

Brevundimonas Vesicularis Bacteremia In A Neonate: A Rare Case Report.

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Abstract : There are very few cases of *Brevundimonas vesicularis* reported worldwide. We present a case of bacteremia in a neonate who had aspirated meconium . A blood culture showed growth of a non hemolytic yellow colored colony at 37°C. It was identified as *Brevundimonas vesicularis* by Vitek 2 automated system (BioMerieux). There are only a couple of reported cases of bacteremia caused by *Brevundimonas vesicularis* . To our best of knowledge this is the third case report of *Brevundimonas vesicularis* bacteremia from India. [Nandy S et al NJIRM 2013; 4(3) : 170-172]

Key Words: Bacteremia, Neonate, B.vesicularis

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Introduction: *Brevundimonas* infections in human are reported very rarely. Till now only two cases have been reported from India, one in a neonate¹ and the other in an infant aged 1.25 years². We present a case of bacteremia in a neonate.

Brevundimonas is a gram negative bacterium, which was grouped in the family of Pseudomonaceae earlier. Presently it belongs to the class Alphaproteobacteria and family Caulobacteraceae³. Several species such as *B.alba*, *B.aurantiaca*, *B.bacteroides*, *B.diminuta*, *B.intermedia*, *B.kwangchunensis*, *B.mediterranea*, *B.nasdae*, *B.subvibrioides*, *B.terrae*, *B.variabilis*, *B.vesicularis* has been described till date³. *Brevundimonas* is strictly aerobic gram negative short rods (0.5 ×1.0-4.0um). They are motile by means of single polar flagellum, which has a short wave length (0.6-1 um)³. It produces smooth glistening opaque circular convex non lactose fermenting colonies .The optimal temperature for growth is 30 °C. It can grow at 41°C but not at 4°C³. Some species produces pigments (orange, yellow). It has been isolated from water, aqueous solution & various clinical specimens. Both *B. vesicularis* and *B. diminuta* have been described as opportunistic pathogens in immunocompromised hosts. But a study done in Taiwan has reported *B.nasdae* along with *B.diminuta* and *B.vesicularis* to cause infections in human⁶.

Case report: The patient was a new born female baby of 2.25 kg weight delivered normally. She had tachypnea due to severe respiratory distress and had aspirated meconium. She had severe pulmonary hypertension and mild RV dysfunction. Laboratory tests revealed WBC count of 22800/μl

and decreased platelet count (40,000). Blood culture did not yield growth of any isolate after 48 hours. Baby was managed on inotropes & high pressure settings. She was extubated after 3 days .A presumptive diagnosis of bacteremia was made and the baby was treated with injectible Piperacillin Tazobactam, Amikacin, Gentamycin, Fluconazole and Ciprofloxacin and Meropenem .Her platelet count was persistently low and at the time of discharge (a week after birth) it was reported to be 51000/μl . However the blood culture yielded a positive result after six days of incubation at 37 °C. On subculture onto solid medium no growth was observed in MacConkey agar. However, on blood agar yellow colored convex smooth non hemolytic circular colonies appeared. It was gram negative bacilli, which were oxidase positive. Further it was identified as *B.vesicularis* on the basis of biochemical characteristics tested by Vitek 2 automation system (BioMerieux). These included positive arylamidase, beta glucosidase, gamma glutamyl transferase test and H₂S production. An antibiotic sensitivity test was performed by Kirby Bauer disc diffusion method. The organism was susceptible to Meropenem, Ceftazidime Clavulanic acid, Netilmycin, Cefepime, Ampicillin Sulbactam, Piperacillin Tazobactam, Levofloxacin, Ciprofloxacin, Ceftazidime, Tobramycin and Gentamicin. It was resistant to Cotrimaxazole and Nalidixic acid. The baby responded to the antibiotic treatment and survived the infection.

Discussion: *Brevundimonas* infections are been reported with increasing frequency from different countries of the world. It is considered as a opportunistic pathogen since in most of the cases

patient were immunocompromised or having serious underlying illness. But some cases have been reported in immunocompetent patients also¹. The bacteria have been found to be associated with different types of infections ranging from endocarditis, bacteremia^{1,2,4,5,6,7,9,10}, septicemia⁹, keratitis⁸, skin infections, septic

arthritis etc¹. Brevundimonas infection has been reported to occur in all the age groups ranging from newborn babies to elderly people. It can be either be hospital acquired or community acquired.

Summary of *B. vesicularis* bacteremia reported worldwide:

Type of Infection	Reference No.	No. of cases reported	Age	Sex	Underlying Disease	Place of isolation
Bacteremia	1	1	1 yr	F	Nil	Pune, India
	2	1	neonate	F	-----	Kolkata, India
	6	30	2 months to 86 years	15 F 7 M	Not mentioned	Taiwan
	7	1	5	M	Sickle cell anaemia	New Orleans, LA
	9	1	42	F	Mitral valve stenosis	Israel
	10	1	38	M	Nil	Taiwan
	5	1	54	F	systemic lupus erythematosus and chronic active autoimmune hepatitis	Barcelona Spain
	4	8	Neonate		congenital heart diseases(4) respiratory distress syndrome(2) cerebral anomalies(1) meconium aspiration syndrome(1)	Ankara, Turkey
	Present Case	1	Neonate	F	Aspiration of meconium while birth	New Delhi, India

Till now only two cases of neonatal septicemia had been reported in India by Bhatwadekar et al¹ and Viswanathan et al². Karadag et al had reported 8 cases of neonatal septicemia from Turkey, where all of the babies had some underlying diseases namely congenital heart diseases(4), respiratory distress syndrome, cerebral anomalies(1) and one of them had aspirated meconium similar to the present study. In all of the above cases, including the present case, the patients responded well to the antibiotics and regained health.

It is difficult to formulate appropriate antimicrobials regime for Brevundimonas infection because only a handful of isolates have been reported worldwide. The organism is generally susceptible to Aminoglycosides, Cephalosporins

and antipseudomonal penicillins and uniformly resistant to Ampicillin. Piperacillin Tazobactam and Carbapenems are reported to have good susceptibility against *B.vesicularis*¹⁰. The isolates in our case study exhibited a broader spectrum of antibiotic susceptibility which also included Netillimycin.

Conclusion: Brevundimonas infection is hardly reported in infants and new born babies. To the best of our knowledge this is the third case of neonatal septicaemia reported so far. Even though rare but the numbers of Brevundimonas infection are rising slowly. Hence It should be taken into consideration as possible pathogen especially in cases of immunocompromised patients.

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