Community-Acquired Pneumonia: Challenges and Solutions

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Pneumonia is not a public health issue confined just to the developing world, even developed countries like the United States bear a significant brunt of this disease, with 1 million people seeking care in a hospital due to pneumonia and about 50,000 people dying from the disease. Many of these deaths can be prevented with vaccines.

Lower respiratory tract infections (LRTIs), including pneumonia, are the fourth most common cause of death globally and the second most frequent reason for years of life lost — states the 2010 Global Burden of Disease Study. Of the LRTIs, community-acquired pneumonia (CAP) is the most important infectious disease of the respiratory tract encountered in clinical practice. Indeed, CAP continues to pose a challenge to clinicians the world over, more so in India. An alarming report by the World Health Organization in 2008 revealed that the highest burden of pneumonia was in Asia, with most of the cases (43 million) from the Indian subcontinent alone. India accounts for almost a fourth of the global pneumonia burden and a third of the WHO regional burden. Pneumonia is also increasingly common among the elderly population and in those with comorbid conditions, such as chronic obstructive pulmonary disease (COPD), diabetes, renal failure, congestive heart failure, chronic liver disease, rheumatic disease, cancer.

The challenge is further compounded by the emergence of antibiotic-resistant strains of the three most important implicated pathogens, seriously threatening effective management of CAP. Even the introduction of potent new antimicrobials has not been able to bring down the number of CAP-related deaths. To make it worse, immunization rates tend to lag behind worldwide.

The good news is that most forms of CAP are treatable, and a better understanding of the causative pathogens can significantly help in optimizing the treatment, as each cause warrants a different treatment approach. The bad news is that in India, the pathogens vary across the different geographical areas of the country, and even the best available diagnostic methods can detect a specific etiological agent in barely half the CAP cases. Given the extremely poor quality of conventional laboratory tests for CAP-causing pathogens, current clinical recommendations are for only the severely affected individuals.

Treatment based on empirical antibiotic use is recommended to ensure adequate coverage of both typical and atypical pathogens. However, unless there is improvement in the rapid diagnostic methods to define causative pathogens and allow specific, directed therapy, patients will continue to be treated empirically. In addition, CAP itself threatens to be a future menace given the projected increase in the number of patients at risk (elderly and those with comorbid conditions). This calls for an assessment of the efficacy of preventive strategies in CAP.

An early initiation of antibiotics in CAP management can shorten the illness course and also decrease complications and mortality. There are other factors too that influence the effectiveness of the antibiotic chosen, such as the likely pathogen, resistance patterns in the community, risk of antibiotic resistance, severity of pneumonia, and the presence of comorbid illnesses. An inappropriate choice of antibiotics can lead to an increase in healthcare-associated infections, emergence of multi-drug resistant organisms, and an overall increase in healthcare costs.

Vaccination to prevent pneumococcal infections can be a wise strategy to reduce disease burden, antibiotic resistance, and costs. Effective vaccines are available against Streptococcus pneumoniae, Haemophilus influenzae, and influenza viruses. Although vaccination is the mainstay preventive therapy in elderly patients, there is a gross underuse of pneumococcal and influenza vaccination in this particularly vulnerable population. Given the increased incidence of CAP in the elderly population, these individuals may receive significant benefits from vaccination in disease prevention, with an additional reduction in the risk of invasive disease.

As stated earlier, CAP is also linked to several other diseases, such as COPD, chronic kidney disease, diabetes, cardiovascular disease, cancer, rheumatic diseases. It is also a big problem in immunocompromised patients and the elderly. In all these conditions, major guidelines advise the use of pneumococcal and influenza vaccines as preventive strategies.

The disease burden of pneumonia, particularly of Streptococcus pneumoniae, in the country highlights the need to improve access to care and increase the coverage of pneumonia-preventing vaccines, particularly in older adults. Indeed, if CAP seems like a dark tunnel, vaccines are the light at the end of it!

This anthology on various aspects of CAP addresses the issues

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surrounding this disease. It is an attempt to keep the clinician abreast of the latest developments in the management of CAP. Emphasis is laid on the importance of prevention in the management of pneumonia in India, and the crucial role vaccination plays in preventing IPD and improving the quality of life in predisposed adults, especially the elderly. An entire chapter is devoted to the recommendations of several Indian and international guidelines on pneumococcal and influenza vaccination for the prevention of CAP; the last chapter details the protocols for pneumococcal vaccination.

With evolving medicine and new challenges, prevention should be the new strategy for the management of CAP. All of us need to ponder.