Asthma in the Elderly

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KEYWORDS

• Aging • Asthma • Lung function • Overlap syndrome • Phenotypes

KEY POINTS

- New-onset asthma may occur at any age.
- Elderly patients with long-standing asthma usually have a history of atopy; IgE levels are elevated and often there is a history of allergic rhinitis.
- Asthma that begins at an advanced age is usually nonatopic and has low rates of remission.
- There are no specific protocols for the treatment of asthma in the elderly; treatment entails objective monitoring, avoidance of asthma triggers, pharmacotherapy, and patient education.
- Most elderly asthmatics tolerate asthma medications well with minimal adverse drug reactions.

INTRODUCTION

Asthma was long considered a childhood disease. There was little focus on asthma in elderly subjects until the Tucson epidemiologic study of obstructive lung disease brought attention to asthmatics in this age group.[1] This longitudinal study began in 1971 and results of the eighth survey in 1984 showed that active asthma is relatively common in people over age 65 years of age. Many subjects had severe disease with marked ventilatory impairment and suffered with this disabling disorder for years. Fewer than 1 of 5 in the study group went into complete remission and the death rates in the asthmatics tended to be higher than in nonasthmatics.[2] A further report of patients who developed asthma after the age of 60 showed that the serum IgE level was closely related to the likelihood of a subsequent asthma diagnosis and that a rapid decrease in lung function often occurred around the time of the initial diagnosis.[3]

The Tucson epidemiologic study offered the first characterization of asthma in the elderly (AIE) and highlighted the need for further investigation in the group. In the decades that followed, it became apparent that AIE is underdiagnosed and undertreated and that there is a paucity of knowledge regarding many aspects of the disease in this

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age group.[4–11] The need for an assessment of current knowledge became apparent. This resulted in a workshop convened by the National Institute on Aging in September 2008, to improve the understanding and care of AIE, defined as asthma in those over 65 years of age.[12] At that time, it was acknowledged that at least 2 phenotypes exist among elderly asthmatics, namely, those with long-standing asthma have more severe airflow limitation and less complete reversibility than those with late-onset asthma that often, as was seen in the Tucson study, can occur for the first time at an advanced age.[1,13] This raised questions regarding the pathophysiological mechanisms of AIE. Are they different from those seen in young asthmatics? And are aging-related changes in respiratory and immune physiology affecting the manifestations of this disease in the elderly?

It was acknowledged at the National Institute on Aging workshop that asthma presenting at an advanced age often has similar clinical and physiologic consequences as seen with younger individuals, but there are a number of confounding influences that complicate asthma in this age group, including the presence of comorbid illnesses. In addition, the clinical presentation may be highly variable as a result of the heterogeneity among older people that ranges from very "fit" to very "frail." In May 2015, an American Thoracic Society Workshop on Asthma in the Elderly was convened to review the current state-of-the-art knowledge and provide future directions for research.[14]

EPIDEMIOLOGY

The most recent revised global estimate of asthma from the World Health Organization suggests that as many as 334 million people have asthma, and that the burden of disability is high.[15] Asthma is especially seen with increased urbanization and with aging populations. A cohort of asthmatics in Norway followed for 11 years showed a higher risk for older patients. The incidence of asthma per 1000 person years was 2.4, 3.1, and 5.4 for age groups 15 to 29, 30 to 45, and 50 to 70 years respectively.[16] Similar estimates from the United States, Poland, and Sweden have been reported.[16] The incidence of this disease has increased substantially in recent decades.[16,17] About 250,000 asthmatics die from this disease each year, often as a result of poor access to care, poor environmental control, and a lack of proper medications.[18]

A comprehensive epidemiologic study from the United States National Surveillance of Asthma was conducted for several decades and has been reviewed in the American Thoracic Society workshop document.[17] The data on Americans across the lifespan, including those age 65 years of age and older, showed that older Americans had (1) the greatest increase in the prevalence of current asthma, from 6.0% in 2001 to 8.1% in 2010, (2) the highest rate of asthma-related deaths, and (3) the second highest rate of asthma-based physician office visits and hospitalizations, but (4) the lowest rate of having an asthma attack and an asthma-based emergency department visit, respectively. The most vulnerable of the older Americans were females, African Americans, Hispanics, and low-income groups.

In an analysis of a large US database of emergency department visits and hospitalizations for asthma between 2006 and 2008, Tsai and colleagues[19] found that patients over age 65 with asthma had higher rates and greater durations of hospitalization, greater mortality, and more near-fatal attacks.

The presence of age-associated comorbidities of AIE such as heart disease, chronic obstructive pulmonary disease (COPD), kyphosis, gastroesophageal reflux, and pulmonary vascular disease makes determining asthma-related health care use difficult. In addition, many common geriatric conditions such as cognitive impairment, falls, low