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Treatment Of Asthma

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***Abstract*—Asthma is one of the most common respiratory problems in modern industrialized countries, affecting over 5% of the population. It affects all age groups from infants to senior citizens, and mortality rates from asthma appear to be increasing during the past few years in the United States as well as in other industrialized countries. Asthma tends to occur in families, associated with other allergic disease, and may be induced by a wide variety of environmental antigens, most commonly inhaled allergens such as pollen and dust. Bronchial challenge with a specific allergen results in an early bronchospastic response with a relatively brief duration, and in a significant number of patients there is a late response with onset after 3 to 4 hours, lasting hours to days. This late response is associated with a bronchial hypersensitivity reaction, which is demonstrable by nonspecific challenge testing in the laboratory. During the period of bronchial hyperresponsiveness patients are prone to develop attacks following exposure to a wide variety of "triggers," including cold air, fumes, or cigarette smoke. The current approach to management of patients with asthma emphasizes prevention, with avoidance of specific allergens when possible, and chronic use of anti-inflammatory agents including corticosteroids and cromolyn sodium. The goal is to decrease the bronchial hyperresponsiveness. Management of the acute asthma attack consists of bronchodilator therapy, primarily with inhaled beta-adrenergic agonists, and administration of oral or systemic corticosteroids if the attack is not rapidly relieved.**

INTRODUCTION

Asthma

Asthma is an inflammatory disease of the airways associated with episodes of reversible over-reactivity of the airway smooth muscle.According to WHO,Asthma attacks all age groups but often starts in childhood.

A Belgian researcher, Jean Baptiste Van Helmont in around 1700 AD, mentioned that asthma began in ‑the pipes of the lungs‖. Bernardino Ramazzini was the first to discover a relationship between asthma and dust, and identified ‑exercise-induced asthma‖.

The Aztecs used ephedra for mucus clearance in Central America [(1)]Asthma is a disease characterized by recurrent attacks of breathlessness and wheezing, which vary in severity and frequency from person to person.In an individual, they may occur from hour to hour and day to day.

Asthma is one of the most common chronic diseases of childhood, affecting more than 6 million children. Asthma is a chronic inflammatory lung disease that can cause repeated episodes of cough, wheezing and breathing difficulty.During an acute asthma episode, the airway lining in the lungs becomes inflamed and swollen. In addition, mucus production occurs in the airway and muscles surrounding the airway spasm. Combined, these cause a reduction in air flow.Inflammation and narrowing of the small airways in the lungs cause asthma symptoms, which can be any combination of cough, wheeze, shortness of breath and chest tightness. • Asthmais a long-term condition affecting children and adults. The air passages in the lungs become narrowdue to inflammation and tightening of the muscles around the small airways. This causes asthma symptoms such as cough, wheeze, shortness of breath and chest tightness These symptoms are intermittent and are often worse at night or during exercise. Other common triggers can make asthma symptoms worse. Triggers vary from person to person, but can include viral infections (colds), dust, smoke, fumes, changes in the weather, grass and tree pollen, animal fur and feathers, strong soaps and perfume.[(2)]

Asthma is one of the most common chronic inflammatory disorders. Its prevalence varies worldwide between 5% and more than 20%. It isn’t clear why some people get asthma and others don’t, but it’s probably due to a combination of environmental and genetic factors. Asthma affects all ages: it is the most common chronic disease of childhood, adolescence and adulthood and has large effects on school and work performance of patients.

Asthma is a serious challenge to public health. There is no cure and many patients remain uncontrolled despite available treatment. Combined efforts in public health, basic and clinical research are needed to fight this highly prevalent and increasing disease.

Asthma is a common chronic disorder of the airways

that is complex and characterized by variable and recurring symptoms, airflow obstruction, bronchial hyper responsiveness, and an underlying inflammation. The interaction of these features of asthma determines the clinical manifestations and severity of asthma and the response to treatment.(3)

HISTORY OF ASTHMA

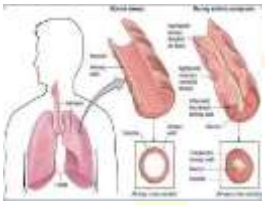
Asthma has a long history of evolution before it was categorically defined. The earliest mention of respiratory distress and wheezing (the occurrence of a whistling sound while breathing) has been found in 2600 BC in China.(4)

The word ‑asthma‖ originates from the Greek meaning short of breath, meaning that any patient with breathlessness was asthmatic. The term was refined in the latter part of the 19th Century with the publication of a treatise by Henry Hyde Salter entitled ‑On Asthma and its Treatment.

In 100 AD, a Greek physician, Aretaeus of Cappadocia, listed the symptoms of asthma, including cough, difficulty in breathing, tiredness, and heaviness in the chest.

The word "asthma" originates from the Greek meaning short of breath, meaning that any patient with breathlessness was asthmatic. The term was refined in the latter part of the 19th Century with the publication of a treatise by Henry Hyde Salter entitled "On Asthma and its Treatment".

In this scholarly work Salter defined asthma as



"Paroxysmal dyspnoea of a peculiar character with

intervals of healthy respiration between attacks", a description that captures his concept of a disease in which the airways narrow due to contraction of their smooth muscle.

His book contains remarkably accurate illustrations of the airways in asthma and bronchitis as well as the cellular appearance of asthmatic sputum some 30 years before Paul Ehrlich described aniline stains for eosinophils (eosin) and mast cells (toluidine blue).2,3 He also described black coffee as a treatment for asthmatic spasms, a drink with a high content of theobromine, a derivative of theophylline and theophylline itself.(5)

This extraordinary insight into asthma stems from Dr Salter himself suffering from asthma himself. Thus, by the late nineteenth century, physicians adopted the view that asthma was a distinct disease which had a specific set of causes, clinical consequences, and requirements for treatment.

Asthma has been described since ancient times. Hippocrates outlined the symptoms of asthma, before the Roman leader Pliny the Elder linked pollen and breathing difficulties. Figures of history including Beethoven, Dylan Thomas, Marcel Proust and Edith Wharton were said to have lived with asthma.(6)

What Is Asthma

Asthma is a chronic inflammatory disorder of the airways. The chronic inflammation causes an increase in the airway hyper-responsiveness that leads to recurrent episodes of wheezing, breathlessness, chest tightness and cough, particularly at night or early in morning.

Asthma is a condition in which your airways narrow and swell and may produce extra mucus. This can make breathing difficult and trigger coughing, a whistling sound (wheezing) when you breathe out and shortness of breath..

Asthma can be minor or it can interfere with daily activities. In some cases, it may lead to a lifethreatening attack.

Asthma is a major noncommunicable disease (NCD), affecting both children and adults, and is the most common chronic disease among children. Inflammation and narrowing of the small airways in the lungs cause asthma symptoms, which can be any combination of cough, wheeze, shortness of breath and chest

The original concept of asthma being primarily a disease of airways smooth muscle drove the development of bronchodilator drugs

Asthma is a common cronic disorder of the airway that is complex and characterized by variable and recurring symptoms airflow obstruction,bronchial hyperre sponsiveness,and anunderlying inflammation.(7)(8)

TRIGGERINGFACTOR

Asthma triggers:- Your triggers can be very different from those of someone else with asthma. Knowyour triggers and learn how to avoid them. Watch out for an attack when you can’t avoid the triggers. Some of the most common triggers are.(9)

Allergic inhalation

1) Animal
2) pollens
3) House dust

Air pollutants 1)cigarette smoke 2)Oxidents 3)Perfumes

TYPES OF ASTHMA

There are Asthma is broken down into types based on the cause and the severity of symptoms

1. Allergic asthma 2.Non-allergic Asthma 3.Seasonal Asthma 4.Occupational asthma 5.Exercise Induced Asthma

Allergicasthma

Allergic (or atopic) asthma is asthma that's triggered by allergens like pollen, pets and dust mites. About 80% of people with allergic asthma have a related condition like hay fever, eczema or food allergies.

If you have allergic asthma your doctor is likely to prescribe a preventer inhaler to take every day and a reliever inhaler to use when you have asthma symptoms. It's also important to avoid your asthma triggers as much as possible.

An allergy is when the immune system mistakes a harmless substance, such as pollen, as dangerous. The body releases chemicals to attack the substance.

Another Type of asthma caused by the allergens is called allergic asthma.this type of asthma is triggered by allergens such as dust ,dust mites,mold,pollen,cockroaches,or pet dangens.Asit turns out,allergic asthma is the most common subcategory of the condition.[10]

Non-allergic asthma

Non-allergic asthma, or non-atopic asthma, is a type of asthma that isn't related to an allergy trigger like pollen or dust, and is less common than allergic asthma.

The causes are not well understood, but it often develops later in life, and can be more severe.

If you think you have non-allergic asthma, see your GP or asthma nurse, who can help you find the best way to manage your asthma Intrinsic asthma, also known as nonallergic asthma or nonatopic asthma, has a range of triggers, including weather conditions, exercise, infections, and stress.[11]

Non-allergic asthma is caused by the different irritants we encounter in the air like perfume, fresh paint, room deodorizers, wood smoke, and tobacco smoke.

If you notice asthma symptoms that aren't tied to allergens, then there's a chance it could be from an irritant that's in the air.[12]

Seasonal asthma

Some people have asthma that only flares up at certain times of the year, such as during hay fever season, or when it's cold.

While asthma is always a long-term condition, it's possible to be symptom-free when your triggers aren't around.If you've been diagnosed with seasonal asthma or think you have it, speak to your GP orasthma nurse about the best ways to manage it.

Seasonal asthma is exactly that-when asthma symptoms occur during different times of the year. This asthma is often due to the change in weather and can betriggered by different allergens such as trees, weeds, and grasses.

You might, for example, only need to take asthma medicines during the season when your asthmabothers you most, and for a short time afterwards.

Occupational asthma Occupational asthma is asthma that's caused directly by the work you do. You might have occupational asthma if: your asthma symptoms started as an adult and your asthma symptoms improve on the days you're not at work. Occupational asthma is usually a type of allergicasthma .[12]

Occupation Athma

Occupational asthma is a type of asthma. It occurs when you breathe in chemical fumes, gases, dust or other substances on the job. When that happens, it causes an allergic or immunological response.

Many substances in the workplace can trigger asthma symptoms, leading to occupational asthma. The most common triggers are wood dust, grain dust, animal dander, fungi, or chemicals.

Occupational asthma is often a reversible condition, which means the symptoms may disappear when the irritants that caused the asthma are avoided. However, permanent damage can result if theperson experiences prolonged exposure

Factors that increase the risk for developing occupational asthma include existing allergies or asthma, a family history of allergies or asthma, and cigarette smoking. According to the National Institutes ofHealth, the following workers are at increased risk of developing occupational asthma: Bakers [13]

Exercise Induced Asthma

Exercise-induced asthma occurs because of the narrowing of the airways in the lungs during strenuous exercise.Suffering from exercise-induced asthma doesn't mean you can't remain active; just be sure you take the necessary treatment when you exercise.

Exercise-induced asthma is when the airways narrow or squeeze during hard physical activity. It causes shortness of breath, wheezing, coughing, and other symptoms during or after exercise.

The medical term for this condition is exercise-induced bronchoconstriction. Many people with asthma have exercise-induced bronchoconstriction. But people without asthma also can have it.
Most people with exercise-induced bronchoconstriction can continue to exercise and remain active if they treat symptoms. Treatment includes asthma medicines and taking steps to prevent symptoms before physical activity starts.(14)

CAUSES

Causes of Asthma

Airborne allergens, such as pollen, dust mites, mold spores, pet dander or particles ofcockroach waste (15)

Respiratoryinfections, such as the common cold
Physical activity
Cold air
Tobacco Smoke.

Dust Mites.
Outdoor Air Pollution.
Pests
Mold.
Cleaning and Disinfection

Air pollutants and irritants, such as smoke

Certain medications, including beta blockers, aspirin, and nonsteroidal anti-inflammatorydrugs, such as ibuprofen (Advil, Motrin IB, others) and naproxen sodium (Aleve)

Strong emotions and stress

Sulfites and preservatives added to some types of foods andbeverages, including shrimp, dried fruit, processed potatoes, beer and wine

Gastroesophageal reflux disease (GERD), a condition in which stomach acids back up intoyour throat.(16)

SYMPTOMS

Asthma symptoms vary from person to person. You may have infrequent asthma attacks, have symptoms only at certain times such as when exercising or have symptoms all the time.

Asthma signs and symptoms include:-

Shortness of breath

Chest tightness or pain Wheezing

when exhaling, which is a common sign of asthma in children Trouble sleeping caused by shortness of breath.

coughing or wheezing Coughing or wheezing attacks that are worsened by a respiratoryvirus, such as a cold or the flu.

Signs that your asthma is probablyworsening include:

Asthma signs and symptoms that are more frequent and bothersome
Increasing difficulty breathing, as measured with a device used to check how well your lungsare working (peak flow meter)
The need to use a quick-relief inhaler more often (17)

DIAGNOSIS

The main tests used to help diagnose asthma are: FeNO test – you breathe into a machine that measures the level of nitric oxide in your breath, which is a sign of inflammation in your lungs. spirometry – you blow into a machine that measures how fast you can breathe out and how much air you can hold in your lungs.
After you're diagnosed with asthma, you may also have a chest X-ray or allergy tests to see if your symptoms might be triggered by an allergy.
Has the child had an attack or recurrent episode of wheezing (high-pitched whistling sounds when breathing out.
Does the child have a troublesome cough which is particularly worse at night or on waking. Is the child awakened by coughing or difficult breathing
Does the child cough or wheeze after physical activity (like games and exercise) or excessive crying.Does the child experience breathing problems during a particular season.
Inhalers, which are devices that let you breathe in medicine, are the main treatment. Tablets and other treatments may also be needed if your asthma is severe.(18)
The asthma tests used, however, aren't accurate before

5 years of age. For younger children, your doctor will rely on information you and your child provide about symptoms.

Sometimes a diagnosis can't be made until later, after months or even years of observing symptoms. Diagnosing asthma generally includes a medical history, physical exam and lung tests.

An asthma diagnosis is based on several factors, including a detailed medical history, a physicalexam, your symptoms, and overall health and test results.

Physical Exam

Your doctor will perform a physical exam to rule out other possible conditions, such as a respiratory infection or chronic obstructive pulmonary disease (COPD). Your doctor will also ask you questions about your signs and symptoms and about any other health problems.

Test to measure lungs function

You may be given lung function tests to determine how much air moves in and out as you breathe.These tests may include:

Spirometry:-

This test estimates the narrowing of your bronchial tubes by checking how much air you can exhaleafter a deep breath and how fast you can breathe out.

Peak flow:-

A peak flow meter is a simple device that measures how hard you can breathe out. Lower than usualpeak flow readings are a sign that your lungs may not be working as well and that your asthma may be getting worse. Your doctor will give you instructions on how to track and deal with low peak flowreadings.[19]

Additional Tests

Methacholine challenge:-

Methacholine is a known asthma trigger. When inhaled, it will cause your airways to narrow slightly. If you react to the methacholine, you likely have asthma. This test may be used even if yourinitial lung function test is normal.

Imaging tests:-

A chest X-ray can help identify any structural abnormalities or diseases (such as infection) that can cause or aggravate breathing problems.

Allergy testing:-

Allergy tests can be performed by a skin test or blood test. They tell you if you're allergic to pets,dust, mold or pollen. If allergy triggers are identified, your doctor may recommend allergy shots.

Nitric oxide test:-

This test measures the amount of the gas nitric oxide in your breath. When your airways are inflamed — a sign of asthma — you may have higher than normal nitric oxide levels. This test isn't widelyavailable.

Sputum eosinophils:-

This test looks for certain white blood cells (eosinophils) in the mixture of saliva and mucus (sputum) you discharge during coughing. Eosinophils are present when symptoms develop and become visible when stained with a rose-colored dy

Ayurvedic Remedies Of Asthma

Honey And Cloves

To strengthen the lungs, a mixture of cloves (at least 7-8) and banana needs to be kept overnight and eaten the next day. Follow this up, after an hour (nothing to be consumed during the time), with a little hot water and honey. This is very helpful for those suffering from chronic bronchial asthma.[20]

Nightshade/Kanteli

7 to 14 ml of the juice made from the whole plant or the fruits of the Yellow-berried Nightshade or Kanteli, as it's called in Hindi, Kantakari in Sanskrit, can be consumed twice a day to relieve and easesymptoms of asthma.

Herbal Tea

Herbal tea made by blending Ajwain, Tulsi, pepper,

and ginger is useful natural expectorant for asthmatics.

Panchakarma

Panchakarma, that involves 5 (panch) actions of therapeutic treatment (karma), is very useful for asthmatic patients. It is a detoxification process that takes a person through 5 stages that involves theuses of herbs, herbal oils, medicated milk, and other Ayurvedic medicines.

Adulsa

Aside from treating a variety of other diseases, Adhota that also goes by the name Malabar nut tree or Adulsa in Hindi, is an Indian herb that's been used to help control bronchitis for quite some time. It's very effective as a cough remedy and for asthmatics.

Curcumin

Curcumin, which is the yellow pigment that gives turmeric its colour, includes quite a few pharmacological and antioxidant components, of

which, is its ability to inhibit inflammation. This naturally makes it a vital herb in the fight against Bronchial asthma.

Black Raisin

With black resin, dates, long Pippali and honey, taken in equal quantity, make a paste. A teaspoon of the paste should be consumed mixed with warm milk in the morning and evening to help prevent asthma attacks.

Mustard Oil

Rubbing or massaging brown mustard oil on a patient's chest is often used as a natural remedy for asthmatic conditions. It provides relief during an attack.Treatment Of Asthma

Honey And Onion

To minimise congestion and reduce breathlessness during an asthmatic attack, mix some pepper, about1 tsp of honey and a little onion juice in a glass and

drink it slowly. It will help relieve some symptomsin a natural way before medication is required.

Honey And Bay Leaf

To prevent asthma attacks during the night, have a glass of honey (1 tsp) and some Indian bay leaf powder (1 tsp) before going to bed.

Before trying any of these treatments it's important to understand that not everyone will respond to treatments in the same way. Hence, standard ayurvedic treatments are always individually formulated. The above treatments are not a substitute for standard medical diagnosis, personalised ayurvedic treatment or the recommendations from a qualified ayurvedic or regular physician. For specific treatment, it is advisable to always consult with qualified personnel. In the case of an asthmatic attack, however, check out this story here on things you need to keep inmind. Also browse out wellness articles for more tips on chronic disease management. [21]

Treatment

Medications:-

Bronchodilators:- Relax and open the muscles around the airways.Two types of medications are used to relax airway muscles.

Short acting:- Give you quick relief of symptoms and last 4 to 6 hours.

Long acting :-Last 6 to 12 hours; not to be used for quick relief of symptoms.

Corticosteroids:- Reduce, reverse and in some cases stop irritation, swelling and mucus build-up in breathing tubes.

Three forms of corticosteroids:-Oral InhaledNasal

Expectorants & Mucolytics:- Loosen mucus so that it's easier to cough up.

Cough Suppressants:- Stop a steady, dry cough that doesn't bring up any mucus.

Water Pills (Diuretics) :- Get rid of any extra body water or fluids sometimes prescribed for people with heart problems such as congestive heart failure.

Digitalis Drugs (Digoxin) :- Make the heart beat stronger and more.Regularly sometimes given to people with heart trouble.

Potassium/ Calcium Supplements :- Replace vitamins and minerals needed for managing heart rate, blood pressure, and making bones strong. These minerals are often lost due to certain medications, such as water pills.

Anti-Depressants & Anti-Anxiety :- Help stop feelings of depression and anxiety.

Anti-Reflux :- Help to stop heartburn or acid reflux that won't go away, which may cause ulcers, stomach bleeding and more harmful asthma symptoms. [22]

Leukotriene receptor antagonists (LTRAS) :- LTRAs are the main tablets used for asthma. They also come in syrup and powder form.You take them every day to help stop your symptoms occurring.Possible side effects include tummy aches and headaches.

Theophylline :- Theophylline may also be recommended if other treatments are not helping to control your symptoms.It's taken every day to stop your

symptoms occurring.Possible side effects include headaches and feeling sick.[24]

Steroid :- Steroid tablets may be recommended if other treatments are not helping to control your symptoms.

They can be taken either:

as an immediate treatment when you have an asthma attackevery day as a long-term treatment to prevent symptoms – this is usually only necessary if you have very severe asthma and inhalers do not control your **symptoms Long term of use they can cause side effect:-**

increased appetite, leading to weight gain
easy bruising

mood changes
fragile bones (osteoporosis)
high blood pressu

There's currently no cure for asthma, but treatment can help control the symptoms so you're able to live a normal, active life.[23]

Inhalers

Inhalar can help:
Relieve symptoms when theyoccur (relieve inhalers)
Stop symptoms developing
(preventer inhalers)

Relieve inhalers

Most people with asthma will be given a reliever inhaler. These are usually blue.

You use a reliever inhaler to treat your symptoms when they occur. They should relieve yoursymptoms within a few minutes.

Tell a GP or asthma nurse if you have to use your reliever inhaler 3 or more times a week. They may suggest additional treatment, such as a preventer inhaler.

Preventer inhalers

If you need to use a reliever inhaler often, you may also need a preventer inhaler.

You use a preventer inhaler every day to reduce the inflammation and sensitivity of your airways, which stops your symptoms occurring. It's important to use it even when you do not have symptoms.

Speak to a GP or asthma nurse if you continue to have symptoms while using a preventer inhaler. Preventer inhalers contain steroid medicine.

Sometimes they cause side effect:-

a fungal infection of the mouth or throat (oral thrush)
a hoarse voice
a sore throat

You can help prevent these side effects by using a spacer, which is a hollow plastic tube you attach to your inhaler, as well as by rinsing your mouth after using your inhaler.

Combination inhalers

If using reliever and preventer inhalers does not control your asthma, you may need an inhaler that combines both.

Combination inhalers are used every day to help stop symptoms occurring and provide long-lasting relief if they do occur.

It's important to use it regularly, even if you do not have symptoms.[25]

Side effects of combination inhalers are similar to those of reliever and preventer inhale

CONCLUSION

we conclusion asthma can be described as a chronic respiratory condition which can be identified by breathing difficulty, wheezing, cough and chest tightness.

Narrowing and swelling of the airways and increased mucus production are the major episodes looked for to establish an asthma condition. Physical examinations, pulmonary function tests, bloodtests and chest X-rays are also used to determine asthma.

The medications used to manage asthma long term are symptom preventers and symptomcontrollers.

Symptom reliever medications are used for the immediate control of its symptoms. Inhalation or ingestion of allergens and pollutants, exposure to cold weather, exercises, infections and occupational factors such as dust and chemicals can be considered asthma's risk factors.

healthcare professionals need to provide client education in order to prevent and minimize asthma attacks. Chronic asthma conditions affect client physical, psychological and social wellbeing..

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