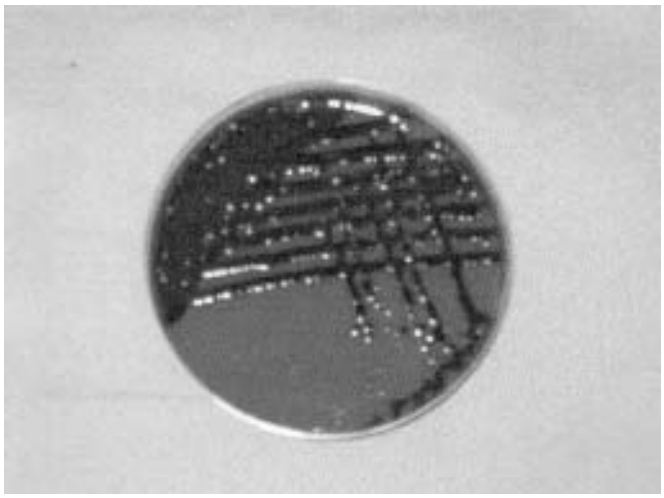

Figure: Deep purple black colonies of *Chromobacterium violaceum* on chocolate agar.

pigment did not diffuse into clear nutrient agar plates. The oxidase test was not performed because of the pigment production. Disc diffusion susceptibility testing showed that the isolate was resistant to ampicillin, cephalexin, cefuroxime, ceftriaxone, ceftazidime and susceptible to piperacillin/ tazobactam, gentamicin, ciprofloxacin, co-trimoxazole and meropenem. All of the above tests except sugar fermentation tests were done in our laboratory. This identification of the organism as *Chromobacterium violaceum* was confirmed by CAREC (Caribbean Epidemiology Centre).

The same organism was isolated from blood specimen which was collected prior to surgery.

DISCUSSION

Chromobacterium violaceum infection in humans is rare, but has a high mortality when it occurs. The most common feature of this infection is sepsis followed by cutaneous involvement and liver abscesses. The above is a case report of fatal septicaemia presenting as a surgical emergency in a tertiary care general hospital in Trinidad. *Chromobacterium violaceum* is a saprophyte found in soil and water in tropical and subtropical countries. The organism rarely causes infection in humans and there are only a limited number of clinical reports, usually from the southern United States of America, South America, Africa, India, Southeast Asia and Australia (4). Infection often occurs after exposure of damaged skin to stagnant water or soil (5, 6). The mortality rate is very high at 60% to 80% (5, 7). One of the problems in the management of patients with *C violaceum* infection is the difficulty in recognizing the disease because of its rarity. Though *C violaceum* is considered to be of low virulence, when infection occurs, prompt medical and surgical interventions are necessary to avoid fatalities. The clinical manifestations of *C violaceum* infection includes sepsis and visceral abscesses involving the liver, kidneys and lungs. Other presentations are cellulitis at the site of trauma, urinary tract infection, lymphangitis, osteomyelitis, sinusitis, orbital cellulitis and meningitis (8). Sepsis is the most common presentation. One differential diagnosis to consider is melioidosis, an infection caused by *Burkholderia pseudomallei* which is quite common in tropical countries (4).

C violaceum is usually susceptible to chloramphenicol, tetracycline, gentamicin, co-trimoxazole, ciprofloxacin and imipenem, and resistant to penicillins, cephalosporins and aztreonam (4, 8, 9). Beta-lactamase production has been documented in *C violaceum* (10).

CONCLUSION

As the mortality rate for sepsis with *C violaceum* is high, clinicians should be aware that this micro-organism is a cause of septicaemia and abscesses in multiple organs. Early recognition and aggressive antibiotic therapy can reduce the high mortality rate associated with *C violaceum* infection.

REFERENCES

1. Martin WJ, Martin SA. Calymmatobacterium, Cardiobacterium, *Chromobacterium* and Streptobacillus, In: Balows A, Duerdi BI_(eds). Topley and Wilson's Microbiology and Microbial Infections. 9th Ed. London: Arnold,1998; 1219–27.
2. Lee J, Kim JS, Nahm CH, Choi JW, Kim J, Pai SH. Two cases of *Chromobacterium violaceum* infection after injury in a subtropical region. J Clin Microbiol 1999; **37:** 2068–70.
3. Steinberg J, Rio C. Other gram negative bacilli, In: Mandell G, Bennett JE, Dolin R (eds). Mandell, Douglas and Bennett's Principles and Practice of Infectious Diseases. London: Churchill Livingstone, 2000; 2463–4.
4. Ti TY, Tan WC, Chong AP, Lee EH. Nonfatal and fatal infections caused by Chromobacterium violaceum. Clin Infect Dis 1993; **17:** 505–7.
5. Roberts SA, Morris AJ, McIvor N, Ellis-Pegler R. Chromobacterium violaceum infection of the deep neck tissues in a traveler to Thailand. Clin Infect Dis 1997; **25:** 334–5.
6. Ender PT, Dolan MJ. Pneumonia associated with near-drowning. Clin Infect Dis 1997; **25:** 896–907.
7. Perera S, Punchihewa PM, Karunanayake MC, de Silva N. Fatal septicemia caused by Chromobacterium violaceum. Ceylon Med J 2003; **48:** 26–7.
8. Midani S, Rathore M. Chromobacterium violaceum infection. South Med J 1998; **91:** 464-6.
9. Atapattu DN, Jayawickrama DP, Thevanesam V. An unusual bacterium causing a brain abscess. Emerg Infect Dis 2001; **7:** 159–160.
10. Farrar WE Jr, O'dell NM. Beta lactamase activity in Chromobacterium violaceum. J Infect Dis 1976; **134:** 290–3.