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Unusual presentation of human listeriosis: A clinical microbiologists' insight

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ABSTARCT

Human listeriosis is a bacterial infection caused by Listeria spp. Among the six species of Listeria identified thus far, Listeria monocytogenes is considered as pathogenic to human. The most common presentation of human listeriosis is meningitis. There have been many reports of human infections caused Listeria spp in the form of food borne outbreaks. Listeria spp have been attributed to cause invasive infections in pregnant women, extreme age groups and immunocompromised individuals. The cause of concern is the complex nature of clinical presentation (subclinical to severe and invasive infections), high mortality rate among invasive infections, complex physiological, biochemical and cultural characters of the Listeria spp.

Keywords: Human listeriosis, clinical presentation of *Listeria* infection, breast abscess caused by *Listeria spp*, laboratory identification of *Listeria spp*

INTRODUCTION

Listeria spp are a group of motile, non-spore forming, aerobic Gram positive short bacilli. Of the six known species of *Listeria*, *Listeria monocytogenes* and *Listeria ivanovii* are attributed to cause infections in human and animals respectively [1]. Human infections of *Listeria* are usually followed by consumption of contaminated food (meat, milk and milk products). Infections of *Listeria spp* in developed nations are normally acquired following consumption of processed food (cheese, meat). Many human listerial infections go unnoticed and invasive infections of *Listeria spp* occur in individuals with predisposing factors like extremes of age and pregnancy [2, 3]. Common presentations of invasive listeriosis include birth anomalies as a result of infection transmitted from mother transplacentally, neonatal and adult meningitis [4]. Though the spectrum of human listeriosis has been ever increasing, this is certainly a very rare case where *Listeria spp* has been associated with breast abscess in a young, lactating lady who is otherwise immunocompetent.

MATERIAL AND METHOD

Clinical presentations

Human infections caused by *Listeria spp* normally present as meningitis. The profile of infections caused by Listeria spp has increased and a thorough literature search revealed that *Listeria spp* infections range from mild gastrointestinal infections to severe invasive conditions like septicaemia, endocarditis, myocarditis, arteritis, pneumonia, pleuritis, cholecystitis, peritonitis, arthritis, osteomyelitis and sinusitis. Other infections caused by *Listeria spp* in human include otitis, conjunctivitis, ophthalmitis and skin infections (farmers, agriculture workers and veterinarians) [4]. A 21 year-old lactating lady presented to the tertiary care hospital with complaints of a lump in her right breast gradually increasing in size. On observation the size of the lump was 3cmX1cm. and there was no previous history of fever or other gastrointestinal symptoms. She belonged to the rural area and agriculture is their main source of earning and her house accommodates cattle and sheep. There was no history of diabetes, hypertension and tuberculosis.

Laboratory identification methods

Pus was collected and sent to clinical laboratory for microbiological and pathological evaluation. Gram stain of the pus revealed short gram positive bacilli, and culture on blood agar grew small, round translucent beta hemolytic colonies with no growth on MacConkey agar. On keen observation blue-green iridescent color was seen when observed through obliquely transmitted white light. Anaerobic and fungal culture yielded no growth. Blood culture was not performed in the absence of fever adhering to our laboratory protocol. Conventional biochemical reactions showed that the isolated bacteria were motile at 25^0 C and non-motile at 37^0 C, non-sporing and non-acid fast. They were glucose fermenters, catalase positive, negative for oxidase, indole urease and citrate. Special tests characteristic of *Listeria spp* were performed including growth enrichment at 4^0 C, positive for Voges-Proskauer (VP) test, aesculin and hippurate hydrolysis and 10% salt (NaCl) tolerance test. CAMP test performed with beta hemolytic *Staphylococcus aureus* was positive [5]. Histopathological study of the tissue biopsy revealed extensive inflammation with no signs of granuloma. The isolate showed sensitivity to imipenem, amoxy-clav, ciprofloxacin, ofloxacin, amikacin, co-trimoxazole and third and fourth generation cephalosporins. Empirical therapy including Amoxycillin-Clavulinic acid 1.2 g TID and 400 mg Ciprofloxacin TID was started. The patient responded well and had uneventful recovery.

RESULTS AND DISCUSSIONS

Human Listeriosis traditionally presents as perinatal, neonatal and adult listeriosis. Human infections with *Listeria spp* occur following consumption of contaminated food and initially present as self-limiting gastrointestinal infection. Invasive infections caused by *Listeria spp* are associated with predisposing factors that include pregnant women, extremes of age group, Immunocompromised conditions resulting from organ transplantations, malignancies, metabolic disorders, chronic kidney and liver disease and viral infections (human immunodeficiency virus (HIV/AIDS) [2, 3]. In the present case the close association of patient with cattle and sheep might be responsible for exposure to *Listeria spp.* Invasive listeriosis was not the consequence of infection in this case probably owing to the immunocompetent nature of the patient as evidenced by the existing literature [6]. Extensive literature search has revealed that there was only one such report of breast abscess caused by *Listeria spp* involving silicone implants of the breast [7]. Identification of *Listeria spp* is plagued by lack of clinical suspicion, complex cultural and biochemical characteristics. Many clinical microbiology laboratories in the developing and poor third world nations ignore the occurrence of Gram positive bacilli as a contaminant/insignificant (diphtheria

like Commensals) and miss the identification of *Listeria spp*. Other factors that influence non-identification of *Listeria spp* in the diagnostic laboratories is the lack of availability of advanced and molecular methods including the VITEK automated identification system and Polymerase Chain Reaction (PCR) [8]. Recent reports of invasive and complicated infections caused by *Listeria spp* should be considered as a cause of serious concern [9].

CONCLUSION

The profile of Listerial infections in human is ever increasing and with increasing reports of food borne outbreaks and invasive infections caused by *Listeria spp*, it becomes imperative that clinicians and clinical microbiologists should make a proactive contribution in suspecting and diagnosing infections caused by *Listeria spp* to reduce the morbidity and mortality.

Ethical Issue: Informed consent of the patient was taken for presentation of the case

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