

## Aspergilloma and Chronic Pulmonary Aspergillosis

Aspergillus is an opportunistic fungus that exists as moulds. It is a soil-dwelling organism found in organic debris, dust, compost, foods, spices, and rotted plants. Following candida, it is the second most common opportunistic fungal infection. There are about 300 different species included in the genus Aspergillus, with Aspergillus fumigatus being the most commonly isolated species, followed by Aspergillus flavus and Aspergillus niger. However it is the characteristics of the person infected rather than the fungi that determine the type of infection. Aspergillus causes a wide spectrum of illnesses in humans. It can colonize and form a "fungus ball" in the lungs, cause an allergic reaction in susceptible individuals, and cause both acute and chronic pulmonary aspergillosis. This leaflet will focus on Aspergilloma and Chronic pulmonary aspergillosis.

### What are Aspergilloma and Chronic pulmonary aspergillosis?

Aspergilloma and Chronic pulmonary aspergillosis are chronic forms of lung diseases caused by the fungi Aspergillus. Although separate entities, the distinction between them has yet to be clearly defined and an overlap in clinical and radiological features exists. An aspergilloma is formed when the fungus Aspergillus grows and colonizes a pre-existing lung cavity, creating a 'fungal ball'. Chronic pulmonary aspergillosis, otherwise known as Chronic necrotizing pulmonary aspergillosis, is a slowly progressive infection whereby the fungus proliferates in damaged lung tissue and may result in chronic inflammation and fibrosis (scarring) of lung tissue. Chronic cavitary pulmonary aspergillosis and Chronic fibrosing pulmonary aspergillosis describe particular clinical forms of CPA.

### How is Aspergillus spread?

The spores of Aspergillus are readily inhaled and the disease is spread by airborne transmission. The spores are present in the atmosphere throughout the year, but are at their highest concentration in late autumn. They are also common in bedding and houses.

### Are Invasive pulmonary aspergillosis and Chronic pulmonary aspergillosis the same thing?

No, they are not. In fact there are three different types of pulmonary aspergillosis.

Allergic bronchopulmonary aspergillosis (ABPA) is a hypersensitivity reaction caused by Aspergillus which occurs in atopic (allergic) individuals e.g. asthmatics.

Invasive pulmonary aspergillosis (IPA) only affects patients who are immunocompromised e.g. HIV positive, those receiving chemotherapy, organ transplant recipients etc. There may also be widespread infection, as the infection can spread systemically to the other major organs of the body.

Chronic pulmonary aspergillosis/Chronic necrotizing pulmonary aspergillosis/ Semi-invasive pulmonary aspergillosis is seen most commonly in patients with chronic lung disease or those who are mildly immunocompromised (ie diabetes, lung disease, low dose steroid treatments etc).

A guide for patients

## Aspergilloma and Chronic Pulmonary Aspergillosis



Aspergillus fumigatus

Nothing contained in this leaflet is intended to be any form of medical advice and must not be taken, or relied upon, as such. Individuals must seek all such advice personally in relation to their particular circumstances.



## Will I get infected?

Inhaled Aspergillus does not usually cause any symptoms in people who are not susceptible. Both Aspergilloma and Chronic Pulmonary Aspergillosis are only seen in patients with a pre-existing lung cavity formed secondary to tuberculosis, bronchiectasis, bronchial cysts, sarcoidosis, bullae, neoplasms, COPD, amongst others. Heavy smoking or drinking, and long term corticosteroid therapy may create conditions for developing these diseases.

## What are the symptoms I will experience if infected?

Many people will remain without symptoms, but some may experience weight loss, cough, shortness of breath, haemoptysis (coughing of blood), fever, malaise (tiredness) and chest discomfort or pain.

## What tests can be done?

Usually if Aspergillus infection is suspected, the following investigations will be carried out:

- Blood tests to detect IgG antibodies to Aspergillus (precipitins)
- Sputum culture
- Chest X-ray
- Chest CT scan (may or may not be necessary, depending on chest X-ray findings)
- Bronchoscopy/ Broncho-alveolar lavage (often with biopsy)  
A bronchoscope will be inserted through the nose or mouth to enable a view of the tracheobronchial tree and to collect bronchial and/or lung secretions. The doctor may also remove some tissue specimens for investigation.

## How is it treated?

In patients without major symptoms, no treatment is required. Bed rest, humidified oxygen and cough suppressants are recommended, while postural drainage is helpful in cases of mild haemoptysis. Tranexamic acid may also be useful to help stop bleeding. Aspergilloma can, however, lead to feeling ill generally and this may be helped by azole (antifungal drug) therapy. The most important complication is worse haemoptysis (bleeding from the lung), and here embolisation is the treatment of choice now for 95% of patients, since surgery is not necessary for the majority. Removing sections of damaged lung is difficult surgery and carries a very high risk of further complications, but may still be desirable. Both itraconazole and voriconazole have been shown to provide effective treatment of CPA, with an acceptable level of drug reactions. Antifungals may cause kidney and liver problems and so close monitoring is required.

## Can it be cured?

Aspergilloma – yes, if removed surgically. Recurrence is possible. Chronic pulmonary aspergillosis – probably not, but significant improvements in health are usual. The likelihood of recovery is very high with antifungal treatment, but it must be continued for long periods.

## Avoidance measures

People who suffer from any condition that suppresses their immune system should avoid environments that are conducive to the growth of *Aspergillus* fungus e.g. construction sites (See *Aspergillus* Trust leaflet How can I reduce the risk of *Aspergillus* infection?). In hospitals, there is an increased need to protect high risk patients from *Aspergillus* exposure. Hospitals can institute a number of preventative measures including continuous monitoring of air-control systems and regular surveillance of environmental fungal spores.

## Where can I get more information regarding this disease?

The following websites will prove useful:

*Aspergillus* website: [www.aspergillus.org.uk/newpatients](http://www.aspergillus.org.uk/newpatients)

*Aspergillus* Advocates: [uk.groups.yahoo.com/group/AspergillosisCentreAdvocates/](http://uk.groups.yahoo.com/group/AspergillosisCentreAdvocates/)

National *Aspergillosis* Centre: [www.nationalaspergillosiscentre.org.uk](http://www.nationalaspergillosiscentre.org.uk)

*Aspergilloma* websites: [www.aspergilloma.co.uk](http://www.aspergilloma.co.uk)

The information given is easily understood and up to date. However, if you should have any queries, you should not hesitate to ask your GP or any other health care provider.



## References

- 1 Camuset, J. et al. Treatment of Chronic Pulmonary *Aspergillosis* by Voriconazole in Nonimmunocompromised Patients. (30th March, 2007) *Chest Journal*, American College of Chest Physicians
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- 3 Denning, D.W. Riniotis, K. Dobrashian, R. Sambatakou, H. Chronic Cavitory and Fibrosing Pulmonary and Pleural *Aspergillosis*: Case Series, Proposed Nomenclature Change, and Review. (2003). *Clinical Infectious Diseases*. Available online: [www.journals.uchicago.edu/CID/journal/](http://www.journals.uchicago.edu/CID/journal/)

Medical knowledge and opinion varies according to the extent and availability of research and differing assessments of such research by different practitioners.

Whilst the information contained in this leaflet has been compiled by the *Aspergillus* Trust from sources believed to be reliable, the Trust cannot guarantee the accuracy or completeness of such information and cannot accept any responsibility for any use of such information.

**Update 2009:** The *Aspergillus* Trust is now the Patient Advocates Group, part of the Fungal Research Trust. <http://uk.groups.yahoo.com/group/AspergillosisCentreAdvocates/>

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