Elizabethkingia meningoseptica Bacteremia in an Immuno-competent Patient

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Abstract

Background: Elizabethkingia meningoseptica infections are not common but are clinically important because the organism is naturally resistant to multiple antibiotics. A prompt diagnosis is important so as to give appropriate antibiotic treatment.

Case Report: We report a case of central line associated Elizabethkingia meningoseptica infection in a patient who was admitted with recurrent oligodendroglioma and underwent right frontal craniotomy and surgical decompression of tumor.

Conclusion: Elizabethkingia meningoseptica infection should always be considered in the etiological diagnosis of septicemia who do not respond to empirical therapy as this results in an inappropriate choice of antimicrobial therapy, which may lead to increased morbidity and mortality of patients infected by this pathogen.

Keywords: Bacteremia, Central Venous Catheters, Chryseobacterium, Oligodendroglioma, Sepsis.

Introduction

Elizabethkingia meningoseptica (formerly Flavobacterium meningosepticum and, during 1994-2005 Chryseobacterium meningosepticum) [1] is a gram-negative non-fermenting obligate aerobe. It is widely distributed in the environment, and is an opportunistic human pathogen [2]. It has been reported as a causative agent of meningitis in premature and newborn infants [3]. In adults, it has been isolated from cases of pneumonia, endocarditis and meningitis, usually in association with some underlying severe illness [4]. The organism is inherently resistant to many anti-microbial agents commonly used to treat infections. Infection with this pathogen is potentially fatal unless diagnosed and treated early. The incidence of Elizabethkingia meningoseptica may be underreported as correct identification is difficult unless an automated system is used.

Case Report

A 46 year old male patient, a case of oligodendroglioma underwent surgery and radiotherapy in 2013, now presented with headache associated with seizures. On thorough investigations, patient was found to have recurrent oligodendroglioma. Patient underwent right fronto-temporal craniotomy and surgical decompression of tumor. On 5th post-operative day, patient complained of headache associated with vomiting. CT brain showed pneumocephalus. Total leucocyte count (TLC) was 13,200 cells/mm³ (4500-11000), hemoglobin 15.5 g/dL (13-15), sodium 138 meq/L (145-150), potassium 4.6 meq/L (3.5-5.5) and chlorides were 107 meq/L (96-106). Patient was drowsy and not obeying commands and hence shifted to intensive care unit (ICU). Post-operatively patient was started on injection ceftriaxone two gms intravenous twice daily. On 7th post-operative day in intensive care unit
patient developed high grade fever and antibiotics were changed to cefoperazone plus sulbactam combination and amikacin. Symptoms persisted with increasing TLC counts, thrombocytopenia and raised pro-calcitonin levels: 1.39 ng/mL (< 0.15) suggestive of sepsis.

Two sets of blood samples one from central line and one from peripheral line cultured by an automated method (Bact/ Alert 3D, Biomerieux) flagged positive within 24-30 hours. Colonies on sheep blood agar plates (biomerieux) were 1-2 mm, circular, and non-hemolytic after overnight incubation at 37°C, and there was no growth on MacConkey agar plates. The isolate was Gram negative bacillus with non-fermenting reactions on TSI slant, non-motile, catalase positive, oxidase positive, Indole positive, urease and citrate negative. The isolate from both the samples was identified as being the same and antimicrobial susceptibility testing was carried out by Kirby-Bauer disc diffusion method on Muller Hinton agar as per Clinical Laboratory Standards Institute (CLSI) guidelines. Identification and sensitivity was further confirmed by the fully automated BD phoenix 100. The organism was identified as Elizabethkingia meningosepticum and it was sensitive only to cotrimoxazole (MIC-2/38). As per the culture and sensitivity report vancomycin and cotrimoxazole were added. Patient responded well and was discharged. After discharge patient was kept on cotrimoxazole for two weeks. Patient is doing well in the subsequent visits.

Discussion

Elizabethkingia is a bacterial genus that is commonly detected in the environment (particularly soil and water) but that rarely causes human infection [5]. E. meningoseptica is resistant to multiple antibiotics and has been previously described as a pathogen of neonatal meningitis and sepsis [5], as well as a cause of infection among immunocompromised patients [6]. In hospital environment, it occurs on moist surfaces and water, and colonization in patients was also demonstrated by means of contaminated medical equipment [7,8]. Some reports of infections due to Elizabethkingia meningosepticum have been published. Krebs et al. reported a case of bacteraemia and meningitis by E. meningosepticum, in a patient with history of acute myeloid leukemia [9]. Echeverri et al. reported a case of bacteraemia in a patient with history of acute lymphoblastic leukemia, initially treated with moxifloxacin, then combined with vancomycin and sulfamethoxazole [10]. E. meningoseptica bacteremia has also been described in patients requiring chronic hemodialysis therapy [11-16]. A study from Taiwan on the analysis of adult patients with E. meningoseptica bacteremia showed that 86% of the patients had nosocomial infections and 60% had acquired the infection in the ICUs [17]. In our study also the patient was in ICU at the time of development of bacteraemia.

E. meningoseptica is inherently resistant to many antibiotics and only a limited range of antibiotics are available for treatment. Studies have shown that more than 80% of the isolates were susceptible to trimethoprim-sulfamethoxazole, moxifloxacin, and levofloxacin [18]. In our study, the isolate was susceptible only to cotrimoxazole which is contrary to other studies which have shown that the isolate was susceptible to piperacillin, piperacillin-tazobactam, trimethoprim-sulfamethoxazole, and ciprofloxacin [18].

Conclusion

In our patient central line was the risk factor for Elizabethkingia meningosepticum bacteraemia. Contrary to other studies our isolate was sensitive only to cotrimoxazole and was also resistant to ciprofloxacin. Though uncommon, E. meningoseptica is an important pathogen, especially in hospitalized immuno-competent patients with indwelling devices. It should always be considered in the etiological diagnosis of septicemia who do not respond to empirical
therapy as this results in an inappropriate choice of antimicrobial therapy, which may lead to increased morbidity and mortality of patients infected by this pathogen.

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**References**


