

## Brevundimonas Septicemia: A Rare Infection with Rare Presentation

Brevundimonas is a rare bacterium, predominantly causing nosocomial bacteremia in immunocompromised hosts [1]. *Brevundimonas vesicularis* and *B. diminuta* are the two species isolated in human infections [1] while third species *B. nasdae* has not been isolated from human infection so far [2]. Brevundimonas bacteremia among children is rare [2]. We report a case of Brevundimonas septicemia causing bilateral pneumothorax and empyema in an infant.

Eight-month-old infant presented with fever, rapid breathing and poor oral intake for 5 days. At presentation, infant was in shock and respiratory distress. Chest auscultation revealed decreased air entry with hyper-resonant percussion note on left side; Chest X-ray showed bilateral pneumothorax (tension pneumothorax on left side); chest tube was inserted in left 7th intercostal space. Collapsed lung expanded and pus was drained out. Empirically, a combination of ceftriaxone, amikacin and vancomycin was started. Blood and pus cultures isolated *Brevundimonas vesicularis*, which was sensitive to quinolones (levofloxacin), cefoperazone, piperacillin-tazobactam, and amikacin but resistant to ceftazidime and amoxicillin-clavulanic acid. Cefoperazone and levofloxacin were added. Chest tube was removed after 5 days and after 2 weeks of treatment, patient was discharged.

Incidence of brevundimonas infection in immunocompetent host is relatively low [1,3]. Our patient had community acquired infection while most of

the pediatric cases reported so far are of nosocomial infections. Previous reported infections by this organism in children are septicemia, pneumonia, meningitis, septic arthritis, and urinary tract infection [1-4]. In the present case, brevundimonas bacteremia led to bilateral air leak with empyema. Carbapenem group of antibiotics including imipenem, meropenem and doripenem are reported to be effective for these infections [1,2]. The sensitivity pattern for quinolones is quite variable.

We conclude that community-acquired brevundimonas septicemia can present as complicated pneumonia with air leak and empyema.

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## Volume Guarantee Ventilation in Neonates and Trouble Shooting

The recent report in Indian Pediatrics [1] brings to focus the common problems while using volume guarantee (VG) ventilation in neonates and their trouble shooting. I wish to add the following problems to the list:

1. In lung conditions, where infants require aggressive ventilation (e.g. severe meconium aspiration

syndrome or PPHN), it may appear that the VG method is not effective with constant low tidal volume (VT) alarms. This is frequently due to a reluctance to set the back-up pressure high enough to allow the ventilator to reach target VT. In this case, the options are:

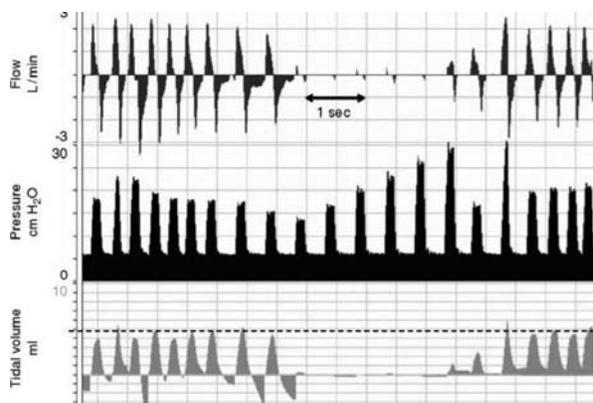
- (a) Increase the back-up pressures high enough to allow the target VT to be reached. This is based on the premise that volutrauma – and not barotrauma – causes lung damage [2]. Therefore if the volume is

appropriate, the pressure needed to achieve that volume is irrelevant.

(b) As some people remain unhappy using high peak inspiratory pressures, the alternative is to switch to high frequency oscillation.

(c) It is always important with any mode of ventilation to check that the amount of ventilator support required is in line with the clinical situation. If not, other contributory causes of poor ventilation (e.g., blocked endotracheal tube, pneumothorax) should be excluded.

- Infants can actively tighten their abdominal muscles that can prevent gas entering the lungs during inflation; often termed 'splinting' [3]. Forced expiration and splinting cause hypoxemic episodes due to low lung volume and low VT delivery, causing obstruction' and 'low VT' alarms. **Fig. 1** shows a recording from a 1000-g baby ventilated with assist control (AC) and VG ventilation at a rate of 50 per min, a set peak inflating pressure (PIP) of 40 cm H<sub>2</sub>O, and a set VT 5 mL. It illustrates the effect on the inflating pressure when the baby tightens the abdominal muscles enough to temporarily stop inflation. This is preceded by active expiration. During the first ten inflations, the pressure is modulated to maintain the expired VT. During inflations 7, 8 and 9, the expired VT is larger than set VT and so the pressure is reduced. At inflation 10, there is a very small VT, and therefore the pressure is increased by 3 cm H<sub>2</sub>O for each inflation for the next five untriggered inflations until a VT is produced. This is then followed by triggered inflations at a similar inflating pressure to the start of this recording,



**FIG. 1** Ventilator recordings showing effect of 'splinting' in a neonate on Assist Control Volume Guarantee Ventilation.

with one untriggered inflation in between. A higher Pmax setting may allow the ventilator to increase the PIP and overcome the obstruction more quickly [4].

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## Effective Strategy for Newborn Screening for Congenital Hypothyroidism

With reference to the recent publication [1] on screening of hypothyroidism, we wish to submit following observations:

Authors have reported that total number of patients under study was 1950 while the total as per the table is 1952. In text, authors state that there were 397 premature

and 1551 full term neonates. This makes the total 1948! It is also remarkable that the male to female ratio is 0.53:1 (682 males to 1268 females).

Authors state that they could pick up one extra case with cord blood cut-off of 10 mg/mL but they had false positive rate of 20% in the bargain. Authors report that they repeated thyrotropin stimulating hormone (TSH) at 72 hours for screen positives, and those with rising trends were evaluated at day 5 and day 12. With this protocol a baby with congenital hypothyroidism with raised cord blood TSH with steady or little less TSH at 72 hours is likely to be missed. Guidelines by American Academy of Pediatrics [2] do not mention a rising trend but values