بسم الله الرحمن الرحيم

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Asthma

Asthma is a common long-term inflammatory disease of the airways of the lungs. characterized by variable & recurring symptoms, reversible air flow obstruction, and easily triggered bronchospasms.

- Although asthma is a chronic obstructive condition,
  - it is not considered as a part of chronic obstructive pulmonary disease, as this term refers specifically to combinations of disease
  - that are irreversible such as bronchiectasis and
  - emphysema Unlike these diseases,
  - in asthma, the airway obstruction is usually reversible; however, if left untreated, can lead the lungs to
  - become irreversibly obstructed.

Signs and symptoms

- Asthma is characterized by recurrent episodes of
  - wheezing, shortness of breath,
  - chest tightness, and coughing.

  } variable and recurring symptoms
- These may occur a few times/day
- or a few times/week ..Depending on the person,
  - they may become worse at night or with exercise
  - Sputum may be produced from the lung by coughing but is often hard to bring up.
- During recovery from an attack, it may appear pus-like due to high levels of white blood cells

- Symptoms are usually worse
  - at night and in the early morning or
  - in response to exercise or cold air
- Some people with asthma rarely experience symptoms, usually in response to triggers,
- whereas others may have Associated conditions
- Associated conditions, including
  - gastro-esophageal reflux disease,
  - Rhino sinusitis,
  - Obstructive sleep apnea.
  - Psychological disorders are also more common,
  - with anxiety disorders occurring in between16–52% and
  - mood disorders in 14–41%.

However, it is not known whether asthma causes psychological problems or psychological problems lead to asthma.

❑ Classification

I. Asthma is clinically classified according to the frequency of symptoms,

II. Asthma may also be classified as

- **atopic (extrinsic) based on whether symptoms are precipitated by allergens or**
- **non-atopic (intrinsic),**

III. While asthma is classified based on severity,

asthma severity, consider how often have signs and symptoms and how severe they are, physical exam and diagnostic tests.

❑ Determining asthma **severity** helps **to choose the best treatment**.

- Asthma severity often **changes over time,**
- requiring **treatment adjustments**.

❑ **Asthma is classified into four general categories**

How asthma is classified

To classify asthma severity four general categories

Asthma classification	Signs and symptoms
Mild intermittent	Mild symptoms up to two days a week and up to two nights a month
Mild persistent	Symptoms more than twice a week, but no more than once in a single day
Moderate persistent	Symptoms once a day and more than one night a week
Severe persistent	Symptoms throughout the day on most days and frequently at night

Epidemiology

- Asthma was recognized as early as Ancient Egypt.

The word "asthma" is from the Greek word, ásthma, means "panting

- The rates of asthma have increased significantly since the 1960s
  - Global rates of asthma have increased significantly between the 1960s and 2008
- it being recognized as a major public health problem since the 1970s.

- in 1990. up to 183 million
- More than 339 million people are living with asthma. 2018
- prevalence is rising.
- Low- and middle-income countries suffer of the most severe cases.
- Asthma kills around 1000 people every day
- Over 80% of asthma-related deaths occur in low-and lower-middle income countries

Cont. ..Epidemiology

- prevalence rates vary between countries 1 -18%.
- It is more in developed than developing countries
- Within developed countries it is more common in those who are economically deprived while in contrast
- in developing countries it is more common in the affluent.

The reason for these differences is not well known.

- ✓ Asthma is the most common chronic disease among children worldwide.
- While asthma is twice as common in boys as girls,
- severe asthma occurs at equal rates.

- In contrast adult women have a higher rate of asthma than men and
- it is more common in the young than the old.

Cont. ..Epidemiology

- In children, asthma was the most common reason for admission to the hospital following an emergency department visit in the US in 2011
- Child are more likely see a physician due to asthma symptoms after school starts in September. ??????

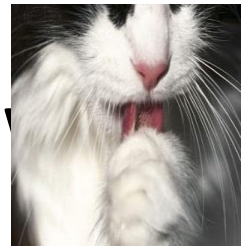
Causes

- The strongest risk factors for developing asthma are a
- combination of genetic predisposition with
- environmental exposure to inhaled substances and particles that may provoke allergic reactions or irritate the airways,
- genetic and environmental factors influencing both the
  - severity
  - and responsiveness to treatment.

Onset before age 12 is more likely due to genetic influence

onset after age 12 is more likely due to environmental influence.

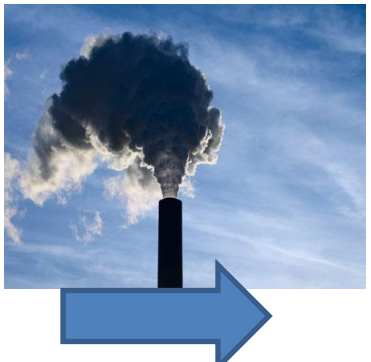
Environmental Causes



- Many environmental factors have been associated with asthma's development and exacerbation including
  - indoor allergens; common indoor allergens include dust mites, cockroaches, carpets and stuffed furniture, pet dander, pesticides

  - outdoor allergens
  - allergens, air pollution, and other environmental chemicals.
- Smoking during pregnancy and after delivery is associated with a greater risk of asthma-like symptoms.

- Low air quality such as traffic pollution or high ozone levels. has been associated with both asthma development and increased asthma severity.
- Low air quality is more common in low-income and minority communities.



- Certain viral respiratory infections, such as respiratory syncytial virus and rhinovirus, may increase the risk of developing asthma when acquired as young children
- Certain other infections, however, may decrease the risk

Hygiene hypothesis

The hygiene hypothesis attempts to explain

- the increased rates of asthma worldwide
- as a direct and unintended result of reduced exposure to non-pathogenic bacteria and viruses, during childhood,.
- It has been proposed that the reduced exposure to bacteria and viruses is due, in part to:
  - increased cleanliness and
  - decreased family size in modern societies.

Exposure to bacterial endotoxin

- Exposure to bacterial endotoxin in early childhood may prevent the development of asthma, But
- exposure at an older age may provoke bronchoconstriction.

➢ Evidence supporting the hygiene hypothesis includes:

- lower rates of asthma on farms and in households with pets.
- Use of antibiotics in early life has been linked to the development of asthma. Also
- delivery via caesarean section is associated with an increased risk (estimated at 20–80%) of asthma . This increased risk is attributed to the lack of healthy bacterial colonization that the new-born would have acquired from passage through the birth canal.
- There is a link between asthma and the degree of affluence which may be related to the hygiene hypothesis as less affluent individuals often have more exposure to bacteria and viruses

II Genetic

Family history is a risk factor for asthma,

If one identical twin is affected, the probability of the other having the disease is approximately 25%.

many different genes being implicated.

Many of these genes are related to the immune system or modulating inflammation.

By the end of 2005, 25 genes,

In 2006 over 100 genes were associated with asthma

❑ Medical conditions

❖ **A triad of atopic eczema, allergic rhinitis and asthma is called atopy.** (refers to the genetic tendency to develop allergic diseases such as allergic rhinitis, asthma and atopic dermatitis (eczema)

❖ **The strongest risk factor for developing asthma is a history of atopic disease; with asthma occurring at a much greater rate in those who have either eczema or hay fever**

➢ Individuals with certain types of urticaria m

Cont. ..Medical conditions

- **Individuals with certain types of urticaria may also experience symptoms of asthma.**

❑ **There is a correlation between obesity and the risk of asthma**

❖**with both having increased in recent years.**

➢**Several factors may be at play including**

➢**decreased respiratory function due to a build-up of fat and the fact that adipose tissue leads to a pro-inflammatory state.**

❑ **Beta blocker medications such as propranolol can trigger asthma in those who are susceptible.**

❖ **aspirin, and NSAIDs.**

❖ **Aspirin, affects up to 9% of asthmatics.**

❖ **NSAID medications..(*such as ibuprofen and naproxen).***

❖ **There is an association between paracetamol use and asthma.**

❑ **Alcohol may worsen asthmatic symptoms in up to a third of people**

❑ Exercise-induced

❑ Exercise can trigger bronchoconstriction both in people with or without asthma.

❖ It occurs in most people with asthma and

❖ up to 20% of people without asthma

❑ Occupational

❑ It is estimated that 5–25% of asthma cases in adults are work-related.

❑ Non-allergic asthma

❖also known as intrinsic or non atopic asthma,

❖makes up between 10 and 33% of cases.

❖There is negative skin test to common inhalant allergens

❖ and normal serum concentrations of IgE.

❖Often it starts later in life, and

❖women are more commonly affected than men.

❖Usual treatments may not work as well.

Asthma exacerbation

- An acute asthma exacerbation is commonly referred to as an asthma attack. previously known as status asthmaticus,
- does not respond to standard treatments of bronchodilators and corticosteroids.
- Half of cases are due to infections
- with others caused by allergen, air pollution, or insufficient or inappropriate medication

The classic symptoms are:

shortness of breath, wheezing, and chest tightness. The wheezing is most often when breathing out. While these are the primary symptoms of asthma, some people present primarily with coughing, and in severe cases, air motion may be significantly impaired such that no wheezing is heard. In children chest pain is often present. A blue colour of the skin and nails may occur from lack of oxygen

Management

- While there is no cure for asthma,
- symptoms can typically be improved.
- A specific, customized plan for proactively monitoring and managing symptoms should be created.
- This plan should include the
  - Reduction of exposure to allergens,
  - Testing to assess the severity of symptoms, and
  - the usage of medications.
- The treatment plan should be written down and
- Advise adjustments to treatment according to changes in symptoms.
- The most effective treatment for asthma is
  - Identifying triggers, such as cigarette smoking pets, or aspirin, and
  - eliminating exposure to them.

- If trigger avoidance is insufficient, the use of medication is recommended.
- Pharmaceutical drugs are selected based on
  - the severity of illness and
  - the frequency of symptoms
  - Specific medications for asthma are broadly classified into
  - fast-acting and
  - long-acting categories
- Lifestyle modification
  - Avoidance of triggers is a key component of improving control and preventing attacks.
  - Cigarette smoking and second-hand smoke(passive smoke)may reduce the effectiveness of medications such as corticosteroids
  - Laws that limit smoking decrease the number of people hospitalized for asthma.

- **Dust mite** control measures, including *air filtration, chemicals to kill mites, vacuuming, mattress covers* and others methods had **no effect on asthma symptoms**.
- Overall, **exercise is beneficial** in people with stable asthma

❑ Medications

- **Bronchodilators** are recommended for short-term relief of symptoms
- For those who have **daily attacks**, a **higher dose** of inhaled **corticosteroids** is used
- People with asthma have higher rates of **anxiety.** and **depression.**. This is associated with poorer asthma control.
- **Cognitive behavioral therapy.** may improve quality of life, asthma control, and anxiety levels in people with asthma

Prevention

- The evidence for the effectiveness of measures to prevent the development of asthma is weak.
- The WHO recommends decreasing risk factors such as
  - tobacco smoke, air pollution, chemical irritants including Perfume and the
  - number of lower respiratory infections. .
- Other efforts that show promise include:
- limiting smoke exposure ,in-utero ,
- breast feeding , and
- increased exposure to day-care or large families, but none are well supported enough to be recommended for this indication.
- Early pet exposure may be useful.

Results from exposure to pets at other times are inconclusive,

and it is only recommended that pets be removed from the home if a person has allergic symptoms to pet.

Reducing or eliminating compounds known to sensitive people from the work place may be effective.

It is not clear if annual influenza vaccinations. affects the risk of exacerbations.

Immunization, however, is recommended by the WHO Smoking bans حظرare effective in decreasing exacerbations of asthma

Thank you for attention