Effect of Aging and Respiratory Infection to Duration of Hospitalization in Asthma Exacerbation

Hirochiyo Sawaguchi* and Masato Muraki
Department of Respiratory Medicine and Allergy, Nara Hospital, Kinki University Faculty of Medicine, Ikoma, Japan

Abstract

Objective: We investigated the factors that delay recovery from asthma exacerbation. Analyses were performed on subjects who needed to be admitted due to asthma exacerbation in our hospital from 2008 to 2014.

Method: Ninety-five adult subjects who needed hospitalization with asthma exacerbation were analyzed. The number of patients and the duration of hospital stay were analyzed statistically according to age (under 65 years of age versus 65 years or over), sex and respiratory infection.

Results: The number of males and females were 34 and 61, respectively. The average duration of hospitalization in patients 65 years or over was 14.0 ± 8.7 days, and that in those under 65 years of age was 8.9 ± 4.2 days (P=0.0006). Twenty-nine patients had respiratory infection while 16 did not in those under 65 years of age. The durations of hospital stay in patients under 65 years of age with and without respiratory infection were 8.1 ± 3.8 and 10.8 ± 4.3 days, respectively (P=0.04). Thirty-three patients had respiratory infection and 17 patients did not in those aged 65 years or over. The durations of hospital stay in patients 65 years or over with and without respiratory infection were 15.0 ± 9.3 and 12.4 ± 8.1 days, respectively (P=0.34).

Conclusion: Being elderly (65 years or over) is a factor that prolongs the duration of hospital stay for asthma exacerbation. Respiratory infection seems to be a major factor which influence the duration of hospitalization for asthma exacerbation in patients under 65 years of age. On the other hand, respiratory infection is not a major factor of the duration of hospitalization for asthma exacerbation in patients 65 years over or over.

Keywords: Bronchial asthma; Hospital admission with asthma attack

Introduction

Viral or bacterial infections are very important in inpatients with asthma exacerbation [1-2]. On the other hand, the difficulty of treatment for elderly patients with asthma is known [3-6]. However, there have been few studies investigating the factors that delay recovery from asthma exacerbation. Therefore, we evaluated the effects of age and respiratory infection on the duration of hospitalization for asthma exacerbation in patients from 2008 to 2014.

Methods

Study subjects and laboratory analysis

The subjects comprised all 95 patients with asthma who needed hospitalization due to asthma exacerbation and who was admitted to the Department of Respiratory Medicine and Allergy at Nara Hospital, Kinki University Faculty of Medicine, from January 2008 to December 2014. The patients consisted of 35 males and 61 females aged 19 to 90 years. The diagnosis of asthma, its exacerbation and the presence of respiratory infection were comprehensively judged by chest physicians and/or allergists based on symptoms, physical examinations, spirometry, chest roentgenogram and blood, urine, throat swab or sputum examination. The asthma of all patients was fundamentally managed under the Global Initiative for Asthma (GINA) guidelines [7,8]. The distribution of patient numbers according to age by sex is presented in Figure 1. Male patients numbered 34 and females 61. There were no deaths during the study period and all patients left the hospital. The duration of hospitalization of the patients 65 years or over versus those under 65 years is shown in Figure 2. The average duration of hospitalization of patients 65 years or over was 14.0 ± 8.7 days.

Results

The clinical characteristics of the patients are presented in Table 1. The severity of asthma exacerbation was classified according to GINA guidelines [7,8]. The distribution of patient numbers according to age by sex is presented in Table 1. Sixty of patients aged 19 to 64 years and 35 patients aged 65 years or over were admitted to the hospital. The duration of hospitalization of the patients 65 years or over versus those under 65 years is shown in Figure 2. The average duration of hospitalization of patients 65 years or over was 14.0 ± 8.7 days.
8.7 days and that of those under 65 years was 8.9 ± 4.2 days. There was a statistically significant difference between the two age groups (P=0.0006). The types of respiratory infection with asthma exacerbation are shown in Table 2. The duration of hospitalization in the patients under 65 years of age is shown in Figure 3 by classifying patients with and without the complication of respiratory infection. Twenty-nine patients were complicated with respiratory infection and 16 patients were not complicated with respiratory infection. The average duration of hospitalization was 8.1 ± 3.8 days in the patients under 65 years of age with respiratory infection. On the other hand, the average duration of hospitalization was 10.8 ± 4.3 days in the patients under 65 years of age without respiratory infection. There was a statistically significant difference between these two groups (P=0.04).

In the patients 65 years or over, 33 patients were complicated with respiratory infection and 17 patients were not. The duration of hospitalization in the patients 65 years or over is shown in Figure 4 by classifying patients with and without the complication of respiratory. The average duration of hospitalization in the patients 65 years or over was 15.0 ± 9.3 days in patients with respiratory infection. And the average duration of hospitalization was 12.4 ± 8.1 days in patients without respiratory infection. There was no statistically significant difference between these two groups (P=0.34).

### Discussion

In the present study, the duration of hospitalization as a substitute for delayed recovery from asthma exacerbation was investigated. In

| Contents Nonelderly (<65 years) | Elderly (≥ 65 years) |
|---------------------------------|----------------------|
| Common Cold                     | 10                   |
| Influenza                       | 3                    |
| Bronchitis                      | 13                   |
| Streptococcus Pneumonia         | 2                    |
| Moraxella catarrhalis           | 1                    |
| Others                          | 10                   |
| Pneumonia                       | 1                    |
| Tonsillitis                     | 1                    |
| Bronchitis with Rhinitis        | 1                    |

Table 2: Contents of respiratory infection.

Figure 3: Duration of hospital stays between patients with respiratory infection and patients without respiratory infection in nonelderly (19-64 years old) is shown. There is a statistically significant difference in the average duration of hospitalization between the presence and absence of complication of respiratory infection (P=0.04).
asthma exacerbation in elderly patients. The sample size is not large but it is considered to be the effective as a pilot investigation.

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