STUDY OF VENTILATOR ASSOCIATED PNEUMONIA IN NICU AT TERTIARY CARE CENTRE

INTRODUCTION:
Ventilator associated pneumonia (VAP) is a common nosocomial infection occurring in 9% to 27% of mechanically ventilated patients. It is associated with significant morbidity including increased ventilator days, increased intensive care unit (ICU) and hospital length of stay, and increased cost. Further, VAP has an attributable mortality rate of 20% to 40%. By definition, VAP is a pneumonia that occurs >48 hours after initiation of mechanical ventilation. Depending on the length of mechanical ventilation and other risk factors such as previous antibiotic exposure, the bacterial pathogens responsible for the VAP differ in virulence and antimicrobial resistance. The pathogenesis of VAP involves the micro-aspiration of oropharyngeal and/or gastric secretions that have been contaminated/colonized with pathogenic organisms. Efforts to prevent VAP are focused on early extubating and preventing aspiration. Early diagnosis and treatment help limit VAP related morbidity and mortality.

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Acinobacter 1 7 -
Staphylococcus 3 22 2
Non Fermenters 1 7 1
Klebsiella 6 43 4
Ecoli 1 7 -
Pseudomonas 2 14 1

% percentage
Of the total 100 neonates who were ventilated more than 48 hours during this period, 18(18%) developed ventilator associated pneumonia.
Mean VAP/1000 ventilated days= 19.4
Most common organism is Klebsiella (43%) followed by Staphylococcus aureus (22%) and Pseudomonas (14%). (See table no. 1)
Mortality in babies who had VAP is 44.4%.
Most common organism responsible for mortality is Klebsiella (50%) followed by Staphylococcus (20%).

Figure no.1- Distribution of ventilated neonates

Figure no.2- Pie Diagram showing indication of ventilation:-

PPHN-Persistent Pulmonary Hypertension of newborn, HIE-Hypoxic Ichaemic Encephalopathy, TOF-Teratology of Fallot, MAS-Meconium Aspiration Syndrome, HMD-Hyaline Membrane Disease

Conclusion-
The pathogenesis of VAP involves the micro-aspiration of oropharyngeal and/or gastric secretions that have been contaminated/colonized with pathogenic organisms. Efforts to prevent VAP are focused on early extubating and preventing aspiration. Early diagnosis and treatment help limit the associated morbidity and mortality. An evidence-based guideline has been developed to implement practices aimed at the prevention, diagnosis, and treatment of ventilator associated pneumonia.

Hence microbiological criteria for neonatal VAP diagnosis has been a prerequisite only in some studies [12–114], while in others only clinical and/or microbiological criteria have been required (15-17). Other studies have confirmed that VAP is associated with increased morbidity, a longer duration of MV, and a longer hospital and/or ICU length of stay [18, 19, 20, 21]. Fischer et al. [22] reported an incidence of VAP of 9.6% in a neonatal and pediatric population after cardiac surgery and found a delay in extubation of 3.7 days attributable to VAP. Similarly, Srinivasan et al. [23]

All items involved in our proposed bundle were derived from controlled trials or health institutes recommendations for adults, children or neonatal VAP prevention (12,24).

Reference: