

Devoting attention to the management of community-acquired pneumonia for the elderly

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SUMMARY Community-acquired pneumonia (CAP) is the third leading contributor to lost disability-adjusted life years worldwide, and this is especially true in the elderly population. In order to reduce the burden of disease, effective management of CAP is crucial to public health in terms of maintaining and promoting the health of the elderly and involves safe drug use, vaccinations, early treatment in the ICU, and health education. Since the long-term mortality of CAP is particularly high in the elderly, biomarkers and a predictive diagnostic model of CAP should be developed in future research.

Keywords community-acquired pneumonia (CAP), management

Community-acquired pneumonia (CAP) causes significant morbidity and mortality, and this is especially true in the elderly population. This represents a growing problem for an aging population and an era of longevity. One study in Japan found that the median treatment costs for CAP were ¥536,538 for inpatients and ¥38,490 for outpatients (1). In addition, the median total healthcare costs for CAP were \$11,549 (IQR: \$6,060-21,613) for patients who were ≥ 65 years of age, with an excess cost of approximately \$9,500 per year due to CAP (2). Therefore, effective management of CAP the elderly, including the clinical manifestations of atypical pneumonia, methods of assessing the severity of the disease, appropriate care settings, and the management of complications, is of paramount importance.

Although patients with CAP are generally expected to briefly recover to their state before contracting pneumonia, many patients still suffer from a loss of functional independence and a severe deterioration in health status for a long time after diagnosis. In order to reduce the burden of disease, effective management of CAP is crucial to public health in terms of maintaining and promoting the health of the elderly.

Safe drug use: For the elderly, drug safety is very important. Adverse reactions caused by irrational drug use accounted for 1/7 of the causes of death in the elderly, with an incidence of 15-20%. This can lead to an increase in drug-related diseases and also cause a decline in the quality of life for the elderly. A retrospective and observational study reviewed data on the history of disease in 632 elderly patients with CAP over a

period of 5 years in the Kyrgyz Republic (3). Results indicated that 33.5% of patients took drugs with adverse drug reactions (ADRs) that exceeded their benefit and that 24.5% of patients took drugs with a high level of danger. Therefore, the treatment of CAP must consider the aging process, the variability of the effects of drugs, and the principle of rational use of drugs to improve the efficiency, safety, and individualization of drug treatment.

Vaccination: Given the high treatment costs of CAP and its risks of hospitalization in the elderly population, priority must be given to prophylactic vaccination against *Streptococcus pneumoniae*. *S. pneumoniae* is the most common pathogen causing CAP both in elderly and younger adult patients. According to CDC guidelines, the pneumococcal polysaccharide vaccine is recommended for all adults older than 65 years of age and for persons who are 2 years and older and at a high risk for contracting pneumococcal disease (4). In addition, the influenza vaccine can both prevent primary influenza pneumonia as well as secondary bacterial pneumonia in the elderly. Large cohort studies have indicated that vaccination against influenza can significantly reduce the risk of influenza infection and mortality in elderly patients, although the effect varies depending on comorbidities and demographic factors. Although there have been concerns about the protection provided by and the safety of vaccination in patients with poor immune function or who have only recently recovered from pneumonia, the two vaccines are still recommended.

Early treatment of extremely elderly patients

in the ICU: Elderly patients often have endocrine or cardiovascular conditions, chronic obstructive pneumonia, or other chronic diseases, causing organ reserve function to decline. The organ reserve function of the elderly over 80 years of age is more than 50% lower than that of normal adults (5). The repeated use of antibacterials increases drug resistance, and a variety of bacteria often invade the body simultaneously, resulting in infection; at the same time, the use of some drugs is limited due to the reduced functioning of various systems. The probability that elderly patients will develop pneumonia increases further when the patient's condition deteriorates, the patient suffers major trauma (traffic accident, surgery, severe stress, *etc.*), or the patient receives chemotherapy drugs or immunosuppressants. The physical characteristics of elderly patients with CAP make them susceptible to developing severe pneumonia. Moreover, elderly patients with severe pneumonia deteriorate rapidly progress and they have a poor prognosis and high mortality. Therefore, treatment of elderly patients with pneumonia in the ICU should be considered.

Health education for the elderly: Health education is a teaching process that changes the cognition and behavior of patients and family members through a change in knowledge, attitudes, and beliefs and that facilitates the acquisition of certain skills. Systematic education of care recipients to foster physiological, psychological, and social adaptability is an organic union of knowledge, practices, and principles (6). Health education is a treatment factor that can improve a patient's understanding of a disease and compliance with care, that can improve the treatment of disease and reduce complications, and that can improve the quality of life and ability for self-care of patients. At the same time, health education strengthens the relationship between nurses and patients, reducing the incidence of medical disputes and increasing the trust in and satisfaction with nursing that patients and their families have.

Expectations for research on CAP: The long-term mortality of CAP is particularly high in the elderly, so CAP needs to be effectively prevented in the elderly. Biomarkers play an important role in the mortality of and prognosis for elderly patients with CAP (7). Although the role, utility, and effectiveness of each biomarker need to

be determined, they will help to determine the prognosis for and care of elderly patients with CAP and to determine whether admission is necessary and the most appropriate treatment for these vulnerable individuals. In addition, the creation of a predictive diagnostic model of CAP has also had a positive effect on the management of CAP in the elderly (8).

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