Treatment of Community-Acquired Pneumonia in the Elderly

JMAJ 45(6): 251–257, 2002

Toshiharu MATSUSHIMA

Professor, Division of Respiratory Diseases, Department of Medicine, Kawasaki Medical School

Abstract: Pathogenic organisms responsible for pneumonia in the elderly and the younger population are not drastically different, though subtle differences exist such as a higher frequency of pneumococci and a lower frequency of mycoplasma among elder patients. Similarly, while the elderly tend to show mild symptoms and laboratory data, no major differences are observed between the two groups. Although same antimicrobial drugs can be applied to both groups, the elderly are more prone to exhibit adverse drug reactions due to differences in pharmacokinetics. Since underlying renal hypofunction is observed among the elderly, in particular, limited dosages or drug administration at prolonged intervals are required. Incidence of and mortality due to pneumonia increase with accelerating speed as individuals age. As the saying goes, “pneumonia may well be called the friend of the aged.” From now forward, different approaches to management may be needed for the elderly by studying differences in pneumonia between the elderly and the younger population, focusing on symptoms, physical and laboratory findings, diagnostic methods, treatment, and prevention measures. At a minimum, pneumonia among the elderly needs to be further studied.

Key words: The elderly; Pneumonia; Antibiotic chemotherapy; Guidelines

Introduction

Pneumonia is a major disease with high incidence and mortality rates. Since it frequently occurs among the elderly, Osler said that “pneumonia may well be called the friend of the aged.”

This paper demonstrates how age factors are managed in guidelines, what differences in causative bacteria, symptoms, findings, and treatment exist between the elderly and non-elderly populations, and what methods should be taken in the treatment of pneumonia in the elderly.
How Age Factors Are Considered in Guidelines for the Management of Pneumonia from Various Countries

Guidelines for the management of pneumonia were introduced in many developed countries including the U.S. and European countries in the 1990s. The most well-known document in Japan is the Guidelines for Community-Acquired Pneumonia published by the American Thoracic Society (ATS) in 1993.2

The ATS guidelines are very concise and classify pneumonia patients into four different groups on the basis of age, comorbid illness, and disease condition. Group 1 includes outpatients 60 years of age or younger and without comorbid illnesses, and Group 2 includes outpatients over 60 or with comorbid illnesses. The age factor is taken into account in these categories. Also, as one of the risk factors that increases mortality, complicates the clinical course, and provides a criterion to recommend hospitalization, the age of 65 and above is used. The guidelines also mention that clinical features of pneumonia among the elderly may be atypical or silent, the clinical course may be prolonged, and the mortality rate may be high.

Approximately seven years have already passed since the first publication of the guidelines, and revisions are being considered. One of the changes under review is the use of the age factor (60 years of age) as a criterion for susceptibility to acquiring penicillin resistant pneumococci, rather than as a reference point for the stratification of pneumonia patients.3

The Guidelines published by the Infectious Disease Society of America (IDSA) in 19984 are more complicated but more scientific than the ATS guidelines. In the IDSA guidelines, points are assigned to patient’s prognosis and need for hospitalization on the basis of age, sex, comorbid conditions, physical findings, and laboratory findings. In this system, the number of points derived from subtracting 50 from the patient’s age is added (ten points are deducted in the case of women).

The Guidelines issued in Germany in 19985 characterize Group 1 as patients 65 years of age or younger with mild pneumonia and no risk factors. The consensus guidelines (1998) issued by the Respiratory Society and the Chemotherapy Society in Spain6 define the elderly simply as a group of people who are more susceptible to bacterial pneumonia and drug-resistant pneumococcal infection.

According to the guidelines published by the Japanese Respiratory Society in March 2000,7 in terms of the classification of severity of pneumonia, those 65 and above who have difficulties in visiting a hospital as an outpatient are placed in one class higher category.

In these guidelines mentioned above, pneumonia among the elderly is not considered as a special disease.

Incidence of Pneumonia Among the Elderly

Although the annual incidence rate of pneu-
monia is 12 per 1,000,\(^8\) the figure is reported to go up to 34 among patients 65 and above.\(^9\) In terms of patient statistics in Japan, as indicated by the figures in Table 1 which were excerpted from “Kokumin Eisei no doukou (Trends in National Public Health in Japan),” both the physician treatment rate and the mortality rate show an abrupt and accelerating increase among pneumonia patients over 65. It can be stated that pneumonia is a disease of the elderly rather than a disease frequently observed among them.

**Pathogenic Microbes for Pneumonia Among the Elderly**

Pathogenic microbes for pneumonia may differ between the elderly and the younger population. Mycoplasma pneumonia is found overwhelmingly among the younger population, but rarely seen among the elderly. Bacterial pneumonia, on the other hand, is a kind of pneumonia frequently observed among the elderly. Chlamydia pneumonia has been reported to be much more common among the elderly than the younger population.\(^1\) However, chlamydia pneumonia has also been reported to be frequently seen in the younger population, and the disease, including mixed infection with bacterial pneumonia, needs to be further examined.

Figure 1 shows comparisons of pathogenic microbes for pneumonia between the elderly and the younger population.\(^1\) Overall, no major differences seem to exist regarding pathogenic microbes, and there are at least no critical differences.

**Symptoms and Findings of Pneumonia Among the Elderly**

Since the contrast between the elderly and the younger population can be ascribed to the difference in abilities of the infected host to fend off infections, differences in symptoms and findings are presumed to exist, which draws the most attention.

Table 2 shows the comparisons of symptoms and findings in community-acquired respiratory infections between the elderly and adults compiled by Suga.\(^1\) Although the elderly with community-acquired respiratory infections are likely to exhibit mild symptoms, atypical physical symptoms, and more severe complications, detailed comparisons are necessary to understand the unique aspects of pneumonia in the elderly.
findings, and mild laboratory findings, their disease is resistant to treatment and is often intractable. On the other hand, the diseases develop abruptly in adults with severe symptoms and severe abnormal laboratory findings, but they respond well to treatment. While these are classical examples that are generally observed, not all cases present such trends, and that is what makes clinical medicine complicated.

In a period of five years between April 1985 and March 1990, the author and colleagues experienced 406 cases of pneumonia at Kawasaki Medical School, Kawasaki Hospital, Okayama, Japan. Fifty-seven cases were found among patients aged 80 and above, and 51 cases among patients under 50 years of age. Table 3 shows the comparisons of their cardinal symptoms (at most up to the top three chief complaints) and laboratory findings.

Although chest pain and bloody sputum seem to be more common among the younger population, and disturbed consciousness, dehydration, loss of appetite, and general malaise among the elderly, no obvious differences are seen in cardinal symptoms of pneumonia such as fever, cough, and sputum.

In view of laboratory findings, no obvious differences are observed in variables important in pneumonia patients including body temperature (fever), white blood cell count (WBC) in peripheral blood, and C-reactive protein (CRP). Differences exist in serum protein and a tuberculin skin test, though it is unknown if they are the result of or basis of pneumonia.

One of the characteristics of pneumonia among the elderly that is frequently noted is that they do not often run a fever. However, despite normothermia at the first consultation or hospital admission, all of the above-mentioned pneumonia patients, except those in shock, showed body temperatures of 37 °C or greater when a careful thermometry was performed after admission.

As these examples suggest, despite the fact that there are certain severity patterns in symptoms and findings of pneumonia among the

<table>
<thead>
<tr>
<th>Onset of the disease</th>
<th>The elderly</th>
<th>Adults</th>
</tr>
</thead>
<tbody>
<tr>
<td>Symptoms</td>
<td>Slow</td>
<td>Abrupt</td>
</tr>
<tr>
<td>Fever</td>
<td>Mild</td>
<td>Present</td>
</tr>
<tr>
<td>Chest pain</td>
<td>Mild</td>
<td>Severe if inflammation reaches the pleura</td>
</tr>
<tr>
<td>Cough</td>
<td>Slight, or no</td>
<td>Cough with Purulent sputum</td>
</tr>
<tr>
<td>Dyspnea</td>
<td>Common</td>
<td>Not common</td>
</tr>
<tr>
<td>Consciousness Disturbance</td>
<td>Frequent</td>
<td>Rare</td>
</tr>
<tr>
<td>Physical findings</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Chest</td>
<td>Atypical</td>
<td>Typical</td>
</tr>
<tr>
<td>General</td>
<td>Significant</td>
<td>Mild</td>
</tr>
<tr>
<td>Laboratory findings</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Inflammatory reactions</td>
<td>Mild</td>
<td>Significant</td>
</tr>
<tr>
<td>Hypoproteinemia</td>
<td>In some cases</td>
<td>No</td>
</tr>
<tr>
<td>Renal Disturbance</td>
<td>In some cases</td>
<td>No</td>
</tr>
<tr>
<td>Chest X-ray (Bacterial pneumonia)</td>
<td>Atypical finding</td>
<td>Typical shadow</td>
</tr>
<tr>
<td></td>
<td>Interstitial or persistent shadows in some cases</td>
<td>Consolidation</td>
</tr>
<tr>
<td>Outcome</td>
<td>Intractable</td>
<td>Good response</td>
</tr>
</tbody>
</table>

Source: Reference 14)
elderly, no definitive differences exist between the elderly and the younger population. Furthermore, since there are individual differences among pneumonia patients, the regular treatment approach should be applied even to the elderly.
Treatment of Pneumonia Among the Elderly

The most important treatment of pneumonia is antibiotic chemotherapy. Although there are no specific choice regarding the selection of drugs according to pathogenic bacteria, careful attention should be given to administration and dosage. Table 4 lists precautions in introducing antibiotic therapy on elderly pneumonia patients. They are well summarized and provide sufficient information.

Of these precautions, the most important point to notice is underlying renal dysfunction in the elderly. Table 5 shows the dosage and administration for using antibacterial agents in such a case. Treatment should be planned on the basis of this table.

As the therapies other than chemotherapy, managements of dehydration, diet, or body temperature are needed. Also, expectoration of bronchial secretion are required to subside pneumonia.

Conclusion

There are no critical differences in pneumonia between the elderly and the younger population, and just slight differences are present in various aspects. As stated earlier, pneumonia is a disease overwhelmingly found among the elderly and is regarded as “the friend of the aged.” This suggests that pneumonia among the elderly should be considered a common, standard disease.

Our thinking patterns need to be changed so as to consider pneumonia in the elderly as the standard and to study further comparisons of pneumonia between the elderly and the younger population. I believe that guidelines on the treatment of pneumonia should be developed mainly for the elderly.

REFERENCES

1) Esposito, A.L.: Bacterial pneumonia in the elderly. ed. Pennigton, J.E., In Respiratory Infec-


