

ENDOCARDITIS DUE TO *CHRYSEOBACTERIUM MENINGOSEPTICUM*

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Abstract

Chryseobacterium meningosepticum is a gram negative rod widely distributed in nature. It is known to cause meningitis in neonates and premature infants. Adult infections are not common and are usually nosocomially acquired. We report an unusual case of native valve endocarditis in a 58-year-old man due to this organism. A high degree of suspicion and correct identification and sensitivity testing is required to diagnose infections by this rare isolate.

Key words: *Chryseobacterium meningosepticum*, endocarditis, nosocomial infection

Incidence of infective endocarditis (IE) in the general population has been estimated to be between two to six cases per 100,000 patient years.¹ Nosocomial infective endocarditis may occur secondary to intravenous catheters, hyperalimentation lines, pacemakers, dialysis shunts etc. In fact, infected intravenous devices give rise to at least half of these cases.² We are reporting a rare case of nosocomial native valve endocarditis due to an opportunistic gram negative pathogen - *Chryseobacterium meningosepticum*. To the best of our knowledge this is the first ever-reported case of its kind in India.

Case Report

A 58-year-old man was admitted to a local hospital with non ST myocardial infarction (MI) and acute left ventricular failure, with a past history of hypertension, diabetes mellitus (DM) and anterior wall myocardial infarct (AWMI). He suffered cardiac arrest, was resuscitated and put on ventilator. He subsequently developed pneumothorax and went into acute renal failure. An intercostal drain (ICD) was inserted and peritoneal dialysis was started. The 2D echocardiogram revealed regional wall motion abnormality with severe mitral regurgitation (MR) and left ventricular ejection fraction (LVEF) of 50%. His condition deteriorated and he was put on intraaortic balloon catheter (IABC). Two days later he developed acute onset breathlessness, echocardiogram revealed vegetation on aortic valve with severe aortic regurgitation (AR), therefore, intra aortic balloon catheter was removed. Blood samples for bacterial culture and sensitivity were taken and treatment was started empirically for IE with meropenem 500 mg eight hourly intravenously and clindamycin 300 mg eight hourly intravenously.

The patient was referred to this hospital on ventilator,

with ICD *in situ*, for further management. On admission he was afebrile, TLC was 11,800/cmm (4,000-10,000) with polymorphs 90%, Hb 9.4 gm/dL, B.urea 219 mg/dL, S. creatinine 3.27 mg/dL and ESR 55 mm in the first hour. Echocardiogram and trans-oesophageal echo (TEE) revealed a mobile vegetation on noncoronary cusp of aortic valve with noncoaptation, severe AR and severe MR.

One of the several blood cultures taken grew a filamentous gramnegative rod after 26 hours of incubation at 37°C in the BacT Alert 120 automated system (bioMeirieux). On blood agar, after 48hours of incubation, the colonies were small, translucent, convex and non haemolytic. MacConkey agar showed poor growth of a nonlactose fermenter in 48 hours. The gramnegative rod was nonmotile, catalase and oxidase positive. It was identified as *Chryseobacterium meningosepticum* using mini API ID 32 GN identification system (bioMeirieux). It was sensitive to piperacillin-tazobactam, cotrimoxazole, vancomycin, teicoplanin and rifampicin. Resistance was noted for ampicillin-sulbactam, ticarcillin-clavulanic acid, ticarcillin, piperacillin, cefepime, imipenem, meropenem, ceftazidime, gentamicin, amikacin and ciprofloxacin. Cultures taken from other body sites were negative. The same organism i.e., *Chryseobacterium meningosepticum* was isolated from one of the blood samples taken during the previous hospitalisation, a day before discharge from the local hospital. The identification and sensitivity were performed there by the Vitek automated system (bioMeirieux).

The patient was then treated on the lines of acute bacterial endocarditis with Inj. piperacillin-tazobactam 4.5 gm six hourly intravenously initially, the dose was reduced to 2.25 gm six hourly as patient had mild to moderate renal impairment, ciprofloxacin 200 mg 12 hourly intravenously and rifampicin 300 mg 12 hourly orally. He received four weeks of piperacillin-tazobactam and ciprofloxacin and two weeks of rifampicin.

The vegetation resolved on a review echo done after the completion of therapy. All follow up blood cultures

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were negative and the patient was planned for double valve replacement (DVR) surgery. But suddenly he developed left ventricular failure with cardiogenic shock and died despite resuscitative measures.

Discussion

Chryseobacterium spp. is a gram negative rod, ubiquitous in nature and found primarily in soil and water. *Chryseobacterium meningosepticum* formerly called *Flavobacterium meningosepticum* and CDC group IIa is the most pathogenic member of the genus. It is a well-known agent of meningitis in premature and newborn infants. Adult infections are usually acquired nosocomially. Cases of pneumonia,³ endocarditis,^{4,5} postoperative bacteremia⁶ and meningitis have been reported especially in immunocompromised patients. In the hospital environment, they exist in water systems and wet surfaces and serve as potential reservoirs of infection. Colonization of patients via contaminated medical devices as respirators, endotracheal/tracheostomy tubes, mist tents, humidifiers, incubators for new borns, syringes etc, has been documented.⁷ Contaminated surgically implanted devices such as intravascular catheters and prosthetic valves have also been reported.⁸

The organism is usually resistant to most antibiotics commonly prescribed for gram- negative bacterial infections like aminoglycosides, extended spectrum beta lactam antibiotics etc. However, some fluoroquinolones have shown favourable results.⁹ Rifampicin is usually active *in vitro* and has been used as a part of combination therapy to clear persistent infections. Vancomycin alone or in combination with rifampicin has in the past been successful in treatment of meningitis in infants. However, recently the role of vancomycin against *Chryseobacterium* spp. infections has been questioned. Thus, there is no optimal regimen for the treatment of *Chryseobacterium* spp. infections and antimicrobial therapy should be based on results of properly performed susceptibility tests. Appropriate infection control measures such as changing of equipment concerned with humidifying or administering gases every 24 hours and

thorough hand washing may prevent infection with this opportunistic organism.

Chryseobacterium meningosepticum could be an important pathogen in endocarditis patients. Proper management of infection by this rare organism warrants correct identification and sensitivity testing of such isolates by the microbiology laboratory personnel.

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