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Case Report

Clinical presentation and management of leuconostoc bacteremia in patient with prolonged ICU stay: Case report

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ABSTRACT

A 54 years old female came to emergency with the complaints of pain in abdomen, recurrent vomiting, abdominal distention and not able to pass flatus since two days. Patient was managed in intensive care unit and was empirically put on Meropenem and Targocid. She developed multiple episodes of loose motion, and stool culture was sent which was positive for Clostridium defficle. Therefore, patient was put on Vancomycin and Metrogyl. The blood cultures reported growth of Leuconostoc pseudomesenteroides. Infection with Leuconostoc may cause fever, intravenous catheter-related sepsis, bacteremia, abdominal pain, gastroenteritis, colitis or meningitis. To summarize this rare organism which is most commonly seen in immunocompromised patients, was isolated in a previously healthy individual, post Vancomycin therapy with prolonged ICU stays.

1. Introduction

Leuconostoc is a catalase-negative gram-positive microorganisms with irregular coccoid morphology. They are environmental organisms often found on plants, dairy products, vegetables, wine and occasionally in human virginal and stool samples.[1] Earlier organisms of the genus was considered non-pathogenic hence generally recognized as safe. Few clinically human infection cases by this microorganism have been reported in the literature, leading to their classification as opportunistic pathogens. There organisms may be misidentified as Lactobacillus, Streptococcus (particularly the viridans group) or even enterococcus, as all share biochemical properties.[2] These microorganisms, have an important physiological marker related to their intrinsic resistance to Vancomycin unlike other gram-positive bacteria.[3] Despite remaining uncommon, these pathogens are gaining attention as several cases of nosocomial infection have been reported.

2. Case Report

A 54 years old female came to emergency of Asian institute of Medical Sciences and Research Center, Faridabad, India with the complaints of pain in abdomen, recurrent vomiting, abdominal distention and not able to pass flatus since two days. She had a history of cholecystectomy done 3 years back. On examination, her general condition was poor but was conscious oriented, afebrile having tachycardia and abdominal distention. Blood investigations at the time of admission were done and showed leucopenia (TLC – 2,600), viral markers (HIV, HbsAg, HCV) were negative and initial blood and urine cultures were negative. CECT whole abdomen and CT angiography abdomen triple phase showed moderate free fluid (ascitic) and few calcified mesenteric lymph nodes, as well as mild circumferential thickening of jejunal loops, respectively. Patient was managed in intensive care unit and was empirically put on Meropenem and

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Targocid. Ascitic tapping was done which showed exudative infective pathology. Patient's condition clinically was deteriorating as she started having fever along with difficulty in breathing with reduced urinary output a follow up blood investigation showed leukocytosis and thrombocytopenia with deranged renal functions. Chest X Ray showed bilateral patchy opacities and CECT thorax reported B/L mild pleural effusion with underlying atelectasis and segmental collapse of left lower lobe with patchy ground glass and centrilobular opacities and few mediastinal lymph nodes. Patients was put on ventilatory support on day 3. Radiogically lung condition was deteriorating and hence bronchoalveolar lavage was taken for evaluation, where GeneXpert was positive for Mycobacterium tuberculosis, cultures showed pseudomonas growth. Antibiotics were reviewed and Targocid was replaced by Polymyxin B (as patient had thrombocytopenia), ceftriaxone, anti-tubercular treatment with antifungals were started. Initially patient showed improvement clinically and radiologically but failed multiple weaning attempts, therefore tacheostomized. Patient was having bleeding per rectum hence colonoscopy was done in which caecal ulcer, external and internal hemorrhoids were found for which sclerotherapy was done. Also she developed multiple episodes of loose motion, and stool culture was sent which was positive for Clostridium defficle. Therefore, patient was put on Vancomycin and Metrogyl. After 25 days of intensive care patient still had febrile episodes hence repeat blood cultures were advised. The blood cultures reported growth of Leuconostoc pseudomesenteroides. Therefore, Vancomycin and ceftriaxone were withheld and Levoflox, Metrogyl and anti-tubercular treatment were continued. Also, all the catheters were changed. Patient improved Clinically, was de-cannulated and discharged. A written informed consent was obtained for the publication of cases details and accompanying images.

3. Discussion

In today's scenario many organisms earlier listed as non-pathogens have started showing virulency, because of the adaptability of bacteria and the detrimental effect of modern radiation therapy, chemotherapy, and immunotherapy on resistance mechanisms. To name few, bacteria like lactobacillus acidophilus, Serratia marcescens which were earlier considered as nonpathogenic now are known to cause pneumonia, urinary tract infections, and bacteremia in compromised hosts. Similarly, before 1985, Leuconostoc species were usually considered nonpathogenic and, therefore, held little or no importance clinically and microbiologically.[2]

The genus Leuconostoc is composed by catalase-negative gram-positive microorganisms have an important physiological marker related to their intrinsic resistance to Vancomycin.[3,4]

Infection with Leuconostoc may cause fever, intravenous catheter-related sepsis, bacteremia, abdominal pain, gastroenteritis, colitis or meningitis in this group of patients.[5] Similarly in our case, she was admitted for more than 20 days in intensive care unit and was on intravenous antibiotic therapy, specially Vancomycin was given for 10 days prior culture. Handwerger S et al., and Montejo M et al., also reported risk factors like history of surgery and prior Vancomycin therapy[5,6] in patients infected by Leuconostoc.

Indwelling intravascular catheters or the gastrointestinal tract infection are common risk factors described.[7,8] Removal or change in indwelling intravenous catheters alone have been shown to be curative in some patients without the need for antimicrobial therapy.[5]

The antibiotic therapy is driven by MIC of the drug. Leuconostoc spp. Have shown resistance for glycopeptides, owing to the production of peptidoglycan precursors ending in D-Ala-D-Lac, and are usually susceptible to Penicillin, Ampicillin, Aminoglycosides, Clindamycin, Minocycline and Marcolides.[9] In addition, Linezolid and Daptomycin have been used successfully to treat Leuconostoc bacteremia, although linezolid MICs of Leuconostoc species are usually higher when compared with those of streptococci.[10] Moderate susceptibility is seen with Cephalosporins, Chloramphenicol, Tetracycline and Doxycycline. Although the organism has been shown to be resistant to Cefoxitin, it is susceptible to Cefotaxime in vitro.[11] Consistent with our isolate the culture were sensitive to Benzylpenicillin (MIC=0.5), Clindamycin (MIC=0.25), Erythromycin, Levofloxacin (MIC=2), Linezolid (MIC <2), Tigecycline (MIC<0.06). Glycylcyline, has a broad-spectrum activity against various gram-positive and gram-negative bacteria including multidrug-resistant strains, anaerobic bacteria and atypical organisms proven to be useful in the treatment of hospital-acquired infections caused by Vancomycin-intermediate and Vancomycin-resistant enterococci (VRE).[12,13]

To summarize this rare organism which is most commonly seen in immunocompromised patients, was isolated in a previously healthy individual, post Vancomycin therapy with prolonged ICU stays.

4. Acknowledgement

None.

5. Conflict of Interest

The authors declare no conflict of interest.

6. Source of Funding

None.

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