



“Asthma: A Comprehensive Outlook”

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1) ABSTRACT:

Asthma is most commonly found disease in humans. It generally causes due to chronic inflammation of airways. Automatically or medically it is slightly reversible. Asthma is more common in childrens and adults, also it affects nearby 3-5% of US population. Flight route obstruction probably due to smooth muscles in wall of bronchi and bronchioles, increased secretion of mucus, and damage to airway epithelium. Now various products are available there in market to treat asthma, also asthma can be treated by patient himself by taking self care like preventing antigen exposure, to reduce inflammation and dysfunction, should the use of certain medications to dilate the narrowed bronchi. This review document is all about the pathophysiological approaches with respect to asthma management.

Keywords:

Asthama, inflammation, airways, disease, bronchioles, breathing.

2) INTRODUCTION:

It is described as an incurable inflammatory disease of flight paths in which multiple cells and cellular components are involved, this term was given by ‘Global initiative of Asthma’. Chronic inflammation has association with hyper way respiratory response leading to recurrent episodes of respiration, shortness of breath, chest tightness and cough especially at early in the morning or night. grain allergen such as pollen, house dust mites, fungi, or food causes asthma, also the most common causes of asthma attacks are emotional breakdowns, aspirin, sulfiting agents, exercise, and breathing cold air or cigarettes smoke. In the first phase or acute phase response, smooth

muscle spasms are accompanied excess mucus fluid can block bronchi and bronchioles and make it harder to attack. Asthma is a chronic disease of the lungs it burns and reduces the airways. Some are common symptoms like whistle sound when breathing, chest tightness, lack of shortness of breath, and cough. Sometimes coughing often occurs late at night or very early in the morning. Asthma affects people of all ages, but it usually starts during time in childhood. There are over 25 million of people are known to have asthma in United States, about 7 million of these people are children.

Aim:

The primary aim is to control asthma symptoms and reduce the frequency of flare-ups, ensuring patients can live active and fulfilling lives. Asthma management is not a "one-size-fits-all" approach; it is individualized based on the severity and type of asthma, as well as the patient's lifestyle and preferences.

Objectives:

- Control of Symptoms
- Prevention of Asthma Exacerbations
- Maintenance of Normal Lung Function
- Minimization of Medication Side Effects
- Improvement of Quality of Life

Plan of work:-

1.Literature review and data collection:

To gather and review existing literature on Neffy to inform the review's content.

2.Structuring and outlining the review:

To organize the review into clear, logical sections for ease of writing and readability.

3.Writing the review:

To write the review based on the gathered data and structured outline.

4.Review and editing:

To ensure the quality, accuracy, and clarity of the review before final submission.

5.Submission and Dissemination:

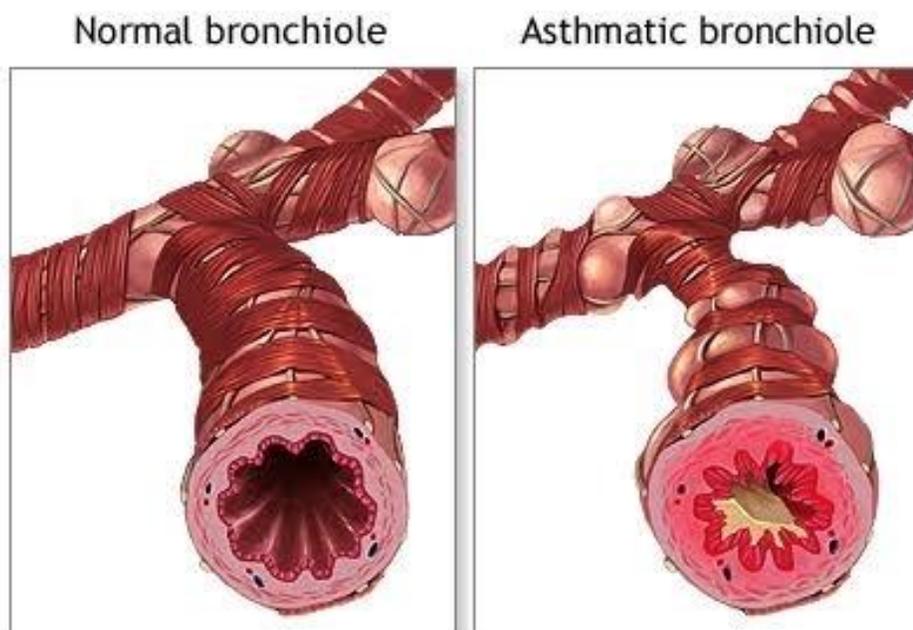
To submit the review to a relevant academic journal or online platform for publication and dissemination.

3) DEFINITION:

Asthma is defined as the chronic inflammatory disease of airways. The chronic inflammation is associated with hyper responsiveness of airways (means an exaggerated airways narrowing response to allergens and exercise) and that further leads to symptoms such as dyspnea, wheezing, chest, tightness, and coughing.

4) WHO DEFINITION:

Asthma is chronic disease characterised by recurrent attacks of breathlessness and wheezing, sleeplessness, daytime, fatigue, reduced activity which vary in severity and frequency from person to person symptoms may occur several times in a day or week in affected individuals.

Figure 1:**5) VISION:**

Asthma has no exact cure, although patient feels good, he can be still sick and can become arrogant anytime. However, with modern knowledge, most people with asthma are able to control the disease. People with symptoms can live a normal, active life too. They can sleep all night without interruption from asthma. If a person has asthma, they can take a significant role in the management of the disease. Because of effective, complete, and continuous treatment, building strong relationships with doctors and other health care providers.

6) CAUSES:

Asthma is an incurable disease of the respiratory system of lungs. Asthma can be in one's lung sometimes it can be felt sometimes not. Asthma doesn't go away far, but right treatment can keep it under control.

Asthma have two main causes

A) Spiritual prevention-

This is first cause of the asthma, this can feel like tightness in chest. All the muscles around the airways of lungs squeezes together or tighten. This reinforcement is called as "bronchoconstriction," and it can make it harder to breathe.

B) Inflammation-

This is another cause of asthma, maybe patient doesn't notice it. If patient has it asthma, lung airways constantly keeps burning, and airways become more swollen and irritated when the symptoms of asthma get worse. Inflammation do reduce the amount of air a person can enter or breathe out. In some cases, it is too big produces mucus, which further disrupts the planes. Sometimes inflammation can block the airways also, which can lead to shortness of breath, cough, chest tightness, or shortness of breath respiratory - becomes normal feelings for patient. And in case of patient with asthma, airways can be burned even if they have no symptoms.

7. PATHOPHYSIOLOGY:

The pathophysiology of asthma generally involves many complex interactions between genetic, environmental, and immunological factors. Here are some of the key elements involved in the pathophysiology of asthma:

A) Airway Inflammation

The underlying cause of asthma is the chronic inflammation of the airways. This inflammation is caused by various immune cells, such as mast cells, eosinophils, T lymphocytes, and dendritic cells. The inflammation leads to the release of cytokines, chemokines, and some other inflammatory mediators, which are responsible for the narrowing of the airways.

B) AHR

Patients with asthma have airways which are more sensitive as well as responsive to triggers like as allergens, irritants, cold air, exercise, and respiratory infections. When person exposed to these triggers, the airways constrict more quickly, causing to symptoms of asthma.

C) Bronchoconstriction

The inflammation and also increased sensitivity of the airways causes contraction of the smooth muscles surrounding the airway walls. This contraction results in broncho constriction, causing the airways to narrow and make it difficult for air to pass through.

D) Mucus Production

In asthma, overproduction of mucus takes place by the goblet cells in the airway lining. The excessive mucus later obstructs the airways and contributes to the characteristic symptoms of

asthma. Generally pathophysiology of asthma can vary between individuals, and asthma is a heterogeneous condition with different phenotypes and underlying mechanisms. The understanding of these mechanisms has began the development of various treatment approaches targeting specific aspects of the disease, that includes anti-inflammatory medications, bronchodilators, and immunomodulatory therapies.

8. TYPES:

There are various types of asthma

1) Addictive Asthma

Asthma allergy is generally caused by overdose to allergens such as pollen or pet dander. If patient has asthma, allergies, and personality or family history of allergies, such as allergen rhinitis or hay fever, or eczema (skin a problem that leads to righteousness, a red rash, and sometimes small blisters). Remember that the form of asthma allergy is called as annual asthma, Means it usually affects people in the spring or early spring. For example, a person may be diagnosed with asthma worse in spring when there is an increase in blooming flowers, and some find that their asthma is really worse in late summer or early fall due to ragweed or meld from the leaves of trees.

2) Insignificant Asthma

Asthma can be made worse with annoying things in the air, like cigarettes smoke, wood smoke, perfume deodorizers, pine fragrance, new paint, house cleaning products, cooking fragrance, perfume, and outdoor air pollution. People with non-allergic asthma may have the same symptoms as those with an allergen asthma, but they are not bothered by allergens from the natural world such as pollen or fungi. Other underlying causes of asthma include respiratory diseases, such as the common cold, fever, or disease of sin, and exercise, cold air, sudden changes in air temperature, and even gastro oesophageal reflux (heartburn).

3) Night Asthma

Night asthma refers to asthma symptoms that seems very bad in the middle of the night, usually between 2 AM and 4 AM. Interestingly, nocturnal asthma can affect anyone with any type of asthma. Factors that can cause asthma symptoms of night-time worsening may include sinus infection or postnasal drip caused by allergens such as dust worms or pet dander. A body clock is possible and play a role. The body produces some adrenaline and corticosteroids, which help to protect against it asthma. The levels of these two items are very low between midnight and 4AM, which makes it so they are more likely to experience symptoms between this times.

4) Pregnancy Asthma

Among pregnant patients with asthma, one- Thirdly they will find improvement in their plans for asthma, one-third will remain stable, and one- Third, they will deal with asthma. Improved asthma control during pregnancy is a thing associated with lower pregnancyrelated rates problems.

5) Chest at Work

Asthma at work means asthma i.e., newly discovered and it is generally caused by exposure tub substance (chemicals or animal proteins, because example) at work. If person can reduce exposure to these causes, it'll help reducing the symptoms of asthma. Keep that in mind, Asthma does not refer to humans it has already been diagnosed that you have more asthma it tends to explode when exposed to irritating dust or smoke in the workplace.

6) smoking

Cigarette smoke usually makes asthma harder to irritate airways and make them shrink, Smoking in adults with asthma is in association with a rapid decrease in lung capacity performance, increased symptoms of stiffness and stiffness of the frequency of further attacks in a non-invasive response to inhaled corticosteroids. Although the studies are limited to most people of asthma patients have not yet been performed, smoking cessation obviously has certain numbers significant health benefits that may be the most important for four patients existing respiratory disease. So that the appropriate counselling should be given to everyone patients with asthma smoking and medical conditions such as nicotine alternative treatment may work.

9. CLASSIFICATION OF ASTHMA:

A) Intermittent Asthma-

Symptoms appears less than twice a week, and night time signs and symptoms appears much less than twice a month.

B) Moderate Persistent Asthma-

Symptoms appears daily, and night time signs and symptoms appears extra than as soon as a week.

C) Severe Persistent Asthma-

Symptoms arise at some point of the day, and night time signs and symptoms arise very frequently.

D) Allergic asthma-

Triggered with the aid of using publicity to allergens which includes pollen, dirt mites, or puppy dander, etc .

E) Non-allergic Asthma-

This asthma is brought on with the aid of using irritants which includes bloodless air, smoke, or exercise.

F) Exercise-Promoted Asthma –

This type of asthma is triggered with the aid of using body activity, specifically in bloodless or dry environments.

10. ASTHAMA SYMPTOMS:

A) Explosion:

The sound of a whistle is often heard when person breath.

B) Coughing:

Coughing may not go away and it happens often and sometimes worse at night.

C) Chest tightness:

Patient feels like there is a cord pull tightly and tightly around the chest.

D) Shortness of Breath:

Patient can feel like he can't breathe properly, when he tries to get some air in, it feels like there's something obstacle to air to pass in. And can't get enough air inside chest.

11. DIAGNOSIS:

The diagnosis of the asthma includes combination of clinical evaluation, medical history, and diagnostic tests. There are some main components of diagnosing asthma that are

A)Medical History

The doctor start diagnosis by taking a detailed medical history, knowing information about symptoms, their time frequency, triggers, also response to treatments. They will also inquire about family history of asthma or other allergic conditions.

B) Physical Examination

A physical examination will be taken to assess respiratory function and look for symptoms of asthma, such as wheezing, prolonged expiration, and increased respiratory rate and heartbeat

C) Spirometry

Spirometry is a most common diagnostic test used to measure lung function. It involves breathing into a device called a spirometer, which measures the amount of air you can exhale forcefully and the speed at which you can exhale. This test helps determine the presence and severity of airflow limitation, which is a characteristic feature of asthma.

D) Peak Flow Measurement

Peak flow measurement assesses the max speed at which a person can exhale forcefully. It is often performed using a handheld device called a peak flow meter. Regular peak flow measurements can help monitor changes in lung function and assess the effectiveness of asthma treatment.

E) Bronchodilator Response Test

This test is performed after spirometry to measure how much the lung function improves after inhaling a bronchodilator medication, such as albuterol. If significant improvement found in lung function, it shows that the airway constriction is reversible, which is a characteristic feature of asthma.

F) Allergy Testing

Allergy skin tests or blood tests are conducted to identify specific allergens that could be triggering asthma symptoms in some people. Identifying and managing that triggers can help improve asthma control.

G) Additional Tests

In many cases, additional tests may be performed to eliminate other conditions that may present with similar symptoms, such as chest X-rays, pulmonary function tests and methacholine challenge tests. It's worth noting that asthma is a complex condition, and the diagnosis may require multiple visits to the healthcare provider, especially when symptoms are intermittent or the initial evaluation is inconclusive. It is important to consult with a qualified healthcare professional for an accurate diagnosis and appropriate management of asthma.

12. REMEDIES FOR ASTHAMA:

A) Ginger

Ginger is a well known natural remedy for a variety of deceases including asthma. Some researchers have found that it helps to reduce inflammation and prevent airway obstruction cut. Also, some studies have shown that it contains nutrients that can increase muscle mass relaxing effects of certain asthma medications.

Figure 2: Ginger



B) Mustard Oil

When patient have asthma, massage with mustard oil can help. clarifies breathing passing and retrieving normal breathing. It is widely used medicine in case of asthma, It is easy and sorted type of medication.

Figure 3: Mustard Oil



C) Figs

The nutritional properties of figs promote respiratory health and help release phlegm as well reducing respiratory difficulty often. They are rich in fibre and other essential minerals like manganese, calcium, magnesium, copper, potassium, and vitamins K. Dried figs are more beneficial than fresh ones and it is highly recommended to asthma patients to be consumed on an empty stomach.

Figure 4: Figs



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D) Garlic

The following garlic solution can help clear lung congestion. •Boil two or three cloves in one quarter cup of milk, Let it cool to room temperature and drink. Because asthma is an inflammatory disease, garlic, maybe able to help to relieve your symptoms. For 2019 study found that garlic extract significantly reduced the number of inflammatory cells and white blood cells called eosinophils in laboratory mice.

Figure 5: Garlic



E) Coffee

Regular caffeine in coffee can help control asthma attacks because it acts as bronchodilator. Hot coffee helps to relax and clear airways to help you breathe more easily. The stronger coffee gives the better result. But avoid to drink more than three cups of tea black coffee a day. If patient does not like coffee, he can choose a cup of hot black tea. caffeine can't be used as a standard treatment however.

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Figure 6: Coffee**E) Eucalyptus oil**

Pure eucalyptus oil can be effective treatment for asthma symptoms. The most potent properties Research has shown that it contains a eucalyptol chemical which can help to isolate mucus. It may be possible to help relieve respiratory conditions by inhaling steam with added eucalyptus oil. The oil reacts with mucous membranes, not only reducing mucus but helping loosen it so that you can cough it up.

Figure 7: Eucalyptus Oil**F) Honey**

Honey is one of the oldest and best treatments for asthma. Alcohol and ethereal oil in honey can help to reduce asthma symptoms. Just inhaling the scent of bees produces a good results to other people. Patient can also add one teaspoon of honey to a glass of hot water too drink it, at least three times a day. One of the hallmark features of asthma is bronchoconstriction, where the muscles surrounding the airways tighten, leading to breathing difficulties. Many research

suggests that honey may have bronchodilator properties, which can help relax the airway muscles and improve airflow.

Figure 8: Honey



13. MEDICATIONS:

The right medicine for patient depends on many things like age, symptoms, asthma type, also what works best to keep your asthma under control.

A) LONG-TERM ASTHMA CONTROL MEDICATIONS:

Medicines that commonly taken daily, it is the cornerstone of the asthma treatment room. These treatments are for ongoing asthma and managed daily and make it less likely to develop to reduce asthma attacks. Types of long-term control medications include:

a) Leukotriene changes

These oral medications - including montelukast (Singular), zafirlukast (Accolate) and zileuton (Zyflo) - helps to reduce asthma symptoms by up to 24 hours. In some rare cases, these drugs are directly linked to mental responses, like anxiety, anger, insanity, depression and suicidal thoughts. Seek medical advice immediately for anything unusual reaction.

b) Absorption corticosteroids

These anti-inflammatory drugs include fluticasone (Flense, Fluent HFA), budesonide (Pulmicort Flex haler, Raincoat), flunisolide (Aerospan HFA), ciclesonide (Alvesco, Omnaris, Zetonna), clomethasone (Qnasl, Qvar), mometasone (Asmanex) and fluticasone furoate (Arnuity Ellipta). Person may need to use this medication a few days to weeks in advance so they achieve their maximum profit. Unlike oral corticosteroids, these are corticosteroids the drugs have a lower risk of side effects and are usually safer for a long-time use.

c) Beta agonists are long-acting

These inhaled medicines, including salmeterol (Serevent) and formoterol (Foradil, Perforomist), that open airways. Some studies suggest that it may increase the risk of severe asthma attacks, so take only in combination with a slow corticosteroid. And because these medications can mask asthma, so do not use in case of acute asthma

d) Combined inhalers

These drugs - such as fluticasone-salmeterol (Advair Diskus), budesonide-formoterol (Symbicort) and formoterol-mometasone (Dulera) – contains a long acting beta agonist and corticosteroid. Because these inhalers are compounding, they contain long-acting agonists, and can increase your risk of developing severe asthma attacks.

e) Theophylline

Theophylline (Theo-24, Elixophyllin, others) a single pill daily can help to keep airways open (bronchodilator) by relaxing the muscles around the airways. It is not used as often now as it used to be years ago.

f) Emergency medicine (recovery)

This is mainly used necessarily to reduce the immediate, temporary symptoms of asthma or sometimes before exercising if doctor recommends it.

Types of emergency medicine include:

Beta agonists are temporarily active- These inhaled, fast-acting bronchodilators and work within minutes to reduce symptoms quickly during asthma attacks. Includes albuterol (ProAir HFA, Ventolin HFA, as well levalbuterol (Xopenex). Short-acting beta agonists can be taken using a portable, hand-held device inhaler or nebulizer - a machine that can convert asthma drugs into fine mist – so that they may be inspired a mask or a mouth.

14. FUTURE TREATMENT OPTIONS:

This generally includes the use of agents such as anti-I.e., monoclonal antibody. Extreme sensitivity type 1 immunoglobulin, I.e., plays an very important role in the development of autoimmune diseases atopic studies, and especially asthma. Its pressure is therefore the goal set for the asthma management. Anticolonial anti-Iguanid, omalizumab, blocking I.e., interactions with cell molecules and basophils, improved. This agent is provided as underground injection at doses called serum levels of I.e., resulting in signal acquisition control in a series of patients with the effect of the fewer, and also larger growths reduction of absorbed corticosteroid doses without any significant adverse effects. This is an important future treatment for the patients with asthma attacks. Monoclonal development antibodies to interleukin-5 are widely accepted. This is based on principle that eosinophils are not a response cell for inflammation of the asthma. The inhibition of

cytokine interleukin-5, is responsible for the maturation and release of this a group of cells in bone marrow represents an another possible treatment. This shows that human monoclonal antibody anti-interleukin-5 antibody SB240563 has been able to reducing the sputum of the eosinophilia after an allergen challenge while given intravenously, however without affecting the collapse of the first orate on FEV 1, or on the airway response.

15. CONCLUSION:

Most people find that the allergies to food or medications cause asthma symptoms. If one has been plagued by flare-ups, lo and behold what he eats and drinks, and whatever the medications you may be taking. Asthma generally affects 3– 5% of the U.S. population and most frequently children rather than adults. Flight ban is possible be due to the smooth muscles in the walls of the bronchi and small bronchioles, enema of mucosa of airways, mucus enlarged f luid, or damage to the epithelium of the way of the spirit. There are now so many daily products in the market, that are available to treat asthma and major stroke to treat this disease the patient must protect you from antigen exposure, bronchial reduction inflammation and hyperactivity, should use some drugs to stretch the bronchi reduced. In addition to the recent advances in understanding the pathophysiology and objectives of asthma treatment interventions, the use of sour corticosteroids is still good way and option for the treatment of chronic asthma. Steroids are mainly effective in promoting eosinophilic inflammation of the airways, lung function and control of asthma symptoms in many patients. However, some patients will still need additional treatment for asthma.

16. REFERENCES

- [1] Lugogo, N., Que, L.G., Fertel, D., Kraft, M., 2010. Asthma. In: Mason, R.J., Broaddus, V.C., Martin, T.R., (Ed.) Murray & Nadel's Textbook of Respiratory Medicine. Saunders Elsevier, Philadelphia. 5th Edn. pp. 258- 267.
- [2] Brozek, J.L., Bousquet, J., Baena-Cagnani, C.E., Bonini, S., Canonica, G.W., Casale, T.B., 2010. Allergic Rhinitis and its Impact on Asthma (ARIA) guidelines: 2010 revision. J. Allergy Clin. Immunol. 126(3), 466-76.
- [3] National Asthma Education and Prevention Program Expert Panel Report 3: Guidelines for the Diagnosis and Management of Asthma. Rockville, MD. National Heart, Lung, and Blood Institute, US Dept. of Health and Human Services, 2007. NIH publication 08-4051.
- [4] .MimsJW. Asthma: Definitions and pathophysiology. Int Forum Allergy Rhinol. 2015;5(May):S 2 S6.doi:10.1002/alr.21609
- [5]. Classification of asthma. URL: <http://www.familyallergy.com/diseases/classification.asp>.
- [6] Classification of asthma by National Asthma Education and Prevention URL: <http://www.Aafp.org>.
- [7] Wechsler, M.E., 2009. Managing asthma in primary care: putting new guideline recommendations into context. Mayo Clin. Proc. 84, 707-717.
- [8] Fanta, C.H., 2009. Asthma. N. Engl. J. Med. 360, 1002-1014.

[9] www.asthma.com/learn/index.html.

[10] <http://www.newindianexpress.com/magazine/Asthma-The-Pollution-Contagion/2015/01/31/article2642766.ece> .

[11] <https://www.slideshare.net/mobile/MohdHanafi1/asthma-6038704>.

[12] <https://en.m.wikipedia.org/wiki/Asthma>.

[13] <http://acaai.org/asthma/symptoms/asthma-attack>.

[14] <https://www.slideshare.net/mobile/NAMDEOSHINDE15/asthmappt-17224469>.

[15] <http://www.mayoclinic.org/diseasesconditions/asthma/basics/treatment/con20026992>

[16] <http://www.top10homeremedies.com/homeremedies/homeremedies-for-asthma.html>.

[17] http://www.dailymail.co.uk/health/article2508874/New-hope-asthma-sufferers_scientistsgee-triggers-condition.html

