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Review Article

Current asthma deaths among adults in Japan

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ABSTRACT

Recent asthma deaths were examined from yearly reports of the Ministry of Health, Labor and Welfare of Japan and from reports published by the Japan Asthma Death Investigation Committee on 811 deaths over the period 1992–2000. The rate and number of recent asthma deaths in Japan have been decreasing rapidly. Most asthma deaths were of patients aged 70–90 years and there has been a marked trend for increased asthma deaths in the elderly. As for the circumstances surrounding the deaths, sudden death, unstable sudden aggravation and intermittent aggravation were mainly noted. Respiratory infections, fatigue and stress were the major courses of fatal attacks contributing to deaths due to asthma. Many of the patients who died from asthma had been diagnosed as having as moderate to severe asthma and many had non-atopic asthma. There are some reports that suggest that the recent decrease in asthma deaths in Japan is correlated with the use of inhaled corticosteroids.

Key words: asthma death, inhaled corticosteroids, respiratory infections, sudden death.

INTRODUCTION

Although the number of asthma deaths increased during the 1970s and 1980s, it has stabilized or decreased since the 1990s in Western countries. In Japan, the yearly rate of asthma deaths, approximately 5 per 100 000 people, continued in the 1980s, but has been decreasing since 1996. In the present review, the current

adult asthma death situation is outlined on the basis of yearly reports from the Ministry of Health, Labor and Welfare of Japan from reports published by the Japan Asthma Death Investigation Committee on 811 deaths over the period 1992–2000.^{1–3}

PROFILE OF ASTHMA DEATH RATES IN JAPAN

The rate of asthma deaths per 100 000 people was 8.8 in 1970, decreased to 5.6 in 1980, stabilized at approximately 5 in the 1980s and has decreased gradually since 1989. The rate of asthma deaths per 100 000 people was 3.6 in 2000, 3.4 in 2001 and 3.0 in 2002 (Fig. 1). The recent asthma death rate in Japan has been decreasing rapidly. Decreases in asthma deaths in the late 1990s have also been reported in other countries, including the UK,⁴ Canada, Denmark, Sweden⁵ and Germany. The number of adult (over 15 years of age) asthma deaths is decreasing along with the overall asthma death rate. The number of adult asthma deaths was approximately 6200 cases between 1980 and 1986, 5800 from 1989 to 1992, 5360 in 1999, 4427 in 2000 and decreased recently to 3755 in 2002 (Fig. 2). In Japan, there have been more male than female asthma deaths for approximately 30 years. According to reports from the Ministry of Health, Labor and Welfare, the male : female asthma death ratio was approximately 3 : 2 between 1980 and 1985, has been relatively equal in the past few years and, finally, cases of male deaths were slightly lower than those of females in 2002. This sex difference has not been reported in other countries.

The number of asthma deaths in women has not changed significantly in the past 20 years, whereas that of men has decreased significantly (Fig. 3). Therefore, the recent decrease in total asthma deaths in Japan is mainly due to a decrease in the number of male deaths.

It has been reported by the Ministry of Health, Labor and Welfare that the number of asthma deaths of people

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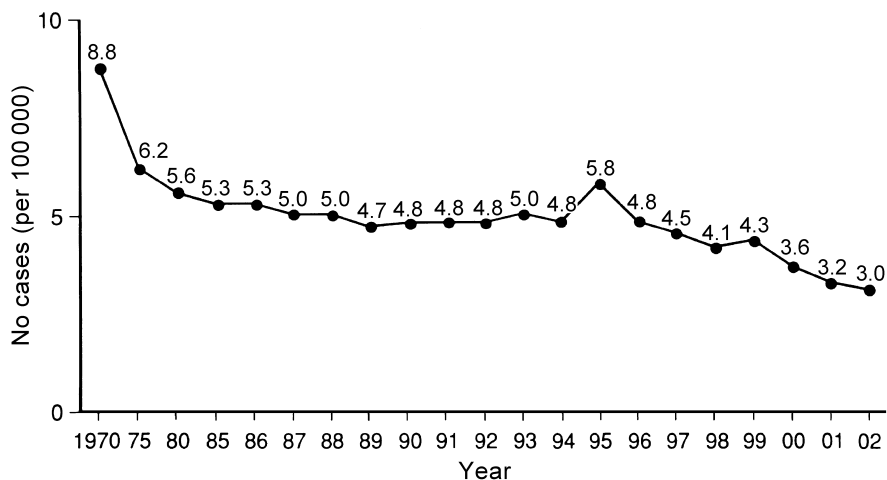


Fig. 1 Death rates of asthmatics in Japan from 1970 to 2002.

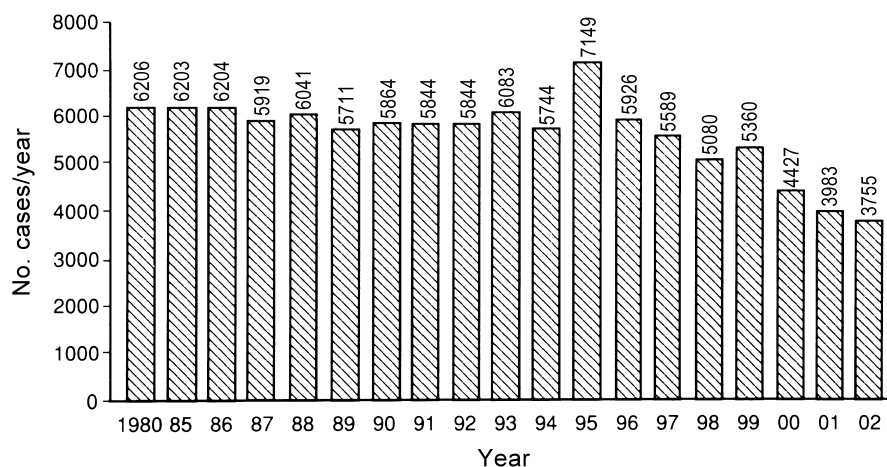


Fig. 2 Changes in the number of asthma deaths among adults (> 15 years old) in Japan from 1970 to 2002.

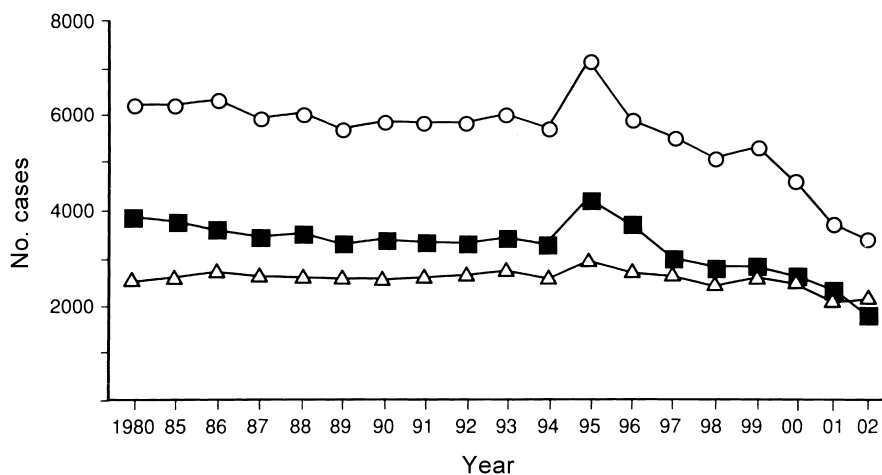


Fig. 3 Changes in the number of asthma death cases in Japan from 1980 to 2002. (○), total number of deaths; (■), deaths in males; (△), deaths in females.

aged between 5 and 34 years increased over the 15 year period of 1980–1995. However, the number of asthma deaths of people aged between 5 and 34 years has decreased in recent years (Fig. 4).

In the past 10 years, most asthma death patients were aged between 60 and 80 years. In recent years, asthma death cases have been limited mainly to people aged 70–90 years and, in particular, the number of asthma

deaths in people age over 90 years has increased gradually (Fig. 5). This trend for a yearly increase in the number of deaths in elderly people should be seen as a new problem to be noted in the prevention of asthma death.

There are two reasons that have been proposed by The Japan Asthma Death Investigation Committee^{1,2} to account for the occurrence of this phenomenon: one is that asthma death often occurs in the cold season, and the other is that the main cause of asthma death is often respiratory infection. However, it should be noted that the increase in the number of deaths of young males, which was observed in the 1990s, has vanished since 2000.

SITUATIONS OF DEATH CASES

As for the circumstances surrounding the asthma deaths, more than 30% of deaths occur within 3 h of the last asthma attack. Approximately 14% of deaths are of the sudden death type (death within 1 h after the occurrence of an asthma attack), 16.2% are of the unstable sudden aggravation type, in which the attacks aggravate a patient's condition and death occurs after the unstable attacks have continued for several hours or days, and 17.2% are of the intermittent aggravation type, in which patients die after

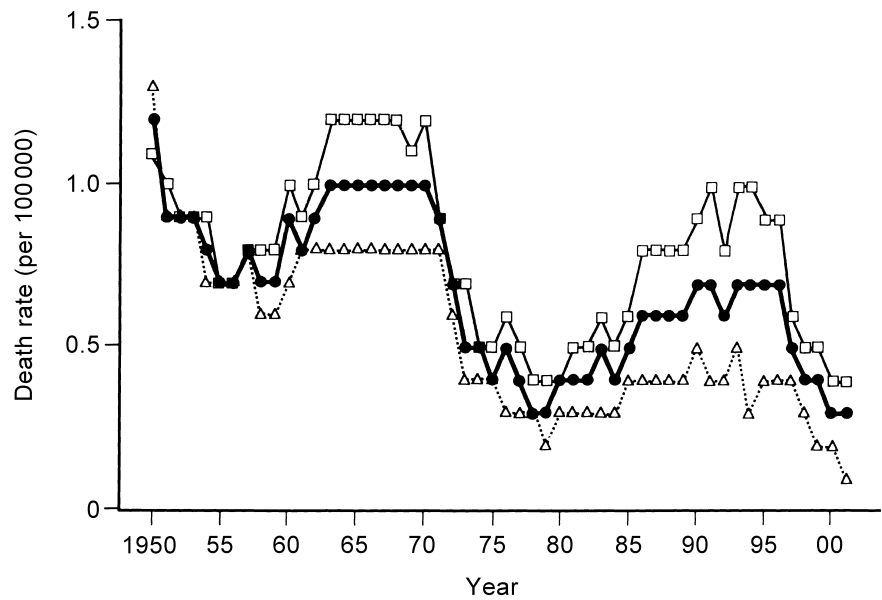


Fig. 4 Changes in the asthma death rate in the age group 5–34 years from 1950 to 2000. (●), total number of deaths; (■), deaths in males; (△), deaths in females.

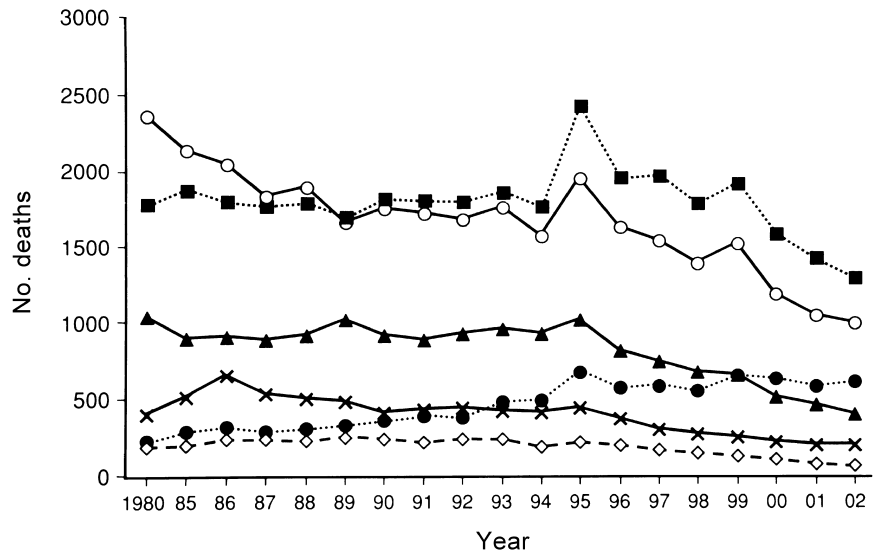


Fig. 5 Changes in the number of cases of asthma death according to age group. (◇), 40–49 years old; (—), 50–59 years old; (▲), 60–69 years old; (○), 70–79 years old; (■), 80–89 years old; (●), ≥ 90 years old.

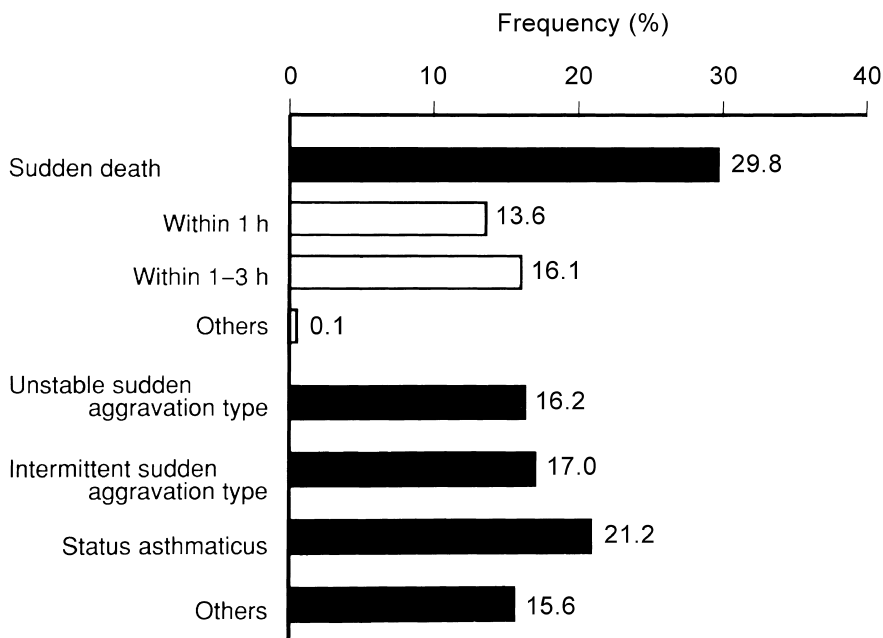


Fig. 6 Types of asthma attack in cases of asthma death.

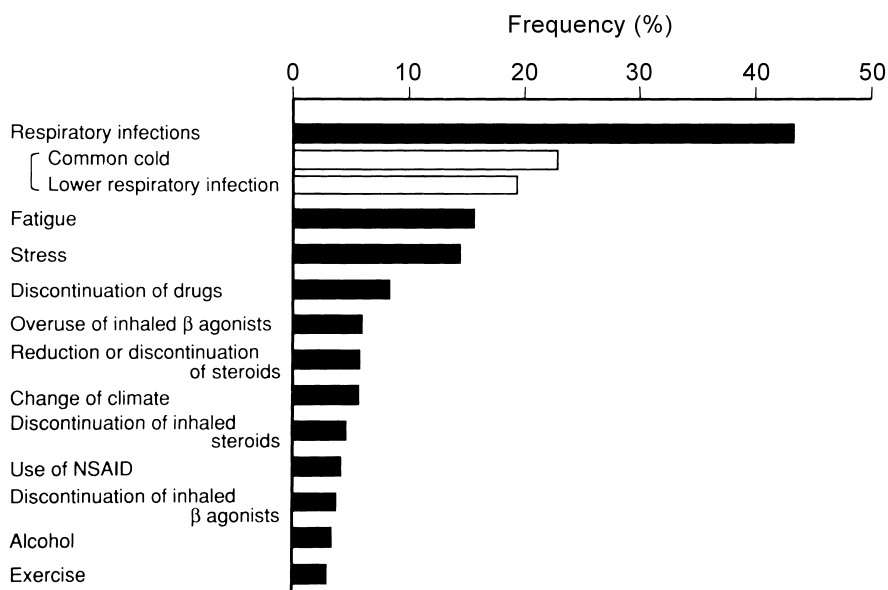


Fig. 7 Factors or causes that may have induced fatal asthma attacks. NSAID, non-steroidal anti-inflammatory drug.

intermittent attacks appear over several days or hours. Status asthmaticus, which had been thought to be a typical type of asthma death, contributes to 21.2% of asthma deaths (Fig. 6). It has been shown that the number of cases of sudden death over the past 30 years peaked at 23% in early 1980s and has decreased since then to 12–14%.

Approximately 60% of severe, fatal attacks occur at home and more patients have died recently en route to hospital, although 53.9% of asthma deaths occur in a

hospital room. When patients arrive at hospital, 56.6% of them are CPAOA (cardiopulmonary arrest on arrival). Ninety-four percent have received treatment at the hospital or emergency room. Fifty-four percent of patients have been administered oxygen and tracheal intubation has been performed on 75% of patients. Epinephrine, corticosteroid and theophylline have been injected in 75.5, 71.5 and 72.4% of cases, respectively, whereas inhaled β_2 -adrenergic receptor agonists are used only in 35.3% of cases.^{1,2}

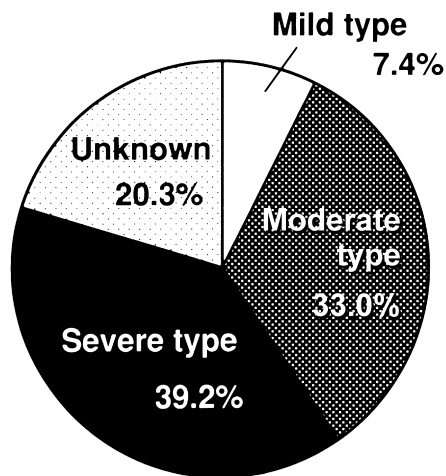


Fig. 8 Asthma severity in patients who died of asthma.

VARIOUS FACTORS RELATED TO DEATH

The exact factors or causes that may have induced fatal attacks were difficult to determine in two-thirds of asthma deaths examined. In the other cases in which the cause of death could be determined, respiratory infections, such as the common cold, acute bronchitis, and influenza, fatigue and stress were found to be the major causes contributing to a fatal asthma attack. Respiratory infection, in particular, is considered to be the most important factor contributing to fatal asthma attacks. Other causes include the sudden reduction or discontinuation of anti-asthma drugs, especially oral or inhaled corticosteroid, climate changes and the administration of a non-steroidal anti-inflammatory drug (including aspirin), the intake of alcohol and the overuse of inhaled β_2 -adrenergic receptor agonists (Fig. 7).

General practitioners who have treated the death cases have pointed out that low patient compliance (a lack of understanding of bronchial asthma, poor asthma diary performance, irregular visits to the hospital etc.) is closely related to asthma death. Insufficient or no asthma education for patients, a failure to assess patient severity or condition and inadequate or ineffective treatment have been identified as contributing causes on the doctors' side.

Many asthma death patients are diagnosed as having as moderate to severe type asthma (Fig. 8) and many have non-atopic asthma. Among the asthma deaths,

30–40% had a history of severe life-threatening attacks and approximately 40% had a history of hospitalization due to severe asthma attacks. These indicators should be considered as important risk factors for asthma death. It is of note that approximately 20% of patients who died from asthma had pulmonary emphysema as well as asthma.

With regard to the therapy administered 1–2 years prior to death, only 40% of cases used inhaled steroids, which is lower than the average for adult asthmatics. Recently, Suissa and Ernst⁶ reported that the yearly asthma death rate in people aged 5–34 years in Japan from 1987 to 1999 correlated with sales of inhaled corticosteroids and these authors pointed out the importance of the use of inhaled corticosteroids in preventing asthma deaths. Suzuki *et al.*⁷ also reported a similar relationship between the asthma rate for all ages in Japan and sales of corticosteroids. In Japan, asthma guidelines were established in 1993 and these guidelines have been revised in 1995, 1998 and 2003.⁸ The importance of patient education, improvement of compliance and the administration of inhaled corticosteroids are emphasized in the guidelines and it is these things that have probably led to the recent decrease in asthma deaths in Japan.

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