

Asthma and yoga

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Introduction

Asthma (from the Greek word *ἄσθμα*, *ásthma*, "panting, gasping") is chronic long-term inflammatory disease of lungs narrowing the airways carrying air in and out. People who suffer chronic condition (long-lasting or recurrent) are said to be asthmatic. It is caused by genetic and environmental factors. Diagnosis is based on the pattern of symptoms and spirometry test. Asthma can be categorized as atopic and non-atopic asthma. Severity of symptoms vary from person to person. It is incurable, but can be symptom free with good overall treatment. Asthma occurs with people of all ages but mostly it is activated in childhood. The occurrence of asthma has increased significantly since the 1970s. In 2011, 235–300 million people globally have been diagnosed with asthma, and it caused 250.000 deaths.

Symptoms

To understand asthma it helps to know how airways work. Air is carried through tubes called bronchi into smaller bronchioles from air goes into the alveoli air sacks where oxygen is diffused into the blood. The inside walls of an asthmatic's bronchial tubes are swollen or inflamed. This swelling or inflammation makes the airways extremely sensitive to irritations and increases risk to an asthmatic reaction. As inflammation causes the airways to become narrower, less air can pass through them, both to and from the lungs. When the airways get asthmatic reaction the muscles around them tighten. This narrow s the airways , causing less air to flow into lungs. Swelling can worsen making airways more narrow. Symptoms of the narrowing include wheezing (a hissing sound while breathing), chest tightness, shortness of breath and coughing because of increased creation of sticky mucus (phlegm). Mucus is thick liquid that further narrows airways more. Symptoms are triggered by different causes. Asthmatics usually experience these symptoms most frequently during the night and the early morning. People suffer troubles in sleeping because shortness of breath and mucus creation. Severity of symptoms vary from person to person from mild to severe. Not all symptoms occur with every person

Complications

Asthma can cause following complications if not treated properly:

Common complications

- Fatigue
- Symptoms that interfere with sleep, work or recreational activities
- Sick days from work or school during asthma flare-ups
- Permanent narrowing of the bronchial tubes (airway remodeling) that affects how well you can breathe
- Emergency room visits and hospitalizations for severe asthma attacks
- Side effects from long-term use of some medications used to stabilize severe asthma
- Psychological problems, stress, anxiety, depression
- Fatal attacks when airways are totally blocked

Rare:

- Pneumonia (infection of the lungs)
- Collapse of part or all of the lung
- Respiratory failure, where the levels of oxygen in the blood become dangerously low, or the levels of carbon dioxide become dangerously high
- Status asthmaticus (severe asthma attacks that do not respond to treatment).

Causes:

Asthma is caused by a combination of complex and incompletely understood environmental and genetic interactions. These factors influence both its severity and its responsiveness to treatment. It is believed that the recent increased rates of asthma are due to changing epigenetics (heritable factors other than those related to the DNA sequence) and a changing living environment.

Internal causes:

Genes: It is possible that some 100 genes are linked to asthma - 25 of which have been associated with separate populations as of 2005.

Stress and psychological factors: People who undergo stress have higher asthma rates. Part of this may be explained by increases in asthma-related behaviors such as smoking that are encouraged by stress. However, recent research has suggested that the immune system is modified by stress as well.

Physical exertion: Strenuous exercise can trigger asthmatic reaction from parasympathetic nervous system.

Viral infections: Syncytial virus and rhinovirus may increase the risk of developing asthma when acquired as young children

Overweight adults: Those with a body mass index (BMI) between 25 and 30 are 38% more likely to have asthma compared to adults who are not overweight. Obese adults - those with a BMI of 30 or greater have twice the risk of asthma.

Pregnancy: The way baby enter the world seems to impact person's sensitivity to asthma. Babies born by Caesarean sections have a 20% increase in asthma occurrence compared to babies born by vaginal birth.

Atopy: Atopy - such as eczema, allergic rhinitis (hay fever), allergic conjunctivitis (an eye condition) - is a general class of allergic hypersensitivity that affects different parts of the body that do not come in contact with allergens. Atopy is a risk factor for developing asthma.

External causes:

Allergens: Allergens such as dust, cockroaches, hay, pollen, fungi, food, and animal proteins cause allergic asthma. Allergic reactions triggered by antibodies in the blood often lead to the airway inflammation.

Medicinal drugs: Beta Blockers can trigger asthma.

Tobacco Smoke: Tobacco smoke has been linked to a higher risk of asthma as well as a higher risk of death due to asthma, wheezing, and respiratory infections. Adolescent smoking has also been associated with increases in asthma risk.

Environmental factors: Indoor air pollution consist such a things as mold, fumes from household chemicals, nitrogen oxide from gas stoves. Outdoor environmental factors include traffic fumes or high ozone levels, sulfur dioxide, cold temperatures, high humidity and weather changes.

Diagnosis

Asthma is clinically classified according to the frequency of symptoms, forced expiratory volume in one second (FEV₁), and peak expiratory flow rate. Asthma may also be classified as atopic (extrinsic) or non-atopic (intrinsic), based on whether symptoms are precipitated by allergens (atopic) or not (non-atopic). While asthma is classified based on severity, at the moment there is no clear method for classifying different subgroups of asthma beyond this system.

There is currently no precise test with the diagnosis typically based on the pattern of symptoms and response to therapy over time. A diagnosis of asthma should be suspected if there is a history of: recurrent wheezing, coughing or difficulty breathing and these symptoms occur or worsen due to exercise, viral infections, allergens or air pollution. Spirometry is then used to confirm the diagnosis. In children under the age of six the diagnosis is more difficult as they are too young for spirometry.

Spirometry

Spirometry is recommended to aid in diagnosis and management. It is the single best test for asthma. If the forced expiratory volume measured by this technique improves more than 12% following administration of a bronchodilator type of medical drug such as salbutamol, this is supportive of the diagnosis. It however may be normal in those with a history of mild asthma, not currently acting up. It is reasonable to perform spirometry every one or two years to follow how well a person's asthma is controlled.

Asthma attacks

Asthma attack happens when symptoms get more intense and/or more symptoms occur. Asthma attacks also are called flare-ups or exacerbations. Asthma attacks can be mild, moderate, severe and very severe. Asthma attacks occur when, the muscles around the bronchi go into spasm. The bronchi narrow and breathing becomes difficult. Inflammation can also swell the lining of the air tubes. Mucus may increase blockage to the air tubes as well. Signs which occur during an asthma attack include the use of accessory muscles of respiration (sternocleidomastoid and scalene muscles of the neck), there may be a paradoxical pulse (a pulse that is weaker during inhalation and stronger during exhalation), and over-inflation of the chest. A blue color of the skin and nails may occur from lack of oxygen.

Irritative feeling increases because carbon dioxide does not leave lungs at fast enough rate causing high CO₂-levels. High CO₂-levels are causing physical 'urge-to-breath' sensations which irritate and causes stress even more. In some asthma attacks, the airways are blocked such that oxygen fails to enter the lungs, entering the blood stream and traveling to the body's vital organs. Asthma attacks of this type can be fatal, and the patient may require urgent hospitalization.

Asthma attack and bronchospasms can be triggered by different factors.

Histamine, the chemical most responsible for allergy symptoms, seems to play a role in asthma attacks as well. But many other things besides histamine can trigger an attack: strenuous exercise, mental stress, cigarette smoke, respiratory infections, industrial chemicals, aspirin, indoor pollution and the sulfites added to many foods. Stress also plays a role in asthma. Severe anxiety can trigger attacks, and stress generally aggravates asthma symptoms.

Exercise induced asthma

Breathing is usually controlled by the autonomic nervous system. There are two branches to this system: the parasympathetic and sympathetic. The parasympathetic branch, known as the "relaxation response," controls resting functions of the body. It slows the heart and breathing rate and activates digestion and elimination. The sympathetic branch has the opposite effect. It rouses the body and regulates active functions related to emergencies and exercise. When emergencies arise, the sympathetic branch floods the body with adrenaline. The heart rate goes up and breathing rate increases. These measures produce the classic symptoms of an asthma attack: Smooth muscles tighten around the airways, the body further constricts them by producing mucus and histamine (which causes swelling). Exercise can trigger bronchospasm in both people with and without asthma. It occurs in most people with asthma and up to 20% of people without asthma. In athletes is diagnosed more commonly in elite athletes, with rates varying from 3% for bobsled racers to 50% for cycling and 60% for cross-country skiing. While it may occur with any weather conditions it is more common when it is dry and cold.

Treatment

Asthma is incurable however, with good treatment and management there is no reason why a person with asthma cannot live a normal and active life. Asthma can be controlled well in most people most of the time. With today knowledge and treatments, most people who have asthma are able to manage the disease. They have few, if any, symptoms. They can live normal, active lives and sleep

through the night without interruption from asthma. Treatment and prevention involves traditionally a combination of medicines and lifestyle advice. The most effective treatment for asthma is identifying triggers (such as cigarette smoke, pets, or aspirin) and eliminating exposure to them. If trigger avoidance is insufficient, the use of medication is recommended. Many people with asthma use alternative treatments; surveys show that roughly 50% use some form of unconventional therapy. "If your asthma is under good control, you can and should exercise normally. Exercising asthma can help reduce your symptoms, improve your breathing, and reduce your stress and anxiety."

Medical treatment

Pharmaceutical drugs are selected based on, among other things, the severity of illness and the frequency of symptoms. Specific medications for asthma are broadly classified into fast-acting and long-acting categories. Bronchodilators are recommended for short-term relief of symptoms. In those with occasional attacks, no other medication is needed. If mild persistent disease is present (more than two attacks a week), low-dose inhaled corticosteroids or alternatively, an oral leukotriene antagonist or a mast cell stabilizer is recommended. For those who have daily attacks, a higher dose of inhaled corticosteroids is used. In a moderate or severe exacerbation, oral corticosteroids are added to these treatments. Treatment of acute symptoms is usually with an inhaled short-acting beta-2 agonist (such as salbutamol) and oral corticosteroids. In very severe cases, intravenous corticosteroids, magnesium sulfate, and hospitalization may be required. Long-acting beta agonists (LABA) or leukotriene antagonists may be used in addition to inhaled corticosteroids if asthma symptoms remain uncontrolled. When asthma is unresponsive to usual medications, other options are available for both emergency management and prevention of flareups. For emergency management other options include: oxygen to alleviate hypoxia if saturations fall below 92% and Heliox, a mixture of helium and oxygen, may also be considered in severe unresponsive cases

Holistic approach to asthma with yoga

Treatment and prevention involves traditionally a combination of medicines and lifestyle advice. The most effective treatment for asthma is identifying triggers (such as cigarette smoke, pets, or aspirin) and eliminating exposure to them. If trigger avoidance is insufficient, the use of medication is recommended. Scientists claim that it is possible to create therapeutic approach to meet all requirements for optimal, holistic, somatopsychic therapy. It should include correction of distorted posture and faulty breathing habits, teaching system of general muscle relaxation, techniques for the release of suppressed emotion and for reducing anxiety and self-conscious awareness, as well as special methods for the expectoration of mucus. On basis of this statement focus of the practice is on following aspects.

- Working will be on physiological, psychological and pranic level.
- Focus is going to be on body awareness and control, control of breathing, relaxation techniques, mental practices and purifying techniques.
- Risks to understand:
 - Asthma attack. Intensive exercise or pranayama has risks of triggering asthma attack.
- Mental coaching and support has to be maintained during therapy period if person is suffering severe asthma.
- Right amount of practice to get results and keep motivation up.
- Despite risk of asthma attack right intensity has to be maintained during practice for progression of respiratory muscles. For example asana exercise needs to be little exhausting but should not trigger asthma attack.
- Treatment and practice plan is progressive due to increase in person's tolerance for physical and mental stress.
- Therapy has 3 weeks to 3 months starting period. Practice is progressing after that for normal yoga classes.

Daily lifestyle plan

Daily plan for therapy is meant for first 3 weeks to 3 months. After that treatment continues with additional yoga classes once a day.

Morning

- Kriyas: Jala neti, Sutra neti (airway cleansing and mucus reduction)
- Therapy series and asana practice 20-30 min
 - Standing breathing practices
 - Back movement practices
 - Supine practices
 - Asanas for asthma
- Pranayama and banddha practice 20 min
 - Kapalbhata
 - Moola bandha practice
 - Agni Sara
 - Full yogic breathing
 - Nadi Suddi
- Relaxing meditation 15 min

Before lunch

- Therapy series and asana practice 20-30 min

Before dinner

- Therapy series and asana practice 20-30 min

Before sleeping

- Relaxing meditation 15 minutes

Therapy series and asanas for daily practice

Three times daily for 20-30 minutes, before breakfast, before lunch and before evening asana practice.

- Standing breathing (seven different breathing exercises).
- Back movements (six different back movement exercises, four of them include breathing with movement).
- Supine practices (four different supine practices, three of them include breathing with movement).
- Spine twisting practice with full lungs (making lung capacity bigger).
- Asanas for asthma during 3 weeks to 3 months: Surya namaskara, Tadasana, Parvatasana, Ardha Kati Chakrasana, Ardha chakrasana, Bhujangasana, Shalabasana, Setubandhasana, Jatari Parivartanasana, Marichyasana C, Pascimottanasana, Shavasana.

Bandha and Pranayama

Pranayamas are applied and practiced carefully, because some techniques like kapalbhati and bastrika can trigger asthmatic attack even though they are highly helpful for asthma.

- Easy Kapalbhati (developing control for asthmatic attacks, later Bastrika)
- Moola banddha practice (building awareness of pelvic muscles and control for advanced breathing techniques)
- Agni Sara (developing respiratory muscles)
- Full yogic breathing (controlling slow breathing, developing lung capacity, respiratory muscles and relaxing mind from stress)
- Nadi Suddi (relaxes mind even more, balances whole body)

Meditation

Meditation session: 15 minutes. After pranayama session in morning and before sleep in evening.

- Any relaxing meditation e.g. SO-HAM meditation after pranayama session every morning.
- Calming mind, releasing stress, reducing sympathetic nervous system activity and respiratory rates.

Scientific studies show meditation to have effect on significant reduction in the severity of asthma as measured in amount of medicinal drugs needed. Control group was receiving normal relaxation. (Chugh D. 1997, The effects of Sahaja Yoga in bronchial asthma and essential hypertension)

Kriyas

Daily kriyas in the morning.

- Jala Neti
- Sutra Neti (mucus reduction and airway cleansing)

Weekly kriyas:

- Vamana doudi (mucus reduction)

Monthly kriyas:

- Shanka prakshala (cleansing digestive system and strengthening them more resistant for allergens)

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