

EDITORIAL

Bacteriological profile in tracheal aspirate: Implications in Bangladesh

The intensive care unit (ICU) is within the hospital unit, where patients often receive intensive drug therapy due to multiple organ dysfunction which require many invasive procedures along with mechanical ventilation, tracheostomy, catheter application in addition to the use of broad-spectrum antibiotics are being used due to the presence of resistant pathogens.

Antibiotic resistance is a worldwide problem and Bangladesh is a major contributor because of its poor health care standards, with abuse of antibiotics. Various studies have been conducted to investigate the distribution of pathogenic microorganisms isolated from tracheal aspirates and their antibiotic sensitivity profiles in the ICU.

Pneumonia is the leading cause of deaths among under-five children globally, with an estimated 1.4 million out of the total 7.6 million deaths in this population in 2010¹. In the critical care medicine, the case-fatality is even higher. A number of initiatives leading to improvement in the nutritional status and rate of case management practices including better access to antibiotics, care-seeking behaviour and referral practices, along with reductions in the indoor air-pollutions and housing overcrowding have contributed to reductions in the global burden of deaths from pneumonia, the United Nations Millennium Development Goal 4 (MDG 4) that aims to reduce child mortality by two-thirds by 2015 still remains in dream. Preventive strategies and appropriate and prompt management of pneumonia are integral part of the strategy to reduce the mortality from pneumonia².

Appropriate antimicrobial therapy requires evidence base, most importantly the etiology in particular patient population and their antimicrobial susceptibility. Pneumonia is frequently caused by a variety of viruses, bacteria, fungus or mycobacterium tuberculosis; however, their isolation and identification in resource poor settings is not only expensive but also very intriguing. Moreover, the etiology varies by age groups, nutritional status, geographical locations and settings in which they occur. In most reported studies, the organisms were isolated from blood, sputum, throat swab or nasopharyngeal swab, which either did not reflect the actual incidence or isolation of the causative organism; isolation of organisms from tracheal aspirates is more likely representative of the actual pathogens. However, there is limited data on isolation of bacterial pathogens from tracheal aspirates in mechanically ventilated patients admitted to ICU with pneumonia, especially from developing countries. Therefore, we aimed at evaluating the bacterial isolations from tracheal aspirates in mechanically ventilated patient admitted to intensive care unit (ICU) with community acquired pneumonia.

One of the articles in this issue that examined the prevalence of various bacterial pathogens isolated from mechanically ventilated patient admitted to ICU of an urban hospital in Dhaka. There were three major observations in the study: i) high rates of bacterial growth from the tracheal aspirates in mechanically-ventilated patient with pneumonia. ii) predominance of gram negatives in this population. iii) multi-drug resistance among the Gram-negatives. Isolation of bacterial agent, indicate an association of bacterial pathogens in pneumonia. However, the isolation of multiple bacterial agents from individual tracheal aspirates makes it difficult to define a causal relationship. The observation is likely in developing world where environmental contamination and poor hygiene practice is likely. In such co-pathogens or infection with polymicrobial pathogen are not uncommon³. This observation with polymicrobial pathogens deserves further attention in selecting antibiotic in case management in patient with pneumonia necessitating ventilation. Nevertheless, the possibilities of

contamination during tracheal aspirate collection yielding multiple pathogens cannot be ruled out. However, the observation is consistent with a number of recent studies involving tracheal aspirate in ventilated patient.

The present scenario of antibiotic resistance in Bangladesh can be benefited by identifying gaps in surveillance and to provide recommendations based on the wide range of antibiogram and database from similar studies.

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References:

1. Nair H, Simoes EA, Rudan I, Gressner BD, Azziz-Baumgartner E, et al. Global and regional burden of hospital admissions for severe acute lower respiratory infections in young children in 2010; a systemic analysis. *Lancet*.2013.
2. Graham SM, English M, Hazir T, Enarson P, Duke T. Challenges to improving case management of childhood pneumonia at health facilities in resource-limited settings. *Bull World Health Organ* 2008; 86: 349-355.
3. Sarker SA, Jakel M, Sultana S, Alam NH, Bardhan PK, et al, Anti-rotavirus protein reduces stool output in infants with diarrhea :a randomized placebo-controlled trial. *Gastroenterology*.2013;145: 740-748.