

An Unusual Presentation of Acute Gastroenteritis Caused by *Elizabethkingia Meningoseptica* in a Child with Sepsis from Rural Karnataka-A Case Report.

*Mamatha Ballal, *Rituparna Chakraborty,**Suneel Mundkur,**Shrikiran Aroor, Abirhami Balakrishnan, Vijianthy Rajalingam

*Department of Clinical Microbiology & Immunology, KMC-International Center, Manipal University, Manipal.

**Department of Paediatrics, Kasturba Hospital, Manipal, Karnataka, India

Abstract: *Elizabethkingia meningoseptica*, a Gram negative obligate aerobic bacilli, though widely distributed in nature (water, soil, salt water) it does not form a part of normal human flora. *Elizabethkingia meningoseptica* has been reported to cause meningitis in premature and new born infants. We report a case of acute gastroenteritis caused by this organism in a child with sepsis. A 1 month 23 days old infant was referred to the Paediatric Unit of Kasturba hospital, Manipal presenting with complaints of high grade fever of 10 days duration and loose stools since 8 days. Routine Laboratory examinations were performed. Microbiological investigations were processed by standard techniques. Peripheral smear report showed leukocytosis and platelet count appeared low normal. Using biochemical tests and VITEK 2C (Biomérieux) Identification system, *Elizabethkingia meningoseptica* was identified as the sole pathogen which was confirmed by its repeated isolation from three consecutive stool samples. Blood and urine cultures were sterile after 24 and 36 hours of incubation respectively. The infant's diarrhoea resolved with treatment. To our knowledge and from literature review, this is the first case of diarrhoea caused by *Elizabethkingia meningoseptica* from an infant, being reported from South India-Manipal, Karnataka. The genus *Elizabethkingia* belongs to the family Flavobacteriaceae of the Class Flavobacteria and order Flavobacteriales. This organism is usually multiresistant to antibiotics typically prescribed for treating gram-negative bacterial infections, but often susceptible to agents generally used for treating gram positive bacterial infections. This bacterium has been associated with cases of neonatal meningitis and septicaemia, and nosocomial pneumonia, endocarditis, and postoperative bacteremia in immunocompromised individuals. The present child with *Elizabethkingia meningoseptica* infection seems to be the first case to be reported with diarrhoea due to this organism. The patient recovered from diarrhoea after treatment with appropriate antibiotics.

INTRODUCTION

Elizabethkingia meningoseptica, formerly known as *Flavobacterium meningosepticum*, was first reported by King in 1959 at the Center for Disease Control and Prevention (CDC), Atlanta¹. In 1994, it was reclassified in the genus *Chryseobacterium* and was named *Chryseobacterium meningosepticum* and later on placed in the new genus *Elizabethkingia* named after the original discoverer Elizabeth King¹. It is a Gram negative obligate aerobe, non-spore forming, non-fermentative and non-motile bacilli that is indole, catalase and oxidase positive. It is widely distributed in nature but does not form a part of the normal human flora. They are inhabitants of soil and water and have been recovered from municipal water supplies and from hospital environment², which can act as a potential source of infection resulting in outbreaks³. *Elizabethkingia meningoseptica* has been reported to cause meningitis in premature and new born infants⁴.

We report a case of diarrhoea caused by this organism in an infant with sepsis.

CASE REPORT

A 1 month 23 days old infant was referred to the Paediatric Unit of Kasturba Hospital, Manipal presenting with complaints of high grade fever of 10 days duration and loose stools since 8 days. Baby had normal neonatal period and was being exclusively breastfed.

On physical examination of the baby girl, her weight was 3.4 kgs, respiratory rate was 34/min, and heart rate was 120/min. The child was conscious with no meningeal signs. The baby had signs of dehydration. Clinical examination also revealed hepatosplenomegaly with no pallor, petechiae or lymphadenopathy.

The final diagnosis was acute gastroenteritis with sepsis. Routine Laboratory examinations were performed. Microbiological investigations were processed by standard techniques. Stool sample was loose, watery, non-mucoid and not blood tinged. Saline and Iodine mounts were negative for trophozoites, cysts or ova. Routine laboratory examinations were performed. Initial laboratory testing showed leukocytosis with a left shift (27,300 cells/mm³ with 28% band form) and platelet count appeared low normal.

Culture was done on Blood agar, MacConkey's agar and Selenite F broth. The plates were incubated at 37°C overnight. Colonies on Blood Agar were non-haemolytic and pure. MacConkey's agar showed very poor growth after 24 hours of incubation. Gram staining of the colony showed gram negative bacilli. The organism was catalase, oxidase and indole positive. OF glucose was not fermented, carbohydrates like glucose, maltose and xylose were not fermented, gelatin was liquefied, nitrate was not reduced to nitrites, urea was not hydrolysed, and there was no growth in 1% and 4% NaCl. The identification was confirmed by VITEK 2C (Biomérieux) Identification system, *Elizabethkingia meningoseptica* was identified as the sole pathogen which was confirmed by its repeated isolation from three consecutive stool samples. Blood and urine cultures were sterile after 24 and 36 hours of incubation respectively. Antimicrobial susceptibility testing was performed according to CLSI guidelines by the Kirby-Bauer's disk diffusion method. The organism was sensitive to vancomycin, ciprofloxacin and cotrimoxazole and resistant to colistin, amoxicillin-clavulanic acid, ceftriaxone and meropenem.

The patient was treated with intravenous vancomycin for 10 days and then switched to oral cotrimoxazole and ciprofloxacin. The child responded well to the treatment. On follow up visit after a month, the child was gaining weight normally and had no history of loose stools or diarrhoea.

DISCUSSION

The genus *Elizabethkingia* belongs to the phylum Bacteroidete, family Flavobacteriaceae of the Class Flavobacteria and order Flavobacteriales⁵. The two closely related species of *Elizabethkingia* which are *E.meningoseptica* and *E.miricola*, got finally validated in 2005^{6,7}. The phenotypic difference of *Elizabethkingia meningoseptica* (formerly known as *Chryseobacterium*) from *Chryseobacterium indologenes* (the most common species causing human disease in this genus) is by the lack of a yellow pigment in culture⁶. *E.meningoseptica* and *E.miricola* can be differentiated biochemically based upon the ability of the latter to hydrolyse urea while the former cannot⁶. *E.meningoseptica* is usually multiresistant to antibiotics typically prescribed for treating gram-negative bacterial infections, including extended-spectrum β -lactam agents³ but often susceptible to agents generally used for treating gram positive bacterial infections and hence mistaken as a gram positive organism. This bacterium has been associated with cases of neonatal meningitis and septicaemia⁸ and in adults it can cause pneumonia, endocarditis, bacteremia, skin and soft tissue infection in association with underlying serious illness³. Positive identification of this organism enables prompt

treatment and increases the chances of recovery. But deciding the appropriate choice of antibiotic is difficult as the results of susceptibility testing vary when different methods are used. Though our patient responded to treatment with vancomycin but there are reports showing failure of this drug in some cases.

From medline search and literature review, the present patient with *Elizabethkingia meningoseptica* diarrhoea is unique as this seems to be the first case being reported from India with manifestation of diarrhoeal due to this microorganism.

REFERENCES

1. Nisel Ozkalay, Murat Anil, Neval Agus et al, Community-Acquired Meningitis and Sepsis Caused by *Chryseobacterium meningosepticum* in a Patient Diagnosed with Thalassemia Major, *J Clin*

Microbiol. 2006 August; 44(8): 3037-3039

- Steinberg JP, Rio D, Other Gram negative and Gram variable Bacilli, In Mandell, Douglas and Bennett's *Principle and practice of infectious diseases*; 6th ed. Philadelphia: Elsevier Churchill Livingstone; 2005: p 2751-768
- M.Dias, Prashant K., R.Pai, B.Scaria, *Chryseobacterium meningosepticum* bacteremia in diabetic nephropathy patients on hemodialysis, *Indian J Nephrol.* 2010 October; 20(4): 203-204
- Thong ML, Pudthueary SD, Lee EL, *Flavobacterium meningosepticum* infection: An epidemiological study in a new born nursery, *J Clin Pathol* 1981; 34:429-33
- Jean Francois Bernardet, Celia Hugo and Brita Bruun, *The Genera Chryseobacterium and Elizabethkingia*; Chapter 6.12, *Prokaryotes* (2006) 7:638-676
- Peter C Iwen, What's in a name? *The Taxonomic Overview of the Genus Elizabethkingia*; *Nebraska Public Health Laboratory Newsletter*; Fall 2009; pages 3-4
- Kim, KK, MK Kim, JH Lim, HY Park, and ST Lee. 2005. *Transfer of Chryseobacterium meningosepticum and Chryseobacterium miricola to Elizabethkingia gen. nov. as Elizabethkingia meningoseptica comb. nov. and Elizabethkingia miricola comb. nov.* *Int. J. Syst. Evol. Microbiol.* 55: 1287-1293.
- Soham Gupta, Santosh Patil and Sethumadhavan Muralidharan, *Meningitis and sepsis due to multidrug-resistant Elizabethkingia meningoseptica in a premature neonate*, *Journal of Pediatric Infectious Diseases* 2010; Vol 5(4):389-391

Case Report

Atracurium Anaphylaxis: A Case Report and Review of Literature.

Vineet Kaur, J. K. Bansal, Sarabjit Singh, Gurinder Singh, Dinesh Garg

Departments of Surgery and Anaesthesia

Government Multispeciality Hospital, Sector-16, Chandigarh, India

Abstract: Anaphylaxis is a severe, life-threatening, generalized or systemic hypersensitivity reaction characterized by rapidly developing life threatening airway, breathing and/or circulation problems usually associated with skin and mucosal changes. Anaesthesia is a unique situation for several reasons as many different drugs are used in rapid succession. Adrenaline is the most important drug for the treatment of an anaphylactic reaction. Mortality of anaphylaxis increases if the administration of Adrenaline is delayed or if Adrenaline is used inappropriately. Prompt diagnosis of anaphylaxis and early administration of Adrenaline is important to save the patient. This report describes a life threatening anaphylactic reaction due to injection of Atracurium in a 40 years old female who was scheduled for surgery for laparoscopic cholecystectomy. Anaphylactic and anaphylactoid reactions during anaesthesia are rare, but potentially life-threatening allergic events. The worst manifestations are cardiovascular collapse, bronchospasm and laryngeal oedema. All the drugs and adjuvants we inject in anesthetic practice may be responsible for anaphylactic reactions. But some of them are more allergenic. That is the case with muscle relaxants (NMRs) which induce 50 to 60% of anaphylactic reactions during anaesthesia.

INTRODUCTION

Anaphylaxis is a severe, life-threatening, generalized or systemic hypersensitivity reaction characterized by rapidly developing life threatening airway, breathing and/or circulation problems usually associated with skin and mucosal changes. The incidence of anaphylaxis is increasing and there has been a dramatic growth in the rate of related hospital admissions in the last two decades. Anaphylaxis can occur following exposure to a very broad range of triggers. It has a range of possible presentations and the lack of any consistent clinical manifestations continues to cause diagnostic difficulty. In the study of Jacobsen, none of the 42 anaesthesiologists tested on an anaesthesia simulator, made the correct diagnosis during the first 10 min of anaphylaxis¹. Adrenaline is the most important drug for the treatment of an anaphylactic reaction. Mortality of anaphylaxis increases if the administration of Adrenaline is delayed or if Adrenaline is used inappropriately². The discovery of anaphylaxis goes back to the beginning of the 20th century. Richet and Portier studied the toxic dose of extracts of the sea anemone. In some dogs the first dose of toxin did quick and fatal systemic reaction with respiratory distress and diarrhea. They called this reaction "anaphylaxis", derived from the Greek words a (na), meaning "not or contrary to" and phylaxis, meaning "protection". Thus repeated exposure to a toxin caused harm instead of prophylaxis or

immunization. For this discovery Richet received the Nobel Prize in Physiology and Medicine in 1913^{3,4,5}.

Anaphylaxis can be caused by allergic and non allergic mechanisms. Allergic anaphylaxis is caused by an immediate (type I) hypersensitivity reaction following exposure to an allergen to which the patient has become sensitized. The allergen stimulates IgE-mediated degranulation of mast cells, releasing large quantities of histamine into the circulation which causes intense smooth muscle contraction, increased vascular permeability and vasodilatation. The clinical presentation is the same regardless of whether the reaction has an allergic or nonallergic mechanism.

Anaesthesia is a unique situation for several reasons. Many different drugs are used in rapid succession, not only anaesthetics, but also antibiotics, fluids, nonsteroidal anti-inflammatory drugs and other compounds (e.g. disinfectants, latex, ...). Most of the drugs are given intravenously and in bolus, bypassing the body's primary immune filters and presenting high concentrations of antigen directly to the mast cells and basophils. So it is difficult to say which drug caused the suspected anaphylactic reaction or that the reaction was the result from the additive side effects of several drugs injected simultaneously^{6,7}.

Anaphylaxis remains the most serious adverse reaction due to NMRs, more severe than pharmacological histamine release. It is unpredictable,

Correspondence: Dr. Sarabjit Singh, Surgical Specialist, House No. 3338, Sector 35-D, Chandigarh-160022 India
e-mail : sarabvineet@yahoo.co.in