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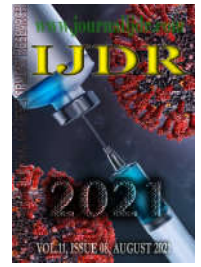
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ASTHMA IN THE ELDERLY PATIENTS: AN INTEGRATIVE REVIEW

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ABSTRACT

Introduction: Asthma is a chronic inflammatory disease, characterized by hyperactive responsiveness of the lower airways and by variable airflow limitation, reversible spontaneously or with treatment. Asthma can appear initially at any age, from newborns to old age, concomitantly or not with allergies of the upper airways, and in the elderly the tendency is chronicity, rather than recurrent crises in childhood. **Objective:** This study aims to review the literature related to asthma in the elderly, with analysis of clinical characteristics, means of diagnosis and therapeutics in this age group. **Method:** This study constituted a systematic review of theoretical references with search for scientific articles in national and international electronic databases. **Conclusion:** The key to successful asthmatic treatment is the correct knowledge of the disease, the triggering factors, its avoidance to avoid crises and the correct pharmacological treatment when necessary.

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INTRODUCTION

In recent decades, there has been a significant increase in the elderly population. This increase in life expectancy is allied to a growing concern for healthy aging, which is intended to be active (ALMEIDA et al, 2017). Elderly, according to the World Health Organization (WHO), is any person over sixty years of age, although this limit does not always follow the changes of aging, due to changes in health status. Currently, the proportion of this population grows faster than any other group (PECHER, 2019). Asthma is a chronic inflammatory disease characterized by hyperresponsiveness of the lower airways and by variable airflow limitation, reversible spontaneously or with treatment, clinically manifesting itself as recurrent episodes of wheezing, dyspnea, chest tightness and coughing, particularly night and morning on awakening. It results from an interaction between genetics, environmental exposure to allergens and irritants, and other specific factors that lead to the development and maintenance of

allergies, and in the elderly the tendency is chronicity, rather than recurrent childhood crises (PECHER, 2019). The high psychosocial and economic costs and the impact of asthma on the population have led scientific and governmental entities to carry out actions to control and care for patients with the disease; however, the lack of standardization of the concept and diagnostic and therapeutic criteria makes it difficult to optimize the treatment (LEAL et al, 2011). This study aims to review the literature related to asthma in the elderly, analyzing the clinical characteristics, means of diagnosis and treatment in this age group. This study consisted of a simple systematic review, with theoretical framework for searching scientific articles in the databases through electronic means: Academic Google, SciELO, LILACS (Latin American and Caribbean Literature in Health Sciences), Medline/PubMed (Medical literature analysis and retrieval system online), consulted by the VHL (Virtual Health Library) at BIREME (Regional Library of Medicine). The descriptors

used in the research were: asthma and elderly. The search for articles was carried out in the period from June to July 2021.

LITERATURE REVIEW

The natural aging process provides a progressive decrease in bodily functions, as well as in the individual's physiological resistance, making the elderly vulnerable to a series of diseases. With regard to asthma, reduced lung functions, associated with reduced immunity, become a risk factor, facilitating the onset of respiratory infections or exacerbation of the disease (RODRIGUES et al, 2010). With aging, pulmonary viscous resistance increases, there is less intrathoracic negative pressure, air spaces increase at the expense of the alveolar ducts, there is progressive calcification of the costal cartilages and mild kypho-scoliosis, which can lead to a barrel-shaped chest, with changes in lung volumes (PECHER, 2019). Elderly asthmatics can be divided into two broad groups: aging asthmatics and those with late-onset asthma. Asthma is underdiagnosed in the elderly for several reasons: lesser perception of dyspnea; interpretation of dyspnea as a natural consequence of age; presence of associated diseases (cardiovascular, hypothyroidism, chronic obstructive pulmonary disease, aspiration pneumopathies and obesity, among others); difficulty in objectively proving airway obstruction (STIRBULOV et al, 2006). Even though it is a chronic allergic disease, asthma is seen, especially in the public sphere, only as a seasonal disease. Despite the existence of financing for the acquisition of control medications, the creation of local asthma management policies through specific and coordinated programmatic activities has not been established (LEAL et al, 2011). The National Institute of Health defined asthma as a chronic inflammatory disease of the airways in which many cells play a role, in particular, mast cells, eosinophils and T lymphocytes (BRAMAN; HANANIA, 2007).

Etiology: The development of asthma is associated with several external (environmental and occupational) and individual (genetic and psychosocial) factors, and depends on the interaction between these external factors and the genetic predisposition to the development of bronchial hyperresponsiveness and atopy, that is, genetic predisposition for the exaggerated production of IgE specific for environmental usual antigens. Nonspecific factors that can trigger it include viral infections (rhinovirus, respiratory syncytial virus, adenovirus, influenza and for influenza), which are the most frequent cause of asthma attacks in infants and children (up to 90% of attacks). In adults, about 40% of asthma attacks are associated with viral infection, while about 10% may be associated with subclinical bacterial infection (SILVA; DIAS, 2013). The allergic inflammatory response is initiated by the interaction of allergens with some cells whose function is to present them to the immune system, more specifically the Th2 lymphocytes. These, in turn, produce cytokines responsible for the initiation and maintenance of the inflammatory process. IL-4 plays an important role in increasing the production of allergen-specific IgE antibodies (STIRBULOV et al, 2006). According to the Global Strategy for Asthma Management and Prevention (GINA), the severity of asthma is classified as intermittent, mild persistent, moderate persistent and severe persistent.

Bronchial asthma in the elderly can be classified into two groups:

- 1) Recurrent EXTRINSE ASTHMA, with onset at a young age, persistent or that reappears in old age;
- 2) Late-onset INTRINSIC ASTHMA, after the age of sixty or later. Almost half of these start after a respiratory infection (Rinovirus, Influenza A Respiratory Syncytial Virus, etc.). The average duration of these infections is twice that of children and young adults. Viral infections are commonly evaluated in acute exacerbations, but encounters of viral-allergenic and viral-bacterial interactions are important for chronicity.

Asthma morbidity assessment measures, such as symptoms, physiological measures, medications and use of health services reflect only part of the

asthma morbidity picture, as they do not inform how patients feel in their daily lives (NOGUEIRA et al, 2009).

Etiopathogenesis: The clinical picture is manifested by repeated episodes of coughing, wheezing and shortness of breath, especially at night (FIKS, 2008). Airway inflammation is an important part of asthma pathology, in which the presence of airway edema and mucus secretion contribute to airway obstruction and bronchial hyperreactivity. The stimuli responsible for asthma (eg, allergens) activate, in the airways, the appearance of mediators from mast cells and other cells. Microscopically, asthma is characterized by an increase in the number of mast cells, eosinophils, macrophages, epithelial cells and T lymphocytes in the bronchial tissue. T lymphocytes play an important role in regulating airway inflammation by releasing cytokines. The inflamed bronchial mucosa reduces the diameter of the airways and also increases mucus production (LEPORI, 2007). These mediators can also reach the ciliated epithelium, causing damage and rupture. As a result, epithelial cells and myofibroblasts, present below the epithelium, proliferate and initiate the interstitial collagen deposition in the reticular layer of the basement membrane, which explains the apparent thickening of the basement membrane and the irreversible lesions that can occur in some patients with asthma (III CONCENSO BRASILEIRO NO MANUEIO DA ASMA). Antigens or allergens are identified as foreign to our body by the Immune System, through special proteins (reagin-type antibodies or immunoglobulin E - IgE) circulating in the blood, lymph and in all body fluids, which will react with the antigens when level of mast cells (very abundant cells in the skin and mucous membranes) causing an immediate and explosive reaction of chemical substances, from fifteen to thirty minutes, with intense inflammation, originating the symptoms of allergy.

Evolution: As a person ages, this disease becomes more persistent, with a progressive increase in the degree of obstruction. The lungs are altered even in a healthy person, due to contact with atmospheric pollution and other aggressions, resulting in lower oxygen content. His thorax undergoes modification, becoming more rigid, with less elasticity, with loss of gas exchange, with reduced oxygen diffusion, making breathing difficult, facilitating the appearance of flu and other infections (PECHER, 2019). With regard to asthma in the elderly, reduced lung functions, associated with reduced immunity, become risk factors, facilitating the appearance of respiratory infections or exacerbation of the disease. In this context, cases of asthma and other diseases of the lower respiratory tract are directly related to the higher probability of hospitalization and possible disability in the elderly (RODRIGUES et al, 2010). Some clinical conditions may be associated with asthma and contribute to its worsening, increasing the need for medication. They are: rhinosinusopathy (acute or chronic), gastroesophageal reflux disease and allergic bronchopulmonary mycoses (SILVA; DIAS, 2013). Elderly people can live in old homes with increased exposure to mold, insects or rodents. It can be speculated whether a more "sterile" environment could help the elderly with asthma, although the more populous environment, on the contrary, can lead to more respiratory infections and consequent exacerbations (KING; HANANIA, 2010). Cases of asthma and other diseases of the lower respiratory tract are directly related to a higher probability of hospitalization and possible disability in the elderly (RODRIGUES et al, 2010).

Incidence and prevalence: There are approximately 350,000 hospitalizations for asthma in Brazil annually, constituting the fourth cause of hospitalizations by the Unified Health System (2.3% of the total) and the third cause among children and young adults (STIRBULOV; SOLÉ et al, 2006). The prevalence of asthma in the elderly is similar to that of young and middle-aged groups, ranging between 6 and 10%. However, the disease is often underdiagnosed and undertreated in the elderly. This may be due to inadequate diagnostic criteria or the patient's poor reporting of symptoms (RIBEIRO et al, 2009). The population concentration in precarious housing, whose main cause is industrialization, determines the similarity in the prevalence of asthma in Brazil compared to developed countries (LEAL et al, 2011). Rodrigues et al (2010) analyzed the geographic distribution and climatic seasonality of

hospital admissions for asthma in the elderly in the Brazilian Amazon, from 2001 to 2007 and concluded with this study that hospital admissions for asthma in the elderly show a decreasing trend over the period. period studied, as well as important seasonal variation with a predominance of this event during the dry period. Epidemiological studies on asthma in Brazil are still limited, due to its territorial extension, and the true dimension of the disease in different regions is unknown (BOECHAT et al, 2005).

Diagnostics: Asthma diagnostics should be based on anamnesis, clinical examination and, whenever possible, on pulmonary function tests and allergy assessment (STIRBULOV; SOLÉ et al, 2006). Atopic diseases are often not considered in the elderly and asthma in the elderly is often confused with chronic obstructive pulmonary disease (COPD), a frequent diagnostic confusion related to advanced age and poorly reversible functional disability (KING; HANANIA, 2010). In the elderly, there is a reduction in sensitivity to symptoms and the cough reflex. This poses a potential problem with both early diagnostic and symptom-based action plans. Simple objective measurements of lung function can generally be performed by the elderly, but many normal reference values are deficient for the elderly over 80 years of age (BEREND, 2005). After the age of sixty, at the “best age”, asthma presents some pathophysiological, clinical and therapeutic particularities. Reversibility is less complete and diagnosis is more difficult. Other common diseases in this age group can mimic asthma, such as chronic bronchitis, bronchiectasis, chronic obstructive pulmonary disease (COPD), gastroesophageal reflux (GER), endobronchial obstruction, bronchogenic carcinoma, heart failure, pulmonary embolism, self-injury diseases (Sjogren's syndrome, scleroderma), etc. (BARUA; O'MAHONY, 2005; PECHER, 2019). Aspergillosis can invade and spread in the lungs of asthmatics who are receiving high doses of corticosteroids (PECHER, 2019). Spirometry is a technique used to confirm the asthma diagnostics, which measures the entry and exit of air from the lungs. Such technique aims to detect early obstructive pulmonary dysfunctions, confirm restrictive pulmonary dysfunctions, in addition to differentiating a functional obstructive disease from an organic obstructive disease (COSTA; JAMAMI, 2001). The measurement of total immunoglobulin E in serum and eosinophilia show better asthma in the elderly than immediate skin tests (PECHER, 2019).

Prevention: Steps must be taken to avoid factors that can cause symptoms to worsen. Although allergens are less important in the elderly, a program that implements environmental control measures, achieving a decrease in allergen exposure, should be instituted in patients with documented sensitivity to specific allergens. These programs can be difficult to implement because they condition changes in lifestyle that are complicated in the elderly (LEANDER, et al, 2010). Aspirin and non-steroidal anti-inflammatory drugs (NSAIDs) should be avoided when possible. Angiotensin converting enzyme inhibitors (ACE inhibitors) can induce dry cough and worsening of asthma symptoms, and should also be avoided (BRAMAN; HANANIA, 2007).

Treatment: Although asthma is a chronic disease, it can be treated within the scope of primary health care, requiring hospitalization only for the most severe cases (RODRIGUES et al, 2010). The etiological treatment of asthma should be started as early as possible, using allergic tests, immunoglobulin E dosage (total IgE and specific IgEs). Patients taking corticosteroids should receive treatment to prevent or minimize osteopenia or osteoporosis (PECHER, 2019). The goal of asthma treatment is complete symptom control. Medications are based on the Global Initiative of asthma (GINA). For rescue purposes, it can be used with the combined use of inhaled corticosteroids and long-acting beta-2 agonists, even in patients with severe asthma symptoms (PONTE et al, 2007; GINA 2019). The stages of asthma treatment in elderly patients do not differ from those of individuals of other age groups, but some aspects deserve to be emphasized: comorbidities are common and must be identified and treated; drug interactions are frequent and can make it difficult to control asthma or associated diseases (STIRBULOV; SOLÉ et al, 2006; GINA 2019). As most provocative stimuli in asthma are airborne and most medications are administered by inhalation, it is

important to consider whether there are differences in particle deposition or aerosol distribution in the elderly. There is little information on this subject, although current evidence suggests that age-related changes in aerosol deposition are small. There is scientific evidence that lung mucociliary clearance is compromised in the elderly, and this may allow harmful inhaled particles or allergens to remain in the airways for longer (BEREND, 2005; GINA 2019). Other investigations have shown that adherence to asthma treatment is much more than simply acting on the focus of the disease. It goes beyond, it does not require patient agreement, consent to the proposed treatment, which, in the case of asthma, involves the use of medications, control of allergens and environmental irritants and monitoring in health services (ARAUJO et al, 2014).

Special care: It is known that among the elderly, the physiological resilience of the individual's respiratory system becomes as difficult as its diagnosis. According to some authors, the disease can be under-diagnosed by interpreting dyspnea as a natural consequence of age and by the existence of non-specific symptoms found in other pathologies, such as chronic obstructive pulmonary disease, congestive heart failure, hypothyroidism, neoplasms and bronchiectasis. Another possibility refers to the prejudice regarding the severity and incapacitation of the disease, which leads health professionals to use other diagnoses with expressions that include: allergic bronchitis, asthmatic bronchitis, chronic allergic crisis, chronic bronchitis, among others (RODRIGUES et al, 2010). In the elderly, undiagnosed asthma is the most frequent cause of obstructive airway disease, usually accompanied by other diseases such as heart failure. In this age group, the biggest complication is the poor perception of symptoms by the patient and the acceptance of respiratory distress as a “normal symptom” in their age; the symptoms most often confused with asthma are COPD and heart failure (“cardiac asthma”) (GINA, 2019). It is essential to verify the adherence to treatment of elderly asthmatics, which may be inadequate due to the prescription of several medications, cognitive decline with memory loss, physical limitations, difficulty in purchasing for financial reasons or apathy (STIRBULOV; SOLÉ et al, 2006). In conclusion, the frequency of asthma patients who have an inadequate perception of disease control is significant. Special attention should be given to elderly patients, with low family income and with milder illness. These patients are at greater risk of inadequately perceiving disease control, requiring a more careful clinical evaluation. Future studies must be carried out to assess whether an asthma education program can reverse this situation (PONTE et al, 2007). The chronic use of oral corticosteroids often leads to undesirable side effects, which should be investigated at any age, but are particularly important in the elderly (Consenso Brasileiro de Educação em Asma).

DISCUSSION

Asthma mortality occurs much more in elderly people (PECHER, 2019). Almeida et al (2017), concluded in their study that asthma is a very prevalent disease in the elderly, being strongly associated with other respiratory pathologies. In a study carried out among residents of São Paulo, there was a trend towards stability in hospitalizations for asthma in the elderly between 1995 and 2009. Records from 2005 show that hospitalizations for asthma corresponded to 18.7% of those for all respiratory causes and 2.6% of all admissions, with a decrease compared to previous decades. In 2007, in the Amazon alone, the total number of hospitalizations among the elderly in the SUS was 157,055; of these, those related to asthma accounted for 2.3% (3,554) (RODRIGUES et al, 2010). According to Ponte et al (2007) on the perception of symptom control in asthmatic patients, it was possible to conclude that the frequency of patients with asthma who have an inadequate perception of disease control is significant. Special attention should be given to elderly patients, with low family income and with milder illness. These patients are at greater risk of inadequately perceiving disease control, requiring a more careful clinical evaluation. Future studies must be done to assess whether an asthma education program can reverse this situation. Elderly people

with asthma tend to attribute their shortness of breath to their aging process and often do not realize that they are decreasing their activities because of the disease. Changes in the perception of airway obstruction due to aging lead to the severity of the disease and, consequently, the delay in seeking treatment (KING; HANANIA, 2010). Care for elderly patients with asthma should be universal and respect the latest expert consensus, which aims to control symptoms, prevent chronic airflow limitation, allow normal work, school and leisure activities, preserve lung function, avoid crises, emergency room visits and hospitalizations, reduce the need to use bronchodilators for relief, minimize adverse effects of medication and finally prevent death (LEAL et al, 2011). Although the guidelines on asthma define the elderly as a risk factor for poor perception of symptoms, severity and mortality from the disease, there are few studies where the relationship between respiratory function and asthma is specifically analyzed in the older age group (RIBEIRO et al, 2009).

CONCLUSION

The main key to the successful treatment of elderly asthmatics lies in the correct knowledge of the disease, its triggering factors, its prevention to avoid crises and the correct pharmacological treatment when necessary. However, the scarcity of studies in this population that further characterize the pathophysiology, etiology and natural evolution of the disease, prevents a true knowledge of this pathology in this age group and, consequently, the absence of a more effective therapeutic adequacy to ensure better control of this pathology in the elderly. Adequate treatment of asthma in the elderly can control asthma in such a way that the patient can have the symptoms minimized or even disappear. Proper treatment allows the lungs to function normally. It is important for the elderly to know how to live with asthma, as this pathology, properly treated and controlled, allows them to have a normal life. The improvement in symptoms may arise spontaneously and last for a prolonged period.

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