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"Index Case of Multiresistant Ochrobactrum Anthropi in an Immunocompetent Postpartum Female with Posterior Reversible Encephalopathy Syndrome: A Unique Case at a Tertiary Care Centre in India"

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ABSTRACT

Ochrobactrum anthropi, an emerging nosocomial pathogen associated with medical devices, presents a distinct challenge in healthcare. While prevalent in patients with invasive devices, such as central venous catheters, its occurrence in hemodialysis (HD) patients is rarely reported. This study details a case of O. anthropi bacteremia-induced septic shock in an immunocompetent, non-diabetic, post-LSCS-postpartum female undergoing intermittent dialysis at AIIMS Rishikesh, a tertiary care center in Uttarakhand, India. In addition to the clinical case, we provide a concise review of O. anthropi infections in HD patients, emphasizing the need for rapid pathogen identification, susceptibility testing, and tailored antimicrobial therapy for favorable outcomes.

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Introduction

The genus Ochrobactrum, formerly designated as centers for disease control groups Vd 1 and Vd 2, belongs to the Brucellaceae family [1]. Notably, O. anthropi is recognized as an opportunistic and nosocomial pathogen, posing a threat in hospital settings due to its prevalence in water sources and adherence to synthetic materials on medical devices [2,3]. Recent reports highlight severe O. anthropi infections, especially in immunocompetent hosts without underlying diseases, often associated with indwelling central venous catheters [4].

Case Presentation

A 19-year-old female, non-smoker, non-diabetic, and non-hypertensive, known case of hypothyroidism, presented at 37 weeks and 2 days of gestation with symptoms of posterior reversible encephalopathy syndrome (PRES). She experienced acute onset holo-cranial throbbing headache, epigastric pain, and nausea, leading to multiple hospital visits. Subsequently, she developed eclampsia, leading to the termination of pregnancy. Despite successful intervention, she suffered from generalized tonic-clonic seizures, altered mental status, and septic hypertension. Cultures revealed O. anthropi sensitivity to Levofloxacin, Ciprofloxacin, Gentamicin, and Cefepime.

INVESTIGATIONS	20/3/23	22/3/23	23/3/23	24/3/23	25/3/23	26/3/23
HB	8.6	9.8	8.1	8.2	7.7	8.4
TLC	14.4	10.3	6.7	4.96	4.5	5.1
DLC	85/11		85/12	74/18		78/16
PLATELET COUNT	162	196	69	23	12	16
PT/INR	12.8/1.2				1.22	13.3/1.23
APTT	29.8				29.5	26
TB/DB	0.83/-	0.5/0.4				
SGPT/SGOT	683/1234	510/??				
ALP/GGT	297/23					
TOTAL PROTEIN/ ALBUMIN	4.1/2.1					
UREA/ CREAT	177/1.4	173/1.79	129/1.44		149/1.86	82/1.23
NA/ K/ CA	138/4.4/7.1	144/-/-	141/4/7.4		137/3.45/6.4	138/3/7
URIC ACID	6		5		6.6	4.4
PHOSPHORUS	6.9		7.4		5.3	
VIRAL MARKERS						
FIBRINOGEN				460		274
D DIMER				>5000		>5.5
PROCAL	33			4.4		4.27

PARAMETERS	RESULT
CSF	CSF-ACELLULAR; CSF SUGAR 92; PROTEIN 80
IAT/DAT	NEGATIVE
ANTI-TPO	108
URINE	K-14.28; Na-98; OSMOLALITY-564
FERRITIN	962
ANA	NEGATIVE
TROP I	0..43
CPKMB	85
LDH	572

NCCT HEAD	IMPRESSION: Multiple symmetrical areas of hypodensities in white matter. b/l frontal/temporal/parietal/occipital-?encephalitis
USG ABDOMEN	IMPRESSION: RPOC
MRI BRAIN	Cortical/Subcortical hyperintensities involving bilateral cerebral hemispheres - likely PRES ■Microbleeds in bilateral cerebral hemispheres.Normal cerebral venography.
BLOOD CULTURE	Ochrobactrum anthropi

Hb: Hemoglobin, TLC: Total Leukocyte Count, DLC: Differential Leukocyte Count, PT/INR: Prothrombin Time/International Normalized Ratio, APTT: Activated Partial Thromboplastin Time, TB/DB: Total Bilirubin/Direct Bilirubin, SGPT/SGOT: Serum Glutamic Pyruvic Transaminase/Serum Glutamic Oxaloacetic Transaminase, ALP/GGT: Alkaline Phosphatase/Gamma-Glutamyl Transferase, Total Protein/Albumin: Total Protein/Albumin, Urea/Creat: Urea/Creatinine, Na/K/Ca: Sodium/Potassium/Calcium, CSF: Cerebrospinal Fluid, IAT/DAT: Indirect Antiglobulin Test/Direct Antiglobulin Test, Anti-TPO: Anti-Thyroid Peroxidase Antibodies, ANA: Antinuclear Antibodies, K: Potassium, Na: Sodium, Osmolality: Osmolality, Fibrinogen: Fibrinogen, D-Dimer: D-Dimer, Procal: Procalcitonin, RPOC: Retained Products of Conception, Troponin I (Trop I): Troponin I, CPK-MB: Creatine Phosphokinase-MB, LDH: Lactate Dehydrogenase, NCCT Head: Non-Contrast Computed Tomography Head, USG Abdomen: Ultrasonography Abdomen, MRI Brain: Magnetic Resonance Imaging Brain.

Discussion

O. anthropi, primarily a waterborne pathogen which is thought to be commonly associated with bacteremia in immunocompromised hosts and in patients with hematological malignancies or solid tumors [5-10] poses challenges in management due to extensive antibiotic resistance. Indwelling medical devices, particularly central venous catheters, are commonly associated with O. anthropi infections. This case underscores the need for vigilance in HD patients with indwelling catheters, even without comorbidities, given compromised host defence. The unpredictable antibiotic resistance pattern requires tailored therapy, emphasizing the significance of catheter removal for successful eradication.

Conclusion

O. anthropi emerges as a significant contributor to central venous catheter-related bacteraemia, particularly in HD patients. Prompt catheter removal is crucial for swift eradication, minimizing the risk of severe complications. Efficient diagnosis and timely management are imperative given its multi-drug resistant nature. Tailored antimicrobial therapy, guided by comprehensive susceptibility tests, enhances patient management and ensures favorable outcomes in addressing this resilient pathogen.

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