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# Neonatal Septicaemia by *Ochrobactrum anthropi*: A Missed Pathogen

**Ankita Gupta, Kalpana Chauhan* and Anita Pandey**

*Department of Microbiology, Subharti Medical College and Associated Chattrapati Shivaji Subharti Hospital, Meerut, India*

**Corresponding author*

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**A B S T R A C T**

Oxidase positive, non-fermenting, Gram negative bacilli are invariably incorrectly identified as *Pseudomonas* species in conventional culture methods often missing out isolates of *Ochrobactrum anthropi.* We report here the clinical and microbiological characteristics of this rare pathogen from a case of neonatal sepsis. Rapid isolation and correct identification followed by appropriate antimicrobial therapy was the key to favourable clinical outcome.

## Introduction

*Ochrobactrium anthropi* belongs to Brucellaceae family and genus *Ochrobacterium.* This genus has nine species, but only three species *O. anthropi, O. intermedium* and *O. pseudointermedium* are known to cause infections (Hagiya *et al.*, 2013). Among these, *O. anthropi*has been reported to cause infections in human beings. *O. anthropi* is ubiquitous in nature (Kettaneh *et al.*, 2003). It is present in soil, water, plants and animals. Due to its ability to survive in antiseptic solution and formation of biofilms, it leads to increased incidence of hospital acquired infections (Khan *et al.*, 2014). The authors want to present this case with the objectives to highlight the clinical and microbiological characteristics of *O. anthropi* employed for identification up to species level so that it is not missed out in routine microbiological practice and simultaneously create awareness regarding the clinical significance of such a pathogen as they are significant nosocomial threat. To the best of our knowledge neonatal septicaemia by *O. anthropi* has not been reported from this geographical area.

## Case Report

A 2-days-old male child, resident of Meerut, Uttar Pradesh was admitted in the emergency unit of Chhatrapati Shivaji Subharti Hospital by his parents with endotracheal tube in situ. He had cyanosis in all 4 limbs. Immediately

on admission the endotracheal tube was changed under aseptic condition and patient was put on ventilator support and treatment started. Intravenous piperacillin/tazobactam was started for broad-spectrum bacterial coverage. As stated by the parent it was a normal vaginal delivery at home at 35 weeks of gestation by an untrained Dai. The baby did not cry at birth and had dyspnoea and was taken to a nearby nursing home where he was intubated. As his condition did not improve the child was referred our hospital. On clinical examination, his general condition was poor. Neonate's weight was 2.49 Kg and he was having cyanosis with icterus all over the body. His pulse rate (133 /minute) & respiratory rate (40/minute) were high. He had low grade fever ($99^0$F) and oxygen saturation was low. On the day of admission, blood sample was sent for biochemical analysis, C-reactive protein (30 mg/dl) and paired blood samples for blood culture. Haematological investigations revealed leucocytosis (14700/$mm^3$ with N-88% and L-12%), Serum electrolytes were sodium 147mEq/L, chloride 109mmol/L, potassium 3.3mmol/L and calcium (0.76mg/dL). Total bilirubin was 13 mg/dl. Blood urea was 35 mg/dL, and blood sugar was 155 mg/dL.

Blood culture was performed by automated BacT/ALERT 3D® system (BioMerieux, France) which showed positive signal for bacterial growth after 24hrs.of incubation. On direct Gram stain from the blood culture bottle, Gram negative bacilli were seen and the treating clinician was alerted immediately for presence of Gram negative bacilli. Following which the neonate was started on intravenous Amikacin. Subculture on blood agar after overnight incubation at $37^0$C showed mucoid, low convex colonies which were greyish in colour with slight tint of yellow (Fig. 1) and non-lactose fermenting mucoid colonies on Mac Conkey agar. The isolate was motile, catalase and oxidase positive. On biochemical analysis ithydrolysed urea, fermented sucrose, reduced nitrates to nitrites and showed oxidative reaction on Hugh and Leifson's oxidation fermentation media.

Non lactose fermenting, motile Gram negative bacilli producing pigmented colonies which were oxidase positive, hydrolysed urea and reduced nitrates to nitrites on standard bacteriological techniques alerted us of growth of some unusual pathogen. Identification and drug susceptibility of the isolate were performed by VITEK® 2 system (Biomerieux, France) using VITEK 2 GN CARD REF 21341and VITEK® 2 AST-N281 REF414532 card respectively. As the susceptibility to *O. anthropi* is not documented in CLSI, the antibiogram was reported as per *Pseudomonas* species (Rastogi *et al.*, 2017). The isolate was susceptible to ciprofloxacin, aminoglycosides and carbapenems but was resistant to penicillin, cephalosporins and colistin (MIC ≥16µg/ml). The paired blood samples grew *O. anthropi* with similar antibiogram. After the culture and sensitivity report injection meropenem was also added in treatment plan. Symptomatic treatment with phototherapy was also given. The child recovered dramatically and was extubated 2 days after initiation of the therapy. Follow up blood culture after 7 days of treatment was sterile.

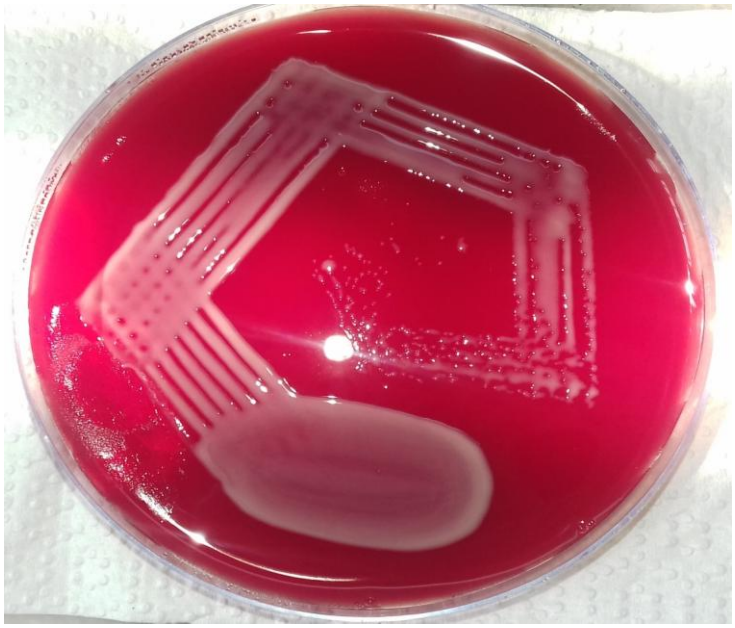
## Results and Discussion

*O. anthropi* is from *Brucellaceae* family. It was formerly called as "*Achromobacter*" or CDC gpVd. The term *Ochrobactrum* comes from Greek word "Ochros" which means 'pigmented (pale yellow)' (Hagiya *et al.*, 2013). It is so called because it produces pigmented colonies. Being oxidase positive and a non-fermenter, it is often missed or generally mis-identified as *Pseudomonas* or *Brucella* in conventional culture methods (Hagiya *et al.*, 2013; Khan *et al.*, 2014;

Cieslak *et al.,* 1992). Thus, it is a diagnostic and therapeutic challenge. This case highlighted first, the importance of automation in Clinical microbiology laboratory which facilitated rapid and correct identification of such an unusual emerging pathogen like *O. anthropi*, which are likely to be missed by conventional identification methods. Second, prompt identification and antimicrobial susceptibility testing using automated system and timely communication with the treating clinician led to a favourable outcome in this case.

*O. anthropi* is an obligate aerobe and is ubiquitous in nature. As per the literature, it causes nosocomial infections which are mostly associated with the use of medical devices like indwelling catheters and drainage tubes. Instrumentation is the main underlying cause for this infection (Yu *et al.,* 1998). In our case, the neonate could have acquired this pathogen either due to unsterile delivery practices by dais in rural areas or during endotracheal intubation. The organism is typically sensitive to aminoglycosides, carbapenems, fluoroquinolones, cotrimoxazole and colistin. However, it is found to be resistant to chloramphenicol and all beta lactams (except carbapenems) due to production of AmpC beta lactamase OCH-1 (Hagiya *et al.,* 2013; Khan *et al.,* 2014). However, our isolate was resistant to colistin, similar finding has also been reported (Khan *et al.,* 2014).

**Fig.1** Blood agar showing pigmented, mucoid colonies



There are case reports which have been published in the past from India. Mudshingkar *et al.,* have reported two cases of neonatal septicaemia due to *O. anthropi* and Arora *et al.,* have reported a case of septicaemia in a 64 years old male due to *O. anthropi* (Mudshingkar *et al.,* 2013; Arora *et al.,* 2008). Recently, Rastogi *et al.,* reported a case describing disseminated infection causing meningitis and blood stream infection due to *O. anthropi* in an immunocompetent trauma patient (Rastogi *et al.,* 2017). Opportunistic infections caused by *O. anthropi* have also been reported from abroad by various workers (Kettaneh *et al.,* 2003; Khan *et al.,* 2014; Cieslak *et al.,* 1992;

Vaidya *et al.*, 2006; Duran *et al.*, 2009).

In Conclusion, this case alerts the emergence of *O. anthropi* as a potential threat in neonates due to unsterile delivery practices and instrumentation. Rapid identification and susceptibility of this pathogen followed by prompt communication with the clinician for appropriate and timely initiation of treatment is thes key for efficient management of infections caused by this multi-drug resistant pathogen.

## References


Arora U, Kaur S, Devi P. 2008. *Ochrobactrum anthropi* septicaemia. Indian J Med Microbiol, 26: 81-3.

Cieslak TJ, Robb ML, Drabick CJ, Fischer GW. 1992. Catheter-associated sepsis caused by *Ochrobactrum anthropi*: report of a case and review of related nonfermentative bacteria. Clin Infect Dis., 14:902-7.

Duran R, Vatanseve U, Acunas B¸ Basaran U.N. 2009. *Ochrobactrum anthropi* bacteremia in a preterm infant with meconium peritonitis. International Journal of Infectious Diseases, 61-3

Hagiya H, Ohnishi K, Maki M, Watanabe N, Murase T. 2013.Clinical characteristics of *Ochrobactrum anthropi* bacteremia. J ClinMicrobiol., 51: 1330-3

Kettaneh A, Weill F-X, PoilaneI.2003.Septic shock caused by *Ochrobactrum anthropi* in an otherwise healthy host. J ClinMicrobiol., 41: 1339-41.

Khan D, Mukherjee T, Gupta S, Haleem S, Sahni A.K, Banerjee S, Konar J. 2014. *Ochrobactrum anthropi* sepsis in Intensive Tertiary Care. J of basic and Clin Med., 3(1): 18-20.

Mudshingkar SS, Chore AC, Palewar MS, Doha VB, Kigali AS. 2013. *Ochrobactrum anthropi*: an unusual pathogen: are we missing them. Indian J Med Microbiol., 31: 306-8.

Rastogi N, Mathur P. 2017. *Ochrobactrum anthropi*: An emerging pathogen causing meningitis with sepsis in a neurotrauma patient. J Infect Dev Ctries., 11(9): 733-5.

Vaidya SA, Citron DM, Fine MB, Murakami G, Goldstein EJ. 2006. Pelvic abscess due to *Ochrobactrum intermedium* corrected in an immunocompetent host: Case report and review of the literature. J ClinMicrobiol., 44: 1184-6.

Yu WL, Lin CW, Wang DY. 1998. Clinical and microbiologic characteristics of *Ochrobactrum anthropi* bacteremia. J Formos Med Assoc., 97: 106-12.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