

Case Report

ACTINOMYCES VISCOSUS FROM BLOOD CULTURE: A RARE CASE

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ABSTRACT

Actinomyces viscosus is a facultative anaerobic Gram positive filamentous bacillus. Though rarely isolated from clinical samples, it has been reported from dental carries, skin lesions, endocarditis, etc. A case report of *Actinomyces viscosus* recovered from blood culture is presented here. A female child with low birth weight presented with grunting, suprasternal and subcostal rib retraction. Blood was sent to Microbiology for culture in tryptic soy broth (TSB) and brain heart infusion broth (BHIB). Gram stain from both TSB and BHIB showed Gram positive non-sporing, branching filamentous bacilli. It was identified as *Actinomyces viscosus* by standard biochemical tests. The isolate was susceptible to gentamicin, amikacin, penicillin, erythromycin, amoxycillin-clavulanic acid, trimethoprim-sulphamethoxazole, cefuroxime and cefotaxime. The baby was started with oxygen, IV fluids, IV ampicillin and gentamicin. The antibiotics were changed to cefotaxime and amikacin later. She became stable on 3rd day. She started breast feeding on 5th day and was discharged on 8th day after delivery. Her condition was stable on discharge. To the best of our knowledge, this is probably the first case of *A. viscosus* in India recovered from blood culture.

Key Words: *Actinomyces viscosus*; Blood culture; Rare

INTRODUCTION

Actinomycosis is a subacute to chronic suppurative granulomatous infection with draining sinuses discharging characteristic sulphur granules. Common anaerobic actinomycetes species are *Actinomyces israelii*, *A. naeslundii*, *A. meyeri* and *A. odontolyticus*. *Actinomyces viscosus*, rarely isolated from clinical samples, is a facultative anaerobe and is found in the oral cavity of humans and animals. Winn et al. (2006). *A. viscosus* has been reported from dental carries, Brailsford et al., (1999), skin lesions, Metgud et al., (2007), sub-mandibular abscess, Radford and Ryan (1997), endocarditis, Mardis and many (2001), infection of the lungs, Eng et al., (1981), etc. We present here a case report of *Actinomyces viscosus* recovered from blood culture. To the best of our knowledge, this is probably the first case of *A. viscosus* in India recovered from blood culture.

CASE

A female child with low birth weight (1.8 kg) was delivered vaginally by a female admitted with 8 months amenorrhea with premature rupture of membranes. She was immediately admitted in Premature Unit (PU) and later transferred to Transitional Care Unit (TCU) after one day. On examination, the baby was euthermic with pulse rate of 158/minute and respiratory rate of 76/min. Her capillary refill time was < 3 seconds. Grunting, suprasternal and subcostal retraction were present. Her blood sugar was 78 – 108 mg/dl and in all other systems no abnormality were detected.

Complete blood count revealed Haemoglobin to be 19.1 gm%, Total leucocyte count 8,000/ cu.mm. (polymorphs 66 and lymphocytes 34) and platelet count 2,54,000/cu.mm. Serum bilirubin (total) was 18.5 mg/dl with direct 0.96 mg/dl. Arterial blood gas analysis showed a pH of 7.34, pCO₂ 35 mmHg, pO₂ 96.1 mmHg and HCO₃ 18.6 mmHg. The chest X-ray was normal.

Blood was sent for culture in tryptic soy broth (TSB) and brain heart infusion broth (BHIB) and both were incubated at 37°C overnight. From TSB, it was subcultured on blood agar and kept in candle jar for 24 hours at 37°C. From BHIB, it was subcultured on brain heart infusion agar and was incubated for 48 hours at 37°C. Gram stain from both TSB and BHIB showed Gram positive non-sporing, branching filamentous bacilli (Figure 1). Modified Z-N stain showed non acid-fast bacilli. Flat irregular, grey, non-haemolytic, moist, smooth colonies with glistening surface were seen on blood agar (Figure 2). Colonies with similar morphology grew on brain heart infusion agar. Secondary

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smear from BA and BHIA were of similar morphology. The organism was non motile and catalase positive and a battery of tests were put up for speciation according to standard techniques. Winn et al. (2006). The organism reduced nitrates to nitrites, hydrolysed urea, did not hydrolyse esculin, fermented glucose and sucrose with acid and no gas and was CAMP (Christie Atkins Munch Peterson) test negative. It was identified as *Actinomyces viscosus*.



Figure 1: Gram stain from Brain Heart Infusion broth showing Gram-positive non-sporing branching filamentous bacilli (100 X).



Figure 2: Flat irregular, grey, non-hemolytic, moist, smooth colonies of *Actinomyces viscosus* on Blood agar.

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Antimicrobial susceptibility was carried out by Kirby Bauer Disc Diffusion Method (KBDDM). Wallace et al. (1977). The isolate was susceptible to gentamicin, amikacin, penicillin, erythromycin, amoxycillin-clavulanic acid, trimethoprim-sulphamethoxazole, cefuroxime and cefotaxime.

The baby was started with oxygen, IV fluids, IV ampicillin and gentamicin in PU. The antibiotics were changed to cefotaxime and amikacin in TCU. She became stable on 3rd day. Respiratory rate came down to 40/min. She was started with RT feeds and was transferred back to PU. She started breast feeding on 5th day and was discharged on 8th day after delivery. Her condition was stable on discharge.

DISCUSSION

First cases of *A. viscosus* from human infection was reported as early as 1972 from a mass in chest wall of an adult male and another in 1973 from a branchial cyst in a 19-year old youth. Radford and Ryan (1997). First case of *A. viscosus* from blood culture was reported in a 76-year old female suffering from multiple myeloma. The same was also reported from a submandibular abscess pus. Radford and Ryan (1997). Two cases of *A. viscosus* have been reported from lung infections in immunocompetent patients. One of them had a peripheral actinomycotic lung mass resembling a tumor. Eng et al. (1981). *A. viscosus* was also reported from a mass in chest wall in 1984. Spiegel and Telford (1984).

Two cases of infective endocarditis due to *A. viscosus* have been reported with no known identifiable portal of entry, along with involvement of mitral valve. Mardis and Many (2001). Echocardiography is essential for diagnosis of endocarditis. It is common in males, has high propensity for systemic embolization and involve only native heart valves.

Oesophagitis due to *Actinomyces* was reported in a patient with lung cancer who received chemotherapy as well as radiotherapy. He was treated with IV Penicillin G followed by clinical improvement but relapsed due to non-compliance. Abdalla et al. (2005).

Serotype 2 mostly isolated from human cases is considered pathogenic because of its aggregative property. *Actinomyces* species colonises the mouth of most adult humans, so isolation from clinical specimen uncontaminated by sputum or mouth flora is important.

Penicillin is the drug of choice for a minimum period of 3 weeks, though penicillin resistance has been reported in cutaneous actinomycosis due to *A. viscosus*, from pus from multiple discharging wounds on the back of a 35-year old lady.^[3] *A. viscosus* from skin lesions (multiple fistulous tracts in right hand) in a 22-year old male from Iran responded to a combination of IV penicillin and oral doxycycline. Daie et al. (2009).

To the best of our knowledge, this is probably the first case of *A. viscosus* in India recovered from blood culture. No source of infection could be identified in the present case. Two cases of infective endocarditis due to *A. viscosus* have also been reported with no known identifiable portal of entry. Mardis and Many (2001).

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