Diagnostic Evaluation of the Endotracheal Tube Tip and Nasogastric Tube Tip Culture for Ventilator-Associated Events in Nicu Patient

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Abstract

Ventilator-associated pneumonia is common healthcare-associated infection in NICU. Evaluation of the microbiological profile and antimicrobial susceptibility patterns of isolates from ET and NG tube tips may help in understanding their role in VAP and guiding antimicrobial therapy.

Samples collected from NICU patients were processed by semiquantitative culture technique. Bacterial isolates were identified by standard microbiological methods. Antimicrobial susceptibility testing was performed by Kirby–Bauer disc diffusion method according to CLSI guidelines.

A total of 108 paired endotracheal and nasogastric tube tip cultures from NICU patients were analyzed. Significant growth ($\geq 10^5$ CFU) was observed in 62 (57.4%) ET tube cultures compared to 28 (25.9%) NG tube cultures, demonstrating statistically significant difference ($p < 0.001$). Concordant organism isolation from both ET and NG tube tips was observed in 58 (53.7%) cases in which Acinetobacter baumannii was predominant concordant isolate. Multidrug resistance was most frequently observed among Acinetobacter isolates, with MDR rates of 28.5% in ET and 20% in NG tube cultures. Mixed growth is observed more in NG tube compared to ET tube tip culture.

Both ET and NG tube tips harbored clinically important pathogens, suggesting that NG tubes may contribute to microbial colonization in ventilated neonates. ET tube cultures yielded more clinically significant growth with high proportion of pure isolates and appear to be the more reliable specimen for microbiological evaluation of ventilator-associated events in NICU patients.