



## Challenges and Pitfalls in the Management of Geriatric Asthma

Nellie Kakoun\*, Abdulrahman M. Mohammed, and Jumana J. Mustafa

Ras Al Khaimah Medical and Health Sciences University, United Arab Emirates

\*Corresponding e-mail: [nelliekakoun@outlook.com](mailto:nelliekakoun@outlook.com)

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### ABSTRACT

*Asthma is defined as a chronic airway disease that influences all ages, but does this definition incorporate the elderly? Traditionally, asthma has been considered an illness of a more youthful age, but epidemiological studies and clinical involvement support the concept that asthma is as prevalent in older ages as it is within the youth. According to the 2012 National Health Interview Survey Data, 208,500 people of age 65 and above develop asthma in a lifetime. This disease in the elderly has been critically misdiagnosed because usually old people think that shortness of breath is just a normal thing because of their old age. Asthma creates a much greater risk for older adults because they are more likely to develop respiratory failure as a result of asthma, even during mild episodes of symptoms. The symptoms of asthma are as follows: chest tightness, shortness of breath, wheezing, and cough (especially at night). Many people aged 65 and older get their first asthma symptoms after an upper respiratory (chest) infection. The World Health Organization (WHO) has declared the coronavirus outbreak a global health emergency. Older people, with pre-existing medical conditions (such as asthma, diabetes, and heart disease) appear to be more vulnerable to becoming severely ill with the virus.*

**Keywords:** Asthma, Geriatrics, Covid-19

### INTRODUCTION

The portrayal of asthma in the elderly suffers from the fact that there has not been sufficient research right now. There are various etiologies for these more unfortunate results, including diagnoses and under-treatment of asthma in the elderly, and factors related to geriatric medicine, for example, diminished cognition, ill-advised drug use, presence of other comorbid conditions, and polypharmacy. There may as well be a diminished reaction to presently accessible asthma treatments in the aged. In 2004, the U.S. prevalence of asthma for those 65 or older was 7%, with 1,088,000 reporting an asthma attack in the previous 12 months. Older asthmatics are more likely to be underdiagnosed, under-treated and hospitalized than younger asthmatics. They also have the highest death rate (51.3 per million people) of any other age group. Older women are hospitalized more than twice as often as older men [1,2].

## LITERATURE REVIEW

### **The Aging Lung**

Lung function is measured by how well a person can fill their lungs with air, and how hard and fast they can breathe out. Lungs develop throughout childhood and early adulthood, reaching peak performance by about age 20 years to 25 years. Lung function is gradually lost throughout adulthood. The American Thoracic Society (ATS) highlighted this topic at the 2014 annual meeting. Aging research has attracted the curiosity and imagination of the scientific research community throughout the history of humankind. “Biological aging” is characterized by a progressive loss of physiological integrity, leading to impaired function, increased frailty, and increased vulnerability to death, which is common to most living organisms. This disruption is often associated with the slow and gradual buildup of molecular damage from environmental and metabolic stressors, leading to a decrease in fitness and greater disease susceptibility. The pulmonary physiologic changes of the aging lung may synergize with the pathologic changes of various lung diseases to affect lung structure and function. Such synergistic effects may lead to more severe manifestations of lung disease in the elderly. Loss of elastic recoil of the lung is a prominent feature of aging and is a characteristic feature of chronic asthma and chronic obstructive pulmonary disease regardless of aging. This may explain the accelerated decline in FEV1 in asthma that has been noted longitudinally in some population studies.

### **Mortality and Morbidity**

Asthma in the elderly is responsible for significant and increased mortality in the elderly population. Asthma deaths are highly over-represented by the elderly population. In Australia between 2003 and 2007 sixty-nine percent of all asthma deaths were in those 65 years and above. In 2009, 259/411 asthma-related deaths in Australia were over the age of seventy. The pattern of mortality in older people with asthma also differs from younger age groups with the peak time of death occurring over winter months, in contrast to the more even spread of mortality throughout the year in the 5 year to 64-year-old age groups, suggesting a potential infective cause of death [1].

### **Pathogenesis of Asthma in Older Adults**

Poor respiratory muscle strength decreased elasticity and increased stiffness of the chest wall are often part of the natural aging process that may contribute to the onset of asthma. Forced Expiratory Volume in One Second (FEV1) and forced vital capacity each decrease after about 20 years by 25 ml and 30 ml each year. This is typically what leads to decreased muscle strength in the respiratory system and increased elastic recoil in older adults.

Aging also comes with 2 changes in the immune system affecting asthma diagnosis in older adults: immunosenescence and inflammation. Such immune responses may make elderly people less receptive to vaccines and cause a higher rate of infection which may either exacerbate or contribute to asthma [3].

Environmental factors such as pollen, animal dander, dust, or smoke often cause asthma. Avoiding triggers is one of the most effective ways elderly patients can manage their asthma. However, many older adults cannot adapt to changes in lifestyle involving the regulation and avoidance of these causes [4].

**Complications of Asthma in the Elderly**

The available knowledge is consistent with asthma being a problematic disease in the elderly. The complication of asthma in a younger patient is wheezing, difficulty breathing, a tight feeling in your chest, and coughing these complications are also seen in elderly patient but elderly patient suffering from more serious conditions like pneumonia, the collapse of the lungs respiratory failure, where the levels of oxygen in the blood become dangerously low, or the levels of carbon dioxide become dangerously high and finally, status asthmaticus (severe asthma attacks that do not respond to treatment) these complications are rare in younger patients. During these complications, the patient cannot respond to the treatment which leads to the death of the patient. The concomitant occurrence of multiple diseases in elderly patients makes asthma worse. The number of comorbidities in older asthmatics is higher than that encountered in younger subjects and the pattern is different from that observed in younger asthmatics. Such comorbidities like kidney disease and congestive heart failure all of these conditions affect the outcome of asthma [5,6].

Because asthma symptoms influence emotional well-being dramatically. The impact of depression on asthma in the elderly has been widely demonstrated. higher rate of exacerbations and higher mortality rates. It is logical to assume that the negative effect of depression on the natural history of asthma is through the worsening of the level of treatment adherence [5].

**Diagnosing Asthma in the Elderly**

The symptoms of asthma in older adults are similar to those of other conditions commonly seen among this population. cough is a prominent symptom of asthma in the elderly and is the only obvious symptom. Asthma in the elderly is confused with other diseases that are common in this age group population, such as COPD, congestive heart failure, and gastroesophageal reflux. Moreover, asthma also coexists with these other conditions, making it extremely difficult to establish which condition leads to poor health [7].

Older adults tend to assume that breathlessness is caused by comorbidities such as obesity and cardiovascular disease. Older adults are also less likely to report asthmatic symptoms due to denial, fear, cognitive impairment, depression, social isolation, and poor medical literacy. Those who do have asthma symptoms are likely to report poor general health, fatigue, and disability surrounding normal daily activities as well [6,7].

Recently at least 50% of older asthma adults have been diagnosed with their disease. In this population, the treatment process for asthma is similar to that for younger patients. However, older adults with asthma have higher morbidity compared to their younger counterparts and perform lower on health-related quality-of-life assessments. Factors commonly found to affect asthma diagnosis in older adults include poor patient awareness and recording of asthmatic symptoms, the occurrence of extrapulmonary incidents, and aging in the respiratory tract [6,7].

To treat asthma correctly in older adults, physicians must review medical history and conduct a medical examination along with x-RAY, electrocardiogram, and spirometry in the chest. A test of carbon monoxide lung diffusing capability

may help to differentiate between asthma and COPD, but chest computed tomography may help identify increased wall thickness and air trapping [8].

Some measures that may be helpful in the diagnosis of asthma in the elderly include plasma brain natriuretic polypeptide analysis, heart function assessment using echocardiography, and the use of exhaled nitric oxide as a marker and control measure [9].

Clinicians need to keep in mind that the diagnosis can sometimes be mistaken by physical tests in older adults with asthma. Wheezing, for example, is a symptom of asthma and several other disorders like COPD, also given that the ratio of FEV1 to forced vital ability declines with age. When diagnosing asthma, clinicians must use age-adjusted values [10].

Clinicians may face bronchoprovocation challenges in elderly patients with cardiac comorbidities and low baseline lung function, as well as spirometry challenges for those who have impaired cognition and coordination [11-14].

### **The Relation between Asthma and Covid -19**

The Centers for Disease Control and Prevention (CDC) have identified persons with asthma, especially those aged 65 years or older, as an at-risk group for severe illness in response to Coronavirus disease 2019 (COVID-19; SARS-CoV-2 [15]. We concur with expert groups that every effort should be made to avoid SARS-CoV-2 exposure and to continue all regular medications necessary to maintain asthma control, including inhaled Glucocorticoids, oral Glucocorticoids, and biological agents (eg, Omalizumab, Mepolizumab) [16].

Maintaining good asthma control helps minimize the risk of an asthma exacerbation, and there is no good evidence that inhaled glucocorticoids or the biological agents used for asthma harm the course of COVID-19. For those taking long-term oral Glucocorticoids, abruptly stopping this medication can have several serious consequences. In addition, the usual guidelines for prompt initiation of systemic Glucocorticoids for asthma exacerbations should be followed, as delaying therapy can increase the risk of a life-threatening exacerbation. For patients with COVID-19 infection, inhaled asthma medications should be given by inhaler rather than nebulizer when possible to avoid aerosolizing the virus and enhancing disease spread. The immediate and long-term effects of COVID-19 on asthma are likely to be a high priority in future research [11].

### **DECLARATIONS**

#### **Conflict of Interest**

The authors declared no potential conflicts of interest with respect to the research, authorship, and/or publication of this article.

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