

CASE REPORT

Chromobacterium Violaceum Septicaemia-A Case Report

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Abstract: Chromobacterium violaceum is a rare human pathogen with a high rate of mortality. Since the first case from Malaysia in 1927, about 150 cases have been reported till 2004 in the world literature [1]. We report a case of septicaemia with bronchopneumonia in a young healthy male.

Case History

A 24 year old male reported to a peripheral health centre with complaints of high fever and cough with expectoration for one week. Clinical examination revealed tachypnoea and bilateral crepitations. Per abdominal examination showed mild hepatomegaly. CNS and CVS were within normal limits. Routine and bacteriological investigations were carried out. Laboratory studies showed normal haemoglobin level with a white blood cell count of 15,500/cu.mm with neutrophilia. Chest x-ray revealed bilateral infiltrates. Blood urea and electrolyte levels were within normal limits. Liver function tests were also normal.

Bacteriological findings: Sputum sample was sent to the microbiology department of KSHEMA. The gram stained smear showed a pleomorphic gram negative rods. The

Fig-1: Non diffusible violet pigment production on Nutrient agar.



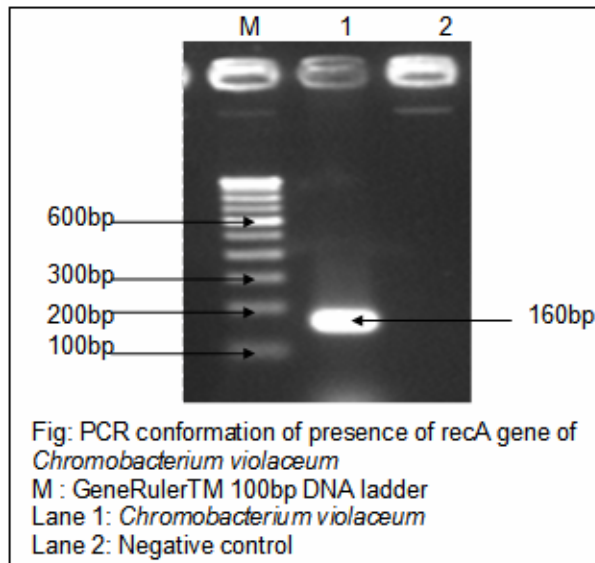
sputum sample was inoculated onto blood agar and MacConkeys agar. The colonies grew easily on MacConkeys agar and blood agar. Violet pigmented colonies with a narrow zone of haemolysis developed on Blood agar. The isolate was further inoculated onto nutrient agar for the demonstration of pigment production (Fig: 1).

Smooth round convex butyrous violet coloured colonies of 1-2mm in size developed on nutrient agar. The organism was a motile gram negative rod. It was Catalase and Oxidase positive. Biochemically Indole, methyl red, and Voges proskauer reactions were negative,

Nitrate was reduced and Citrate was not utilized. Triple sugar iron showed an alkaline slant and acid butt without gas and H₂S production. It fermented glucose

with the production of acid but no gas while sucrose mannitol dulcitol and lactose were not fermented. The arginine dihydrolase reaction was positive while the ornithine and lysine decarboxylases were negative. The isolate was identified as *Chromobacterium violaceum* biochemically. The antibiogram of the organism showed that it was sensitive to the aminoglycosides such as Gentamicin, Netilmicin, Piperacillin, and Amikacin and resistant to the cephalosporins like Cefaperazone,

Fig-2: Rec A amplification PCR showing a 160 bp fragment



Ceftazidime and Cefuroxime along with Ampicillin. A repeat sputum sample and two blood samples were cultured for confirmation of the pathogenic potential of the isolate. *Chromobacterium violaceum* was isolated from all the three samples. As the patient was then shifted to a higher centre for further treatment the prognosis of the patient was not known.

The isolate was then subjected to PCR studies. Rec A amplification PCR generated a 160 bp fragment (Fig 2) specific for *Chromobacterium violaceum*.

Discussion

Chromobacterium violaceum is an aerobic, gram-negative bacillus which grows readily on ordinary culture media. Both pigmented and non pigmented strains exist, though the non pigmented strains are rare. The pigmented strains produce violet non diffusible pigment known as violacein. The biochemical reactions of our isolate do not differ from those already described for the organism. Infection with the organism is largely confined to tropical and subtropical regions. The organism is ubiquitous in nature being a soil saprophyte and water inhabitant [2-3]. It was first described as a human pathogen in Malaysia in 1927 [4]. Though human infections with *Chromobacterium violaceum* are rare it can cause human infections like septicaemia, liver abscess, lung abscess, skin lesions, dental infections, urinary tract infections and diarrhoea. It is associated with high mortality rate [5]. Infection process when systemic will ultimately form abscess in multiple organs. Death generally follows overwhelming septicaemia. Little is known about the factors or the immunodeficient status that are associated with the fatal form of this infection Recombinase A (rec A) is a multifunctional protein involved in general recombination, DNA repair and is highly conserved among eubacteria [6].

Several studies have shown that Recombinase A(recA) can be used as a molecular tool to study the diversity among the *Chromobacterium violaceum* [7]. Intraspecies variation of *Chromobacterium violaceum* can be examined by comparative sequence and by restriction fragment length polymorphism analysis of the Recombinase A gene (rec A) by PCR-RFLP [8].

Conclusion:

The infection caused by this organism is underdiagnosed. Since it is a soil saprophyte and water inhabitant it might be mistaken for a contaminant. The nonpigmented strains have pathogenic potential compared to the pigmented ones but are difficult to identify as they have biochemical properties similar to that of *Pseudomonas* spp and *Vibrionaceae*. Hence very few patients may receive adequate, vigorous and definitive antibiotic therapy early in the infection [3]. When repeatedly isolated from multiple samples it must be regarded as clinically significant and must be treated early and aggressively if death has to be prevented.

References

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