

## **Abstract:**

**AIMS:** Diagnosis of ventilator-associated pneumonia in newborns is challenging because of ease of colonisation, non-specific chest radiograph changes and lack of a consensus definition. The aims of this study were to review treatment decisions in neonates with culture-positive endotracheal aspirate and to assess impact on respiratory outcomes using blinded review of radiological studies. **METHODS:** Charts from all very low birthweight neonates ventilated for >48 h and with positive culture were assessed. Chest radiographs were reviewed by a radiologist masked to the grouping of the episode (treated/not treated). Clinical, investigational and radiological features used in practice were assessed on impact on treatment decisions. Association between treatment and outcomes was assessed. **RESULTS:** Seventy-four episodes of culture-positive endotracheal aspirate were analysed in 38 babies. Fifty-eight episodes were treated with antibiotics. Gestational age at birth and birthweight in both groups (treated vs. non-treated) were statistically comparable ( $25.5 \pm 3.1$  vs.  $27.2 \pm 2.3$  weeks and  $809 \pm 302$  vs.  $870 \pm 262$  g). Comparative chest radiographs were available in 51 of 58 treated episodes; deterioration was noted in 42 (82.3%). Ventilatory parameters were significantly higher in the treatment group and showed a significant improvement after antibiotics. Twenty-three babies developed chronic lung disease. Odds ratio (of having chronic lung disease when treatment is initiated) was 4.5 (95% confidence interval = 0.97-20.8,  $P= 0.06$ ). **CONCLUSIONS:** Treated culture-positive aspirate episodes were accompanied by higher ventilatory requirements, increased symptoms and elevated septic markers. Need for treatment was associated with greater likelihood of developing chronic lung disease.