

Aspergillus

Aspergillus is a common type of fungus that grows on decaying vegetation, such as compost heaps and fallen leaves. It can also be found in air-conditioning systems and hospitals.

Some people with asthma are allergic to the fungal spores. These can trigger an asthma attack if inhaled. Some people will develop a condition known as allergic bronchopulmonary aspergillosis (ABPA), in which asthma worsens significantly as a result of increased lung inflammation.

In rare cases, a person may suffer serious lung or other organ infection with this fungus. Some severely ill people, or those whose resistance is lowered because they are taking medications which suppress their immune system, may be affected.

The structure of the lungs

The lungs are inside the chest, protected by the ribcage and wrapped in a membrane called the pleura. The windpipe (trachea) splits into two tubes, called bronchi, that service one lung each. The bronchi divide into smaller tubes called bronchioles, which ultimately branch into even smaller air sacs called alveoli. Each alveolus has a fine mesh of capillaries. This is where the exchange of oxygen and carbon dioxide takes place.

A person with asthma who is allergic to *Aspergillus* will have spasms of the bronchioles, which causes breathlessness and wheezing.

Allergens and asthma

Nine out of 10 people with asthma find their symptoms worsen when they are exposed to certain triggers or allergens. An allergen is any substance that causes an overzealous response from the immune system, which treats the non-poisonous substance as if it is poisonous. People with asthma are allergic to different triggers, such as cigarette smoke, wood smoke, pollen, dust mite or *Aspergillus* spores.

Men and women with asthma who are aged 20 to 40 years are most commonly affected. People with cystic fibrosis are also vulnerable. Treatment options include medications and avoiding exposure to the fungus whenever possible.

Symptoms of allergic bronchopulmonary aspergillosis

Symptoms of ABPA include:

- Wheezing
- Breathlessness
- Significant worsening of asthma symptoms
- A productive cough with brown mucus or mucus plugs
- Coughing up blood
- Loss of appetite
- Fever
- General malaise.

Complications of ABPA

Some of the complications of untreated allergic bronchopulmonary aspergillosis include:

- **Haemoptysis** – the irritated and inflamed airways can bleed and bloodstained phlegm is coughed up.
- **Bronchiectasis** – recurring bouts of inflammation eventually damage the bronchiolar walls.
- **Atelectasis** – this involves varying degrees of lung tissue collapse.
- **Respiratory failure** – the airways become obstructed, or a severe asthma attack squeezes the airways closed. This is a medical emergency.

Diagnosis of ABPA

ABPA is diagnosed using a number of tests, including:

- **Chest x-rays** – to check for the presence of fluid in the lungs and for any abnormalities, such as enlarged, stretched or damaged airways. CT scans may also be used.
- **Skin test** – the skin is pricked and a tiny amount of the allergen is introduced. A person who is allergic to *Aspergillus* will experience swelling, itching and reddening of the site, usually within 20 minutes. However, the skin reaction may take as long as eight hours to develop in some people.
- **Blood tests** – antibodies are special proteins of the immune system that are tailor-made to counter specific antigens. Blood tests check for the presence of *Aspergillus* antibodies (*Aspergillus* precipitins). These precipitins bind with the spores and form tiny solids. Around half of all people with ABPA have elevated levels of immunoglobulin E, or IgE, which is a type of blood protein that prompts allergic reactions.
- **Sputum tests** – *Aspergillus* spores are sometimes visible in the person's mucus when viewed under a microscope. The spores can be cultured from the mucus and positively identified using special dyes.

Treatment for ABPA

There is no cure for ABPA. The condition is managed with corticosteroids taken orally or with puffers. Antifungal medications generally have no effect. People with ABPA should be monitored regularly to make sure their condition is successfully managed.

Monitoring may include checking antibody levels and evaluating the airflow capacity of the lungs. People with asthma are generally advised to avoid their known triggers whenever possible. However, *Aspergillus* is a particularly common fungus. People with ABPA should try to stay away from marshes, forests, bogs, compost heaps and other areas where vegetation is known to be rotting.

Where to get help

- Your doctor
- Asthma Victoria Tel. 1800 645 130

Things to remember

- *Aspergillus* is a fungus that commonly grows on rotting vegetation.
- Some people with asthma are allergic to *Aspergillus*, and develop allergic bronchopulmonary aspergillosis (ABPA).
- ABPA worsens asthma symptoms, but can be successfully managed with medications such as corticosteroids.

This page has been produced in consultation with, and approved by:

Australasian Society of Clinical Immunology and Allergy (ASCIA)

Content on this website is provided for education and information purposes only. Information about a therapy, service, product or treatment does not imply endorsement and is not intended to replace advice from your doctor or other registered health professional. Content has been prepared for Victorian residents and wider Australian audiences, and was accurate at the time of publication. Readers should note that, over time, currency and completeness of the information may change. All users are urged to always seek advice from a registered health care professional for diagnosis and answers to their medical questions.

For the latest updates and more information, visit www.betterhealth.vic.gov.au

Copyright © 1999/2012 State of Victoria. Reproduced from the Better Health Channel (www.betterhealth.vic.gov.au) at no cost with permission of the Victorian Minister for Health. Unauthorised reproduction and other uses comprised in the copyright are prohibited without permission.