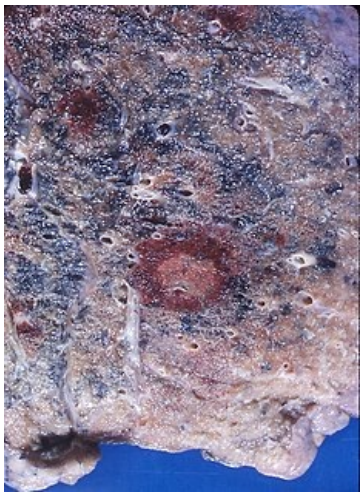
# Invasive aspergillosis

It is **an infectious disease** with high morbidity and mortality for immunocompromised patients caused by fungi of the genus Aspergillus, most often A. fumigatus.



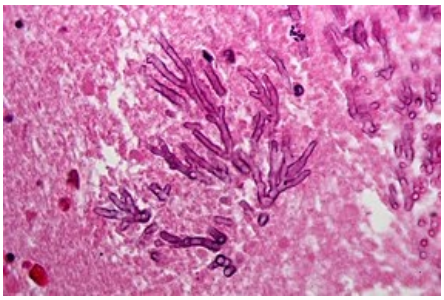
Aspergillosis

## Epidemiology

Aspergils are **ubiquitous**, occurring in the air, soil, dust, building materials, some foods, and water. The main route of entry for aspergillus is the **respiratory tract.** After inhalation, **conidiospores** mature in the lungs and can also penetrate other tissues through blood vessels if they are not controlled by the body's defence mechanisms. However, most people are naturally immune to the development of the disease because their alveolar **macrophages** have the ability to absorb and destroy conidia. However, in patients treated with **kortikosteroids** in immunodeficient patients (patients with leukaemia, AIDS, COPD, patients after chemotherapy or transplantation, etc.), this ability is reduced.

## Risk factors

The main risk factors for the development of IPA are neutropenia, **solid organ transplantation** (especially lung), **hematopoietic stem cell transplantation** (HSCT), **chronic obstructive pulmonary disease** (COPD), **systemic corticosteroid therapy and haematological malignancies**.



Cerebral aspergillosis in an immunocompromised child

Other risk factors such as hepatic and renalfailure,HIV, diabetes mellitus, malnutrition, autoimmune diseases or extensive burns.

In most cases, aspergils are trapped in the lower respiratory tract by inhalation of infectious spores. Less often, IPA can start from other sites, namely the paranasal sinuses, gastrointestinal tract and skin. The infection can spread through the bloodstream to other organs such as the brain, kidneys, liver, heart, pleura, etc.

## Symptoms

The symptoms are non-specific and resemble bronchopneumonia: fever, cough, sputum formation, dyspnoea, chest pain of pleural origin due to vascular invasion leading to thrombosis and small pulmonary infarction, hemoptysis.

## Diagnostics

The gold standard in the diagnosis of IPA is a **histopathological examination** - samples of lung tissue obtained by thoracoscopy or open lung biopsy for the presence of septated branched hyphae and **positive cultures**. Other options are sputum examination, BAL fluid, chest CT examination (presence of nodules and halo sign - zone of weakness around the lung nodules caused by haemorrhage and typical for neutropenic patients), ELISA test for detection of Aspergillus antigens in body fluids (galactomannan - polysaccharide released from aspergillus after growth time) and PCR.

## Treatment

Due to the possible progression of the disease, it is recommended to start treatment when IPA is suspected before the diagnosis is confirmed by laboratory tests. Commonly used drugs are **liposomal amphotericin B, voriconazole** and echinocandin derivatives such as **caspofungin** or **micafungin**.

## References

### Related Articles

- Aspergillosis
- Allergic bronchopneumatic aspergillosis (ABPA)
- CNPA
- Aspergilom
- Aspergills infection
- Invasive fungal infections

### External Links

- Aspergilosis, Medscape (https://emedicine.medscape.com/article/296052-clinical)

## Used Literature


- KOUSHA, M – TADI, R – SOUBANI, A.O. Pulmonary aspergillosis: a clinical review. *European Respiratory review* [online]. 2011, y. 2011, no. 121, p. 156-162, Available from <www.ersjournals.com>. ISSN 1600-0617. DOI: 10.1183/09059180.00001011 (http://dx.doi.org/10.1183%2F09059180.00001011).
- WILLEY, Joanne M – SHERWOOD, Linda M – WOOLVERTON, Christopher J. *Prescott,Harley, and Klein's Microbiology.* 7. edition. McGraw-Hill Hogher Education, 2008. ISBN 978-0-07-299291-5.
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