Catheter Associated Urinary Tract Infection By Leminorella grimontii-A Case Study

Ramya T G 1, Sabitha Baby 1 Geetha R K2

1,2 Department of Microbiology , Karuna Medical college , vilayodi Chittur Palakkad, India.

*Corresponding author: Sabitha Baby, E-mail: Sabithababy@gmail.com

INTRODUCTION:
The genus Leminorella formerly known as Enteric Group 57 belongs to the family Enterobacteriaceae. The generic name is derived from the surname Leon Le Minor, a French microbiologist to honor him for his contributions to enteric bacteriology [1]. The genus Leminorella consists of three species; L grimontii, L richardii and Leminorella sp.3. L grimontii has been proposed the type species for the genus. Literature review suggests that to date, Leminorella species have been recovered from stool and urine with no clinical correlates. We report a case of catheter associated urinary tract infection caused by Leminorella grimontii in a diabetic.

CASE REPORT
An 84 year old male was admitted to the medicine department with history of fever and chills lasting for three days followed by vomiting of five episodes per day. The patient was a known diabetic and was diagnosed one year back to have benign prostatic hypertrophy (BPH). He had been catheterized for BPH since a year. On physical examination, the patient was drowsy, febrile and had rigors. Pulse was 110 beats per minute, B.P was 90/60 mm Hg. Abdominal examination revealed slight tenderness over supra pubic area. No mass was palpable. Blood investigations revealed a total leukocyte count of 17, 500 cells /mm³. Hb was 12 gm%. Urine drained from catheter was sent for microscopy and culture. Liver function tests were normal. Routine microscopy showed 8-10 pus cells per high power field and bacteria. No RBCs were found.

Microbiology work up
The urine was inoculated into blood agar and Mac Conkey agar and incubated at 37⁰c for 24 hours. Colonies on blood agar were moist, 1-2mm, low convex, irregular colonies with a colony count of >10⁵ CFU/ml. Mac Conkey agar showed lactose fermenting irregular flat colonies. On further testing, the organism was found to be gram negative bacilli that were non motile, catalase positive, oxidase negative, reduced nitrites to nitrates. Indole was not produced, citrate was utilised, urea was not hydrolysed. It fermented mannitol and produced H₂S. Antibiotic susceptibility testing showed the organism to be susceptible to Ceftazidime and Nitrofurantoin and resistant to Ampicillin-Sulbactum, Nalidixic acid, Levofloxacin, Amikacin and Cefoperazone. Based on the colony morphology and biochemical reactions, the organism was identified as Leminorella grimontii. The catheter tip was requested for processing. The culture from catheter tip showed growth similar to that in urine and was identical in biochemical profile too. Final diagnosis was made as Catheter Associated Urinary Tract Infection (CAUTI) caused by Leminorella grimontii. The patient was treated with Nitrofurantoin. He improved clinically and was subsequently discharged.

DISCUSSION
Leminorella species are ‘new’ organisms which are now being identified with the help of automated systems. These facultative anaerobes which are non-motile, grow well on sheep blood agar and Mac Conkey agar and are negative for lactose fermentation. Because of their unique phenotypic profile namely H₂S and L-arabinose positive, urea and lipase negative, there are less chances for the organism to be misidentified. Leminorella species may be considered as a nosocomial pathogen as well. Earlier reports reveal infection by Leminorella in hospitalized patients [2]. Limited clinical information is available for infection due to Leminorella. Published data shows wound Infection, urinary tract infection, diarrhea, surgical site infection and peritonitis [4].

Organism:
Leminorella was first described in 1982 and in 1985 Hickmann-Brenner and Farmer proposed the reclassification of the group as genus Leminorella in the family Enterobacteriaceae. Leminorella species exhibit DNA homology of 3-16% with other enterobacteriaceae [5]. Leminorella grimontii is proposed as the type species for the genus. The name of the species is derived from the surname of Patrick Grimont, a French microbiologist at Pasteur Institute [1]. The genus is included in triple decarboxylase negative enterobacteriaceae. Although they produce H₂S and ferment arabinose and xylose, they are fairly inactive biochemically [3].

Clinical relevance:
Leminorella was isolated in 18 specimens over a period of 28 months in a retrospective study conducted at Tel Aviv (Israel) from 1997-1999. Leminorella was isolated in patients who had been admitted in hospital for more than three days. Majority of these patients were elderly with underlying medical problems. The samples from which Leminorella was isolated include urine, sputum, stool, blood, peritoneal fluid and surgical wound.

John Hopkins Microbiology newsletter dated August 2005 cites isolation of Leminorella species from penile discharge of a debilitated person with underlying congestive cardiac failure, acute renal failure, aspiration pneumonia complicated with sepsis.
CONCLUSION
Leminorella species could be a significant pathogen in debilitated patients with predisposing conditions.

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