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**STRATIFICATION OF THE CLINICAL CONDITION OF ASTHMATIC PATIENTS AND THE IMPORTANCE OF APPROPRIATE MANAGEMENT**

# STRATIFICATION OF THE CLINICAL CONDITION OF ASTHMATIC PATIENTS AND THE IMPORTANCE OF APPROPRIATE MANAGEMENT

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**Summary**

Asthma is a chronic disease, arising from contact with an allergen that induces an inflammatory response, which affects part of the respiratory tract, in a genetically predisposed individual. The dissemination of new studies occurs constantly, which contributes to updating the topic, while new information is added. Therefore, the objective of this work was to describe, based on a bibliographic review, the stratification of the clinical picture of asthma, highlighting its pathophysiological aspects. To this end, an integrative review was carried out using data from the aforementioned platforms. To present the results obtained, a narrative description was made, associated with explanatory tables, which ex-
summarizes the main works used for this study. Likewise, the objective of this
two The work was further explored in the “Discussion” topic, organized based on the selected sources.
Therefore, the information presented in this review can be taken into consideration by future researchers who wish to update themselves on the topic of asthma, with a focus on stratifying the clinical picture of asthma and appropriate treatment.

Keywords: Health Teaching, obstruction, chronic disease.

**Abstract**

Asthma is a chronic disease, arising from contact with an allergen that induces an inflammatory response, which affects part of the respiratory tract, in a genetically predisposed individual. The dissemination of new studies occurs constantly, which contributes to updating the topic, while new information is added. Therefore, the objective of this work was to describe, based on a bibliographic review, the stratification of the clinical picture of asthma, highlighting its pathophysiological aspects. To this end, the integrative review was carried out using data from the aforementioned platforms. To present the results obtained, a narrative description was made, associated with explanatory tables, which briefly presents the main works used for this study. Likewise, the objective of this work was further explored in the "Discussion" topic, organized based on the selected sources. Therefore, the information presented in this review can be taken into consideration by future researchers who wish to update themselves on the topic of asthma, with a focus on stratifying the clinical picture of asthma and appropriate treatment.

Keywords: Health education, asthma, chronic illness

**Introduction**

Asthma is a heterogeneous pathology, marked by chronic inflammation of the airways and variable limitation of expiratory flow, reversible spontaneously or with treatment. Classically, asthma behaves like an obstructive ventilation disorder (OVD) with a positive bronchodilator response.

The symptomatological picture is based on intermittent and recurrent respiratory symptoms, including wheezing, dyspnea, chest tightness and cough, which vary over time and in intensity.

From an epidemiological perspective, it is one of the most prevalent chronic respiratory diseases and affects around 1 to 18% of the world population. Brazil ranks among the countries with the highest prevalence of asthma symptoms, with an estimate of approximately 20 million inhabitants living with the disease.

Unfortunately, even with advances in knowledge of the pathophysiology of the disease and the temporal trend towards reduction in mortality worldwide, the disease is still associated with considerable morbidity and mortality and a relevant cause of social and personal burden.

It is a disease with a more classic expression in children and young adults, but the onset of symptoms can occur in any decade of life, and symptomatic emergence in adulthood is not infrequent. In males, it predominates in childhood and, in females, from adolescence.

The following article aimed to describe the importance of stratifying the clinical condition of asthmatic patients, aiming at their appropriate therapeutic management.



**Methodology**

This is a qualitative narrative review study, suitable for discussing the stratification of the clinical picture of asthmatic patients, in a descriptive way. It consists of a broad analysis of the literature, with the imposition of a rigorous methodology in terms of data reproduction and quantitative answers to specific questions, as explained by Afonso & Oliveira (2021). This was chosen because it is fundamental

for the acquisition and updating of knowledge on this topic, highlighting new ideas, methods and subtopics in the selected literature, according to Andrade & Franco (2022). As it is a bibliographical analysis of the main considerations regarding the clinical profile of asthmatic patients, articles indexed in the databases Scientific Electronic Library Online (SciELO), PubMed, MEDLINE, Lilacs, Virtual Health Library (VHL), Scopus, Google Scholar were retrieved. , Science Direct, Latindex, Periódicos Capes, Sociedade Brasileira de Pneumologia, during the month of June 2022, with the last 5 years as the reference period. The indexing terms or descriptors were used, pneumology; asthma; obstruction, isolated and combined, without delimiting a temporal interval. The criteria used for inclusion of publications was to have the expressions used in the searches in the title or keywords, articles in full and to have it explicit in the abstract that the text is linked regarding asthma with aspects relevant to public health. The excluded articles did not meet the established inclusion criteria and/or were duplicated, that is, publications retrieved from more than one of the databases. Dissertations and theses were also excluded. After the target information had been retrieved, the titles and abstracts were initially read, with intense discarding of publications at this stage. Subsequently, the complete reading of the 25 texts was carried out. As axes of analysis, we initially sought to classify the studies according to the particularities of the sampling, grouping those whose samples are about physiology and understanding the clinical picture of asthmatics; and those whose samples are about therapy and the importance of managing it according to the degree of classification and clinical involvement. From there, the analysis of the theoretical foundation of the studies continued, as well as the observation of the general characteristics of the articles, such as year of publication and language, followed by their objectives.

**Results and discussion**

The search for articles that made up this study identified 38 references associated with the chronic inflammatory disease known as asthma in the aforementioned databases, of which 22 publications were included in the review. Among the selected studies, 10 articles have a theoretical approach, two articles are case reports and 2 are cross-sectional studies. The prevalence of publications in the English language was observed, representing 84% of the total, when compared to Spanish (9.6%) and Portuguese (6.4%). During the course of the present study, numerous sources and review articles were found that discussed aspects related to asthma sufferers. This fact possibly reflects the accessibility of establishing a narrative means to group existing research related to the topic, since these publications are widely covered. In order to organize the product of the article survey, we opted for the propaedeutic division of asthma into essential subtopics to understand its development, symptoms, diagnosis, clinical differentiation, as well as its pharmacological therapeutic management, guidelines and rescue procedures.

Asthma is a multifaceted disorder with multifactorial etiology. Different risk factors and environmental interactions are essential for its emergence. Generally, the factors that influence asthma can be divided in:

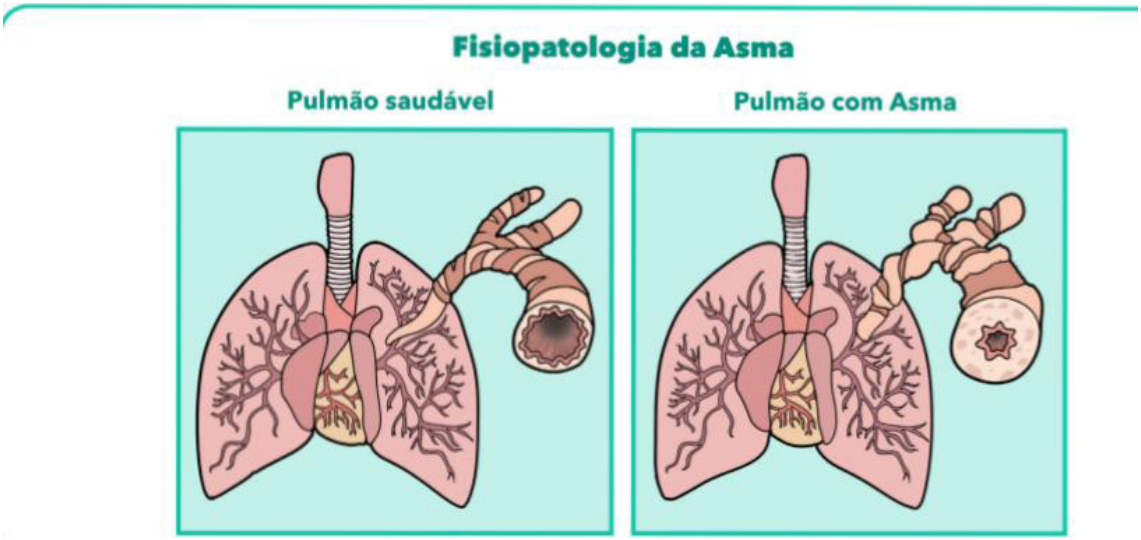


| Attached to the host | Connected to the environment |
|---|---|
| Pathological development | Associated with the triggering of symptoms (“triggers”). |
| Genetic predisposition (genes linked to atopy), age, obesity | Occupational sensitizers, allergens, cigarette smoke, environmental pollution, medications, exercise, climate change. |

The essential milestone observed in asthma is chronic inflammation of the airways characterized by the existence of distinct cells (eosinophils, basophils, mast cells, lymphocytes, macrophages, neutrophils) and cytokines synthesized by them. The immune reaction in asthma is of the Th2 type, the same observed in rhinitis, eczema and also in helminthic infections. Being directly proportional to the asthma endotypes.

When the process begins, an exaggerated bronchoconstrictor reaction to normally non-harmful stimuli is triggered, determining episodes of disease symptoms, reversible spontaneously or with treatment.

Bronchial narrowing results not only from**smooth muscle contraction** , but also the**mucosal edema** and from**mucus hypersecretion** .




In conditions in which the inflammatory process is not controlled and is perpetuated, a vicious cycle of injury and repair is established, which can trigger the**airway remodeling**(irreversible) with interstitial deposition of collagen in the basement membrane. Therefore, we can find the persistence of clinical and functional anomalies, such as symptoms, airflow limitation and bronchoconstriction, even in the absence of a trigger.

The patient who is the victim of a fatal asthma exacerbation presents as the triggering mechanism for death severe and refractory hypoxemia, resulting from the presence of mucus plugs in the airways that impede air flow, composed mainly of eosinophils and desquamated mucous epithelial cells in great number. Characteristic compounds seen at necropsy in these patients include Charcot-Leyden crystals (coalescence of free eosinophilic granules), Creola bodies (clusters of mucous epithelial cells), and Curschmann spirals (bronchiolar mucus casts). There is also edema of the mucosa and submucosa, with the presence of local inflammatory infiltrate.



| |
|---|
| Airway inflammation |
| Airway hyperactivity |
| Reduction in airway caliber |
| Airway remodeling |

The phenotype of a disorder describes the clinically observable common attributes, without necessarily having a direct relationship with the underlying pathophysiology. The classification into phenotypes describes the clinical manifestations, the triggering of crises, the triggers and the reaction to treatment.

**Table 1:**

| Phenotypes of asthma | Allergic Asthma | Non-allergic asthma | Late-onset asthma | Asthma with limited tion fixed to airflow | Asthma and obesity ity |
|---|---|---|---|---|---|
| | • More phenotype frequent<br>• Generally, begins at infancy, with history feet- sunny or family- liar in rhinitis allergic, ecze- ma and allergy to food/me- tips;<br>• Examination of the sputum induced of the reveals fre- hot and a predominance eo-nance Sinophiles;<br>• Patients you usually respond well to corticosteroids inhaled roids rivers (ICs). | • No it presents stigmata of act- sink;<br>• Induced sputum examination may be neutrophilic lic, eosinophilic or contain only some cells inflammatory;<br>• Patients often have lowest response to ICs. | • Adult-onset asthma, more common in women<br>• Generally, no signs of atopy<br>• Patients often require require higher doses of ICs or are relatively refractory rivers to them. | • Patients with disease of long duration and likely remodeling of airway wall<br>• Often, have low response to ICs. | • Patients obese with symptoms breathe prominent ractories nentes<br>• Present little sign of eositic inflammation nophilic<br>• Often you, have smaller response to Cis. |

Endotypes address consistent pathophysiological characteristics, such as metabolic, inflammatory, immunological and remodeling pathways, involved in the pathogenesis of the disease.

| Asthma endotypes | High Th2 inflammation | Low Th2 inflammation |
|---|---|---|
| | • Generally, they present with early-onset, more severe asthma, associated with atopy/IgE and airway and systemic eosinophilia;<br>• They tend to be responsive to corticosteroids and drugs that inhibit Th2 inflammation. | • Generally, they present late-onset asthma, with absence of airway and systemic eosinophilia;<br>• Decreased responsiveness to corticosteroids. They do not respond to drugs that inhibit Th2 inflammation. |

**Clinical condition**

Asthma classically manifests itself with recurrent episodes of**wheezing**,**dyspnea**,**chest oppression**It is **cough**, especially at night or in the morning, upon awakening, with its severity varying throughout the day and time (weeks, months, years). Do not forget that the majority of asthmatic patients have other atopic manifestations, especially allergic rhinitis. An essential characteristic is the improvement of symptoms, spontaneously or through the use of specific medications, such as bronchodilators and/or inhaled or systemic corticosteroids. Furthermore, during the intercritical period, the patient is generally asymptomatic or oligosymptomatic, although, in severe and/or prolonged appearances of the disease, symptoms may be continuous. Therefore, it is essential to characterize the frequency, intensity and time of onset of symptoms (daily, weekly, nighttime causing awakening, when exercising). It is also essential to evaluate precipitating or aggravating factors, use of medications to relieve symptoms, medications to control the disease, previous treatments, previous exacerbations and requested treatments, presence of comorbidities and family history, presence or absence of changes on physical examination It is directly related to the existence of airflow obstruction, that is, whether the patient is in the intercritical period – generally asymptomatic – or in exacerbation.

The main finding is the**wheezing**, which vary depending on the severity of the obstruction. Initially, they are audible only during forced exhalation; subsequently, they are audible on unforced expiration; and, finally, in the most seriously ill patients, they can be audible during inspiration and expiration. In extreme obstructions, wheezing disappears together with the vesicular sound, characterizing the "**silent chest**" Other changes on physical examination include tachypnea, prolonged expiratory time and presence of retractions, depending on the severity of the clinical presentation.

## TRIGGERING FACTORS OF NAASMA SYMPTOMS

• Environmental or occupational allergens: pollens, fungi, dust mites, animal dander, fabric fibers

• Exposure to irritants: smoke, air pollution, aerosols

• Drugs: aspirin, non-steroidal anti-inflammatory drugs, beta blockers

• Climate changes, exposure to cold air, emotional changes and exercise.

**Complementary exams**

Asthma is characterized by the presence of variable limitation to expiratory flow, partially or totally reversible, and its functional assessment is carried out mainly through spirometry and aims to confirm the diagnosis, document the severity of bronchoconstriction and monitor the course of the disease and the changes arising from the treatment.



Classically, it presents as an obstructive ventilation disorder (OVD), characterized by a reduction in forced expiratory flows and volumes (FEV1/FVC < 0.70 or less than the lower limit of regular) and related to increased airway resistance. Furthermore, another striking characteristic of the disease is the existence of total or partial reversibility of airflow limitation, which is identified on spirometry through a positive bronchodilator response, with an increase in FEV1 of 200 mL (absolute) and 12 % (percentage of baseline) when comparing pre-bronchodilator and post-bronchodilator values.

The main aim of managing asthma patients is to obtain and maintain pathological control, which includes controlling current symptoms and preventing or minimizing predictors of unfavorable outcomes of the disease, inflammation of the airways and, possibly, worsening quality of life. life.

Non-pharmacological management covers general and specific environmental control guidelines to mitigate home and occupational exposure to triggers that trigger asthma symptoms.

Therefore, patients must be educated regarding the character and evolution of the disease, the early recognition of exacerbations and the appropriate and correct use of inhaler devices prescribed in the treatment.

Asthma control can be measured using several instruments validated and adapted for Brazil. The GINA scale, as it is more simplified, is the most used today. Classifies the disease into three levels – controlled asthma, partially controlled asthma and uncontrolled asthma – assessed in relation to the last four weeks.

| Parâmetros | Controlada (todos abaixo) | Parcialmente controlada (1 ou 2 destes) | Não controlada (3 ou mais destes) |
|---|---|---|---|
| Sintomas diurnos | Nenhum ou ≤ 2/semana | 3 ou mais/semana | 3 ou mais/semana |
| Limitações de atividades | Nenhuma | Qualquer | Qualquer |
| Despertares noturnos | Nenhum | Qualquer | Qualquer |
| Medicação de alívio | Nenhum ou ≤ 2/semana | 3 ou mais/semana | 3 ou mais/semana |

Regardless of whether symptoms are controlled, asthma should be considered uncontrolled if there is a history of exacerbation in the last 4 weeks. Some of the main risk factors for exacerbations are: uncontrolled asthma, inadequate use or non-prescription of inhaled corticosteroids, FEV1 < 60% of predicted, frequent use of rescue bronchodilators, pregnancy, smoking or occupational exposure, previous intubation or admission to a UTI and at least one severe exacerbation in the last 12 months.

Asthma severity refers to the minimum amount of treatment necessary to maintain control of the disease and can only be assessed retrospectively, generally after 12 months of treatment/follow-up of the patient, and after excluding important causes of lack of control, such as untreated comorbidities, incorrect use of the inhalation device and non-adherence to therapy.

## DRUGS USED IN THE TREATMENT OF ASTHMA

1. Medications**control**: inhaled corticosteroids (ICS) associated with long-acting beta2-agonists or long-acting beta2-agonists (LABA), such as**formoterol**,**montelukast**,**tiotropium**It is**theophylline** (less and less used).
2. Medications**relief**or**rescue**: CI + formoterol on demand, short-acting beta2-agonist or short-acting beta2-agonist (SABA), such as**salbutamol**It is**fenoterol**.
3. Additional medications:**omalizumab**(anti-IgE monoclonal antibody indicated for severe allergic asthma), **mepolizumab**(anti-IL-5 monoclonal antibody indicated in severe eosinophilic asthma), low-dose oral corticosteroids and azithromycin (controversial).

The drug treatment of asthma is divided into five steps, with the patient allocated to a

these steps according to the current treatment and your level of control. The patient's stage of asthma treatment must be assessed at every consultation and adjusted according to the changes that occur dynamically (step-up or step-down)

The mainstay of bronchial asthma treatment is inhaled corticosteroids, which is why this medication should be started early after diagnosis.

Although we often start treating the disease according to severity criteria (previously used, but no longer in use), it is important to highlight that maintenance must be based fundamentally on the state of control of the disease and that inhaled corticosteroids (ICS ) are the drugs of first choice for the treatment of asthma at all stages of the disease.

**MANAGEMENT OF DAASMA EXACERBATION**

Asthma exacerbation/crisis can be treated at three levels of care:

• By the patient himself or with the help of caregivers, in a home environment, which requires engagement and instruction;

• In an outpatient setting and/or in primary health care;

• In the urgency and emergency department, in the in-hospital context. The objective of treatment is the rapid improvement of airflow obstruction and hypoxemia, thus controlling the pathophysiological inflammatory pathway and preventing relapses.

The mainstay of pharmacological treatment for exacerbation of bronchial asthma is the bronchodilator.

Situations in which transfer to an urgent/emergency service is necessary:

• Dyspnea at rest

• Somnolence

• Confusion or agitation

• Inability to complete sentences

• Respiratory rate greater than 30 breaths per minute

• Heart rate greater than 120 beats per minute

• Pulse oximetry with peripheral oxygen saturation < 90% peak expiratory flow less than or equal to 50% of the predicted or personal best result, or patient unable to achieve peak expiratory flow.



Therefore, after adequate risk stratification, the main initial therapy consists of administration of repeated doses of SABA, early introduction of systemic corticosteroid therapy and control of supplemental oxygen therapy, if the patient has an indication. For mild and moderate exacerbation, we should repeatedly administer inhaled SABA (4-10 puffs every 20 minutes for the first hour). After the first hour, the dose varies from 4-10 puffs every 3-4 hours to 6-10 puffs every 1-2 hours.

Short-acting muscarinic antagonist or SAMA (short-acting muscarinic antagonist), especially ipratropium bromide, has the potential to reduce exacerbations in patients with moderate exacerbations. Systemic corticosteroid therapy should be initiated and the drug of choice is prednisolone 1 mg/kg day or a dose equivalent to 50 mg/day for 5 to 7 days. For patients with initial treatment failure and persistent hypoxemia, magnesium sulfate can be administered.

**Conclusion**

Given the information covered in this study, it can be clarified that asthma is a chronic inflammatory disease characterized by respiratory symptoms, limitation of flow in the airways and bronchial hyperresponsiveness. Some cases may result in irreversible damage to the respiratory site, which may lead to chronic functional loss of respiratory capacity. Tests are available to detect the disease early and conduct therapy, according to the classification of severity and response to treatment. This therapy is conducted according to the stratification of the patient's clinical condition, that is, if patients are in an asthma attack, those at the level (mild, moderate and severe). Therefore, the importance of inhaled corticosteroids, associated with a beta-02 agonist, is highlighted. However, it is essential to carry out more in-depth research in order to generate more knowledge and advances for a better pathological prognosis.

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