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A RARE ISOLATION OF BURKHOLDERIA CENOCEPACIA FROM HIGH VAGINAL SWAB IN A POST NATAL WOMAN

Microbiology

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ABSTRACT

We report a case of a vaginal infection caused by a strain of *Burkholderia cenocepacia*. The strain was isolated from vaginal swab specimens from a 27 Year old female, house wife G2 A1 at 34 weeks+5 days period of gestation with hypothyroidism, oligohydramnios, early onset IUGR with Doppler changes. Treatment with inj metronidazole and inj.ceftazidime annihilated *B. cenocepacia* infection and vaginal symptoms.

KEYWORDS

Burkholderia cenocepacia, hypothyroidism, IUGR, oligohydramnios, Doppler changes.

INTRODUCTION:

Members of *Burkholderia* genus are initially -classified in the genus Pseudomonas, it was reclassified under a new genus, *Burkholderia*, in 1992. It is a non- fermenting gram negative bacilli similar to pseudomonas[1] .They differ from pseudomonas by being bipolar stained and intrinsically resistant to polymyxin B. They are aerobic, non–spore-forming, catalase-positive, oxidase positive, gram-negative bacteria. *Burkholderia* includes more than 30 species, including the *Burkholderia cepacia* complex, *B.mallei*, and *B.pseudomallei*[2]. Nosocomial infections caused by *B. cepacia* complex were reported in non-CF patients[3] . They live in a variety of antagonistic conditions, like nutrient deficiency, acid and alkali pH, disinfectant and antiseptic solutions (including detergents and chlorine), exposure to many antibiotics and extremes of temperature and invasive procedures like urinary and intravenous catheterization. Melioidosis is an important disease in tropical regions of Australia and endemic in Indian subcontinent, Southern China, Hong Kong, Taiwan, Africa, America, Middle East and Island communities in the Pacific and Indian ocean. It is an important cause of fatal community acquired septicaemia and pneumonia in parts of North-Eastern Thailand [4]. Humans and animals like sheeps, rabbits, goats, rats, guinea pigs and horses are the reservoirs. It spreads by inhalation of dust, ingestion of contaminated water/soil, contaminated medical devices / substances in hospitals, cuts or scrapes, abrasions of the skin, person to person by contact with the body fluids of an infected person[5]. They have various virulence factors like polysaccharide capsule, type 3 secretion system, LPS, toxins, enzymes, multidrug resistance (bcrA efflux pump), genes determining transmissibility (*esmR* and *cblA* genes, and *esmR*), siderophores (salicylic acid, ornibactin and cepabactin), and long flexible type II pili , hemolysin, lipases, Quorum sensing, pili and Siderophore [6] . Melioidosis occurs in underlying risk factors like Diabetes (60% of melioidiosis patients are diabetic), traumatic inoculation in children,weather, farmers, animal handlers , chronic renal impairment, pulmonary disease, thalassaemia , congestive heart failure, corticosteroid therapy, leukaemia and lymphoma, immunosuppression and alcohol consumption. These strains are intrinsically resistant to many antimicrobial agents and are hence difficult to eliminate [7]. We report a case of a vaginal infection caused by a strain of *Burkholderia cenocepacia*. The strain was isolated from vaginal swab specimens from a a 27 Year old female, house wife with G2 A1 at 34 weeks+5 days period of gestation with hypothyroidism, oligohydramnios, early onset IUGR with doppler changes. Treatment with inj Metronidazole and inj.Ceftazidime eliminated *B. cenocepacia* infection and vaginal symptoms.

A CASE REPORT

A 27 Year old female, house wife with G2 A1 at 34 weeks+5 days period of gestation came with a c/o reduced fetal movements in may 2021. There were no h/o abdominal pain, bleeding or leaking per vagina and burning micturition. Her LMP was - 4/9/2020 and EDD was - 11/6/2021. She is a K/C/O hypothyroidism since two years on treatment and a case of oligohydraminos with early onset IUGR with doppler changes. Not a known case of diabetes mellitus, asthma, tuberculosis, cardiac disorder or epilepsy, no history of blood transfusion or iron/ sucrose injection. On examination Pulse rate - 84/min, respiratory rate-16/min, BP-120/70/mmHg, no pallor/ icterus/ cyanosis/clubbing/lymphadenopathy/thyromegaly, systemic examination was normal. All baseline investigations were normal.

Patient was taken up for emergency LSCS in view of severe oligohydraminos with early onset IUGR done under Spinal anaesthesia . The patient was catherised. On POD 5, patient had fever spike with lower abdominal pain for which T.Para was added. On POD 10 patient had UTI symptoms for which T.nitrofurantoin was given. On POD 12, patient had repeated fever spike for which medicine opinion was sought and orders carried out. Fever profile was Negative. Covid RT PCR was found to be Negative.

Investigations like blood, urine C/S was Sterile. On POD 13, there was serous discharge from wound site for which wound swab culture was sent. Wound swab culture was sterile. HVS taken showed *Klebsiella pneumoniae*, *Proteus mirabilis* and *Pseudomonas aeruginosa* for which antibiotics were started. On POD 16 HVS was taken and sent for culture and sensitivity to microbiology laboratory. The sample was inoculated on Blood agar and MacConkey agar and incubated at 37^0c for 24-48 hrs.

Blood agar showed non hemolytic, rough, corrugated , small, smooth colonies with a metallic sheen and strong soil smell after 24 to 48 hours (Picture 1). After 3–5 days, colonies became dry and wrinkled (Picture 2). MacConkey agar showed rough and corrugated and lactose fermenting colonies (Picture 3,4). Repeat high vaginal swab culture also showed *Burkholderia cenocepacia* growth.

Gram staining of the growth showed gram negative bacilli with bipolar or safety pin appearance (Picture 5)

Motility: motile
Biochemical reactions:
Catalase- positive , Oxidase- positive,

Sugar fermentation: produced acid from glucose, mannitol, lactose, and sucrose

(Picture 6)
Indole – not produced
Urea- not hydolysed
Citrate-negative

TSI- alkaline/alkaline with no gas and H_2S
MMM- mannitol not fermented, motile
Arginine – dihydrolysed (Picture 7)
OF glucose- oxidatively fermented (Picture 8)
Nitrate reduced to nitrite with no gas production
Intrinsically resistant to polymyxin B

On POD 23 medicine opinion was taken in view of high vaginal swab showing Burkholdria growth and reapeted fever spikes for which inj. Ceftazidime was started .Thereafter patient was hemodyanamically stable with no further fever spikes .Wound healing was achived .

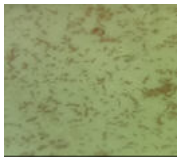
Baby was healthy and was on mother side, hence was discharged and adviced to review after six weeks.

PICTURE 1:BLOOD AGAR PLATE(non hemolytic, rough, corrugated ,small, smooth colonies with a metallic sheen)

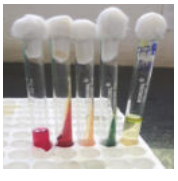
PICTURE 2: BLOOD AGAR PLATE AFTER 3-5 DAYS OF INCUBATION (Dry and wrinkled colonies)

PICTURE 3: MACCONKEY AGAR (Lactose fermenting colonies with metallic sheen)

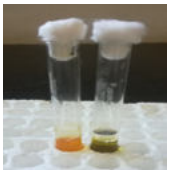
PICTURE 4: MAC CONKEY AGAR PLATE AFTER 3-5 DAYS OF INCUBATION SHOWING (dry and wrinkled colonies)



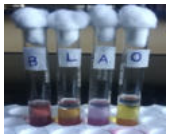
PICTURE 5: GRAM STAINING SHOWING BIPOLAR AND SAFETY PIN APPEARANCE



PICTURE 6:



Picture 7: Of Glucose Oxidatively Fermented



Picture 8: Arginine Dihydrolysed

DISCUSSION:

In a case report by Andrea petrucca , they reported a first description of case of a vaginal infection caused by a strain of *Burkholderia cenocepacia*. The strain was isolated from vaginal swab specimens from a 68-year-old woman with smoldering myeloma and chronic hepatitis C virus infection who was hospitalized for abdominal abscess. Urinary catheterization might have favored vaginal colonization by *B.cenocepacia*, which is similar to our study. Treatment with piperacillin/tazobactam eliminated *B.cenocepacia* infection and vaginal symptoms. They did not isolate *B. cenocepacia* from catheters, disinfectants, and selected hospital environmental samples[8]. Even in our study urine and blood culture were negative. In a case report by Usham gangaram *Burkholderia cenocepacia* was reported as an emerging cause of septicaemia, in an intensive care unit from a tertiary care hospital, Nellore[9]. In a case report by Siddigui , Outbreak of genetically related *Burkholderia cepacia* was reported among non-cystic fibrosis patients at a university hospital[10]. In non-CF patients , *Burkholderia* bacteremia is often related to direct bloodstream access through contaminated peripheral or central intravenous catheters[3] . In many cases, however, the source of infection remains unknown [11] [12]. The four-drug regimen (chloramphenicol, doxycycline, and TMP-SMX) is commonly used In Thailand, with a relapse rate of approximately 10%. In Australia, lower rates have been reported with TMP-SMX alone[13], in our study the patient was treated with ceftazidime and metronidazole and symptoms improved.

CONCLUSION:

Timely reporting and implementation of infection control measures played a major role in curtailing this infection.

CONFLICT OF INTEREST: None declared

REFERENCES:

1. Henry DA, Mahenthiralingam E, Vandamme P, Coenye T, Speert DP. Phenotypic Methods for Determining Genomovar Status of the Burkholderia cepacia Complex. J. Clin. Microbiol. 2001;39:1073–8.
2. Tom C, Peter V,John R W, John JL. Taxonomy and Identification of the Burkholderia cepacia Complex . J Clin Microbiol. 2001 Oct; 39(10): 3427–3436.
3. Naomi H Jose Orsini. Cepacia Syndrome in a Non-Cystic Fibrosis Patient . Volume 2015
4. Cheng AC, Currie BJ. Melioidosis: Epidemiology, Pathophysiology, and Management. Clin. Microbiol. Rev. 2005;18:383–416.
5. Medical devices [Internet]. [cited 2021 Jun 17];Available from: https://www.who.int/health-topics/medical-devices
6. Shauna L, Reckseidler Z, Rebekah D, Donald E.The capsular polysaccharide of Burkholderia pseudomallei contributes to survival in serum by reducing complement factor C3b deposition . Infect Immun. 2005 Feb;73(2):1106-15.
7. White NJ. Melioidosis. Lancet Lond. Engl. 2003;361:1715–22.
8. Andrea Petrucca, Paola Cipriani, Rosa Sessa, Antonella Teggi, Rosalia Pustorino, Daniela Santapaola. Burkholderia cenocepacia Vaginal Infection in Patient with Smoldering Myeloma and Chronic Hepatitis C. Emerg Infect Dis. 2004 Nov; 10(11): 1957–1959.
9. Gangaram U, Ramya T, Jithendra K, Mohan DR. Burkholderia cepacia an emerging cause of septicaemia, in an intensive care unit from a tertiary care hospital, Nellore, India. Int. J. Adv. Med. 2020;7:413–7.
10. Siddiqui AH, Mulligan ME, Mahenthiralingam E, Hebden J, Brewrink J, Qaiyumi S, et al. An episodic outbreak of genetically related Burkholderia cepacia among non-cystic fibrosis patients at a university hospital. Infect. Control Hosp. Epidemiol. 2001;22: 419–22.
11. Bressler A, Kaye K, Lipuma J, Alexander B, Moore C, Reller L, et al. Risk Factors for Burkholderia cepacia Complex Bacteremia Among Intensive Care Unit Patients Without Cystic Fibrosis: A Case Control Study . Infect. Control Hosp. Epidemiol. Off. J. Soc. Hosp. Epidemiol. Am. 2007;28:951–8.
12. Holmes A, Nolan R, Taylor R, Finley R, Riley M, Jiang R, et al. An Epidemic of Buvkholdevia cepacia Transmitted between Patients with and without Cystic Fibrosis. J. Infect. Dis. 1999;179:1197–205.
13. Chaowagul W, Chierakul W, Simpson AJ, Short JM, Stepniewska K, Maharjan B, et al. Open-Label Randomized Trial of Oral Trimethoprim-Sulfamethoxazole, Doxycycline, and Chloramphenicol Compared with Trimethoprim-Sulfamethoxazole and Doxycycline for Maintenance Therapy of Melioidosis. Antimicrob. Agents Chemother. 2005;49:4020–5.