



SNS COLLEGE OF ALLIED HEALTH SCIENCES
SNS Kalvi Nagar, Coimbatore - 35
Affiliated to Dr MGR Medical University, Chennai



DEPARTMENT OF CARDIOPULMONARY PERFUSION CARE
TECHNOLOGY

COURSE NAME: GENERAL PATHOLOGY
I YEAR

UNIT IV : INFECTIOUS DISEASES

TOPIC : FUNGAL INFECTION

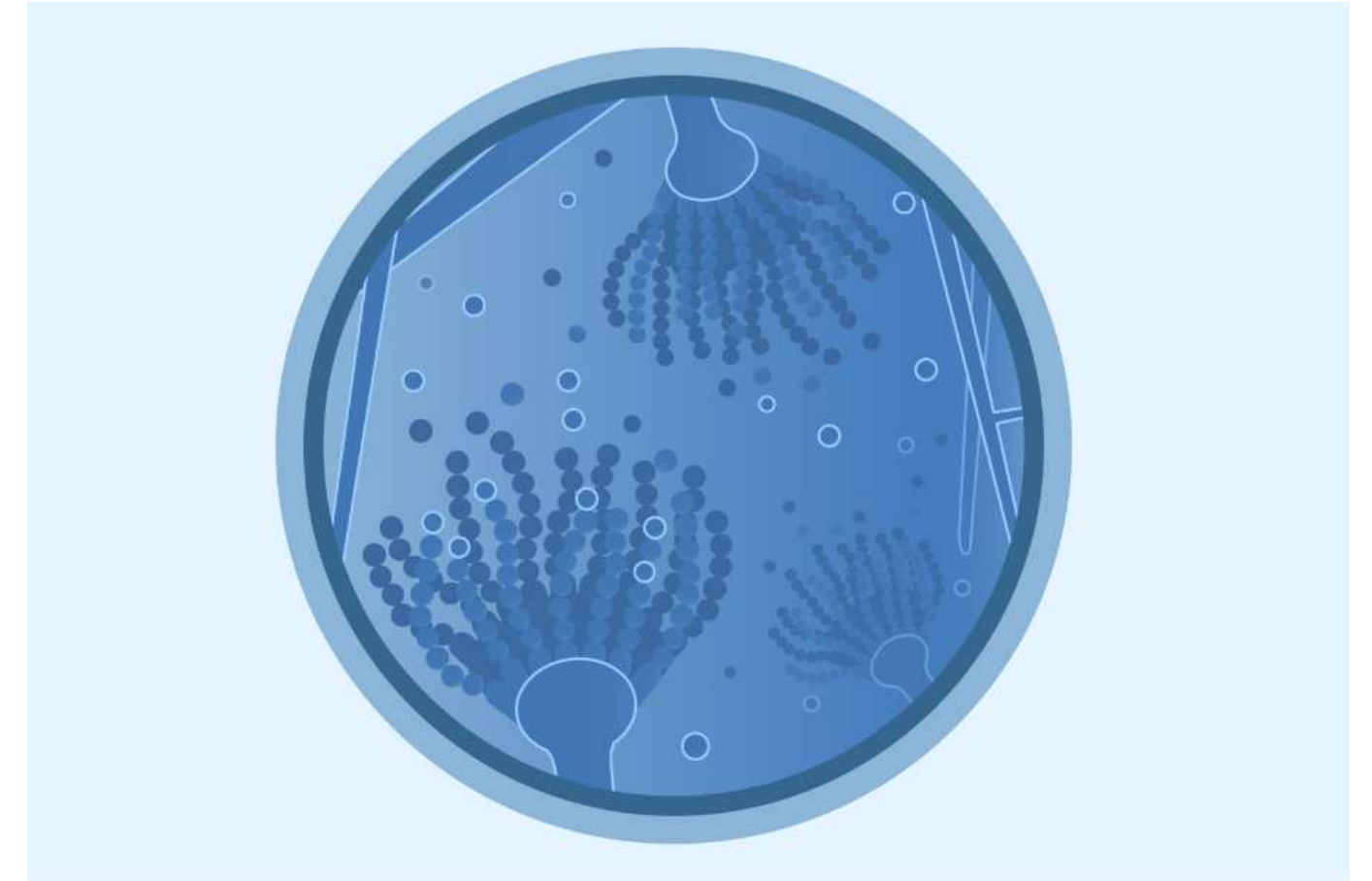
SUB TOPIC 2: ASPERGILLOSIS



Aspergillosis



- It is a **saprophytic fungus** (found in decaying matter)
- The infection is caused by **Aspergillus**
- Its affects the Immunocompromised individuals
- It is coming under the category of **Opportunistic Infection**
- The clinical manifestations vary from allergy to skin to systemic forms

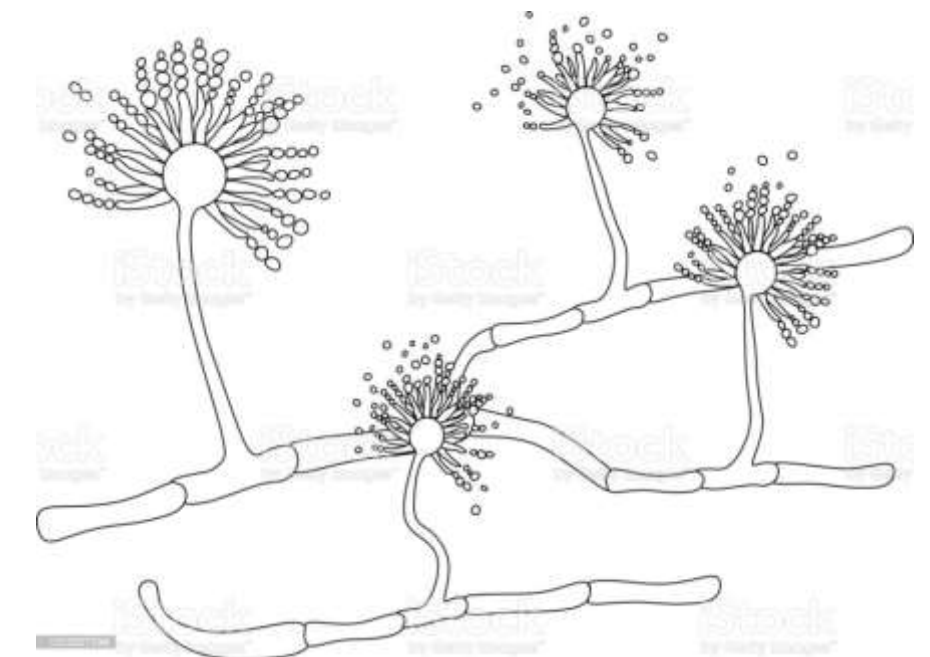
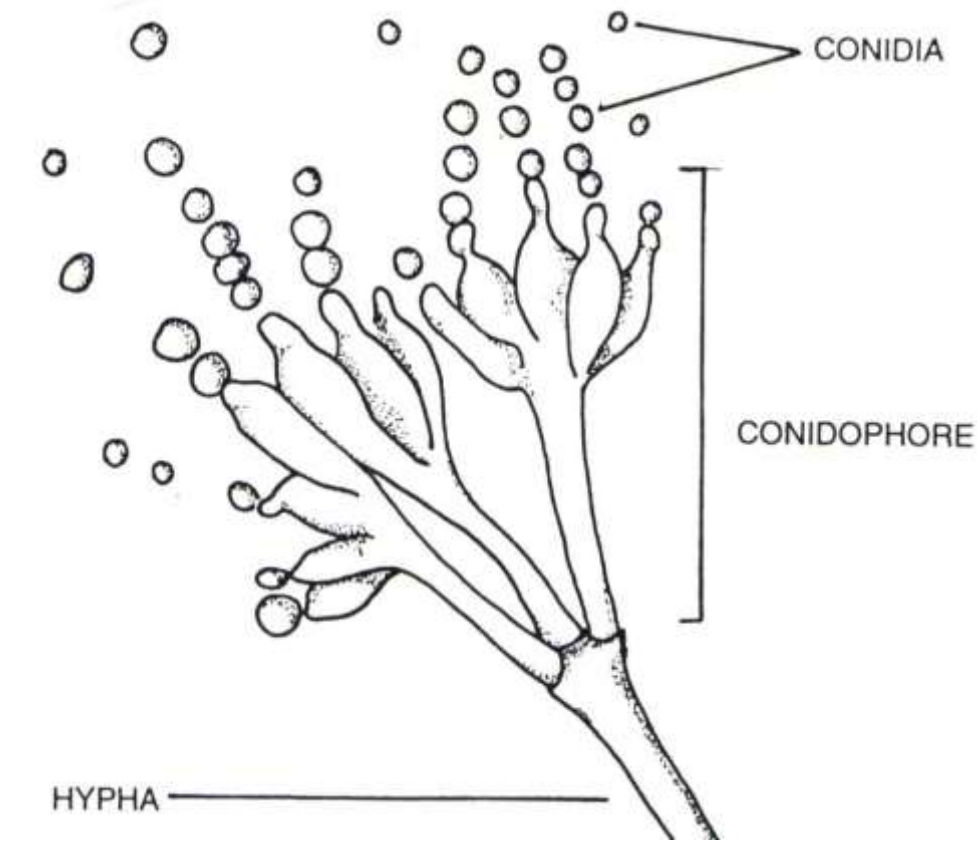




Structure of Aspergillosis



- It has **hyphae**, a filamentous part of fungi
- Thick walled T shaped cell below the hypha is called **foot cell**
- The structure of Aspergillosis contains **conidiopores** – erect branch
- **Conidium**, a type of asexual reproductive spore of fungi and it has vesicles at the center
- Length of Conidiopores is 2.5mm





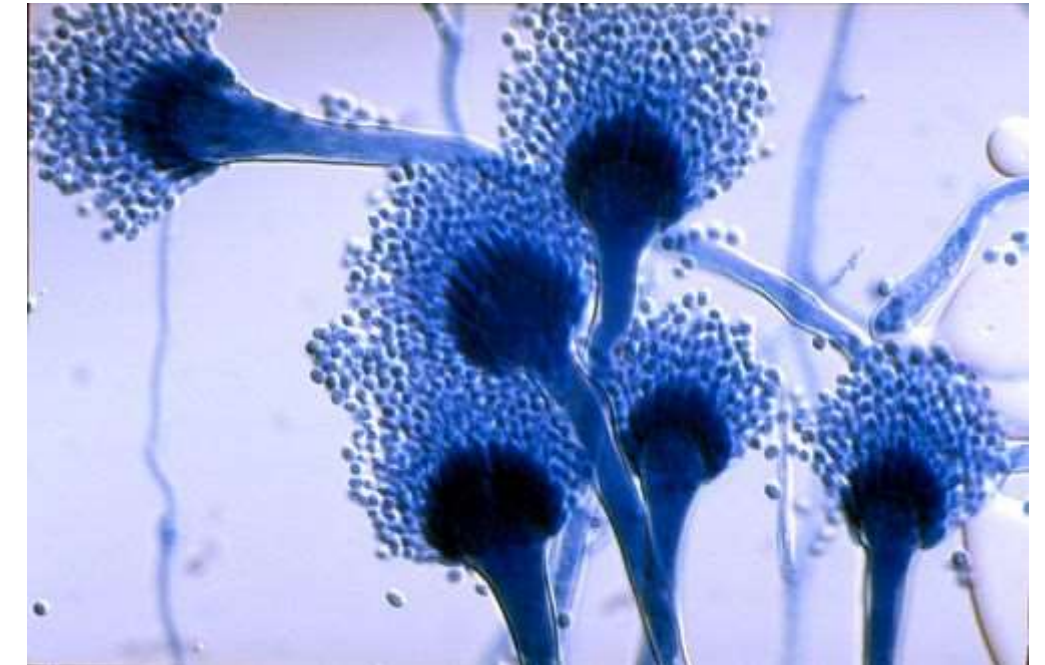
Types of Aspergillosis spp.



- Approximately 180 species of *Aspergillus* have been found, but fewer than 40 of them are known to cause infections in humans.
- Among these species, *Aspergillus Fumigatus* is the most common cause of human *Aspergillus* infections.

Other common species include,

- *Aspergillus Flavus*
- *Aspergillus Terreus*
- *Aspergillus Niger* and
- *Aspergillus Nidulans*





Classification of Aspergillosis



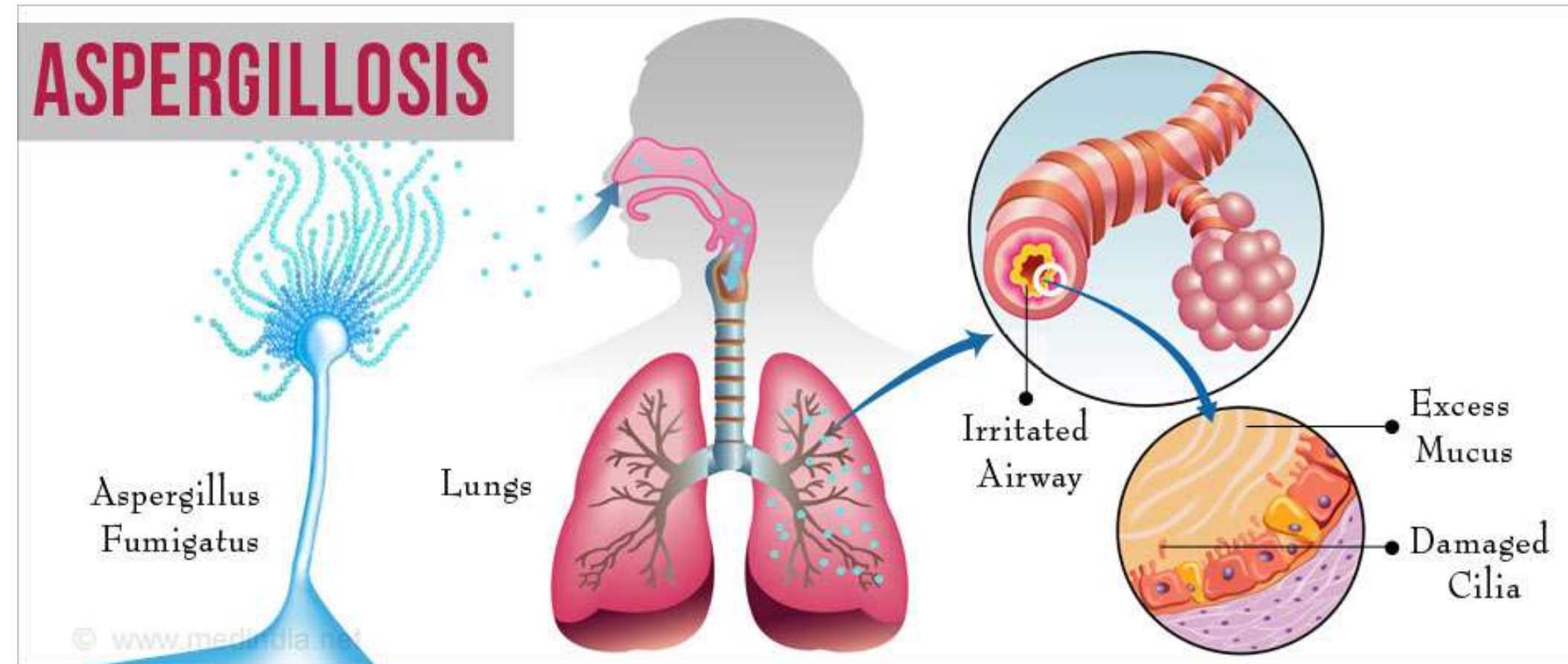
- Invasive Aspergillosis
- Allergic Bronchopulmonary Aspergillosis (ABPA)
- Chronic Pulmonary Aspergillosis
- Aspergilloma
- Cutaneous Aspergillosis



Invasive Aspergillosis



- Acute and Sub-acute (<1 month)
- Invasive form of Aspergillosis affects,
 - Pulmonary
 - Central Nervous System
 - Sino nasal
 - Endocarditis
 - Cutaneous



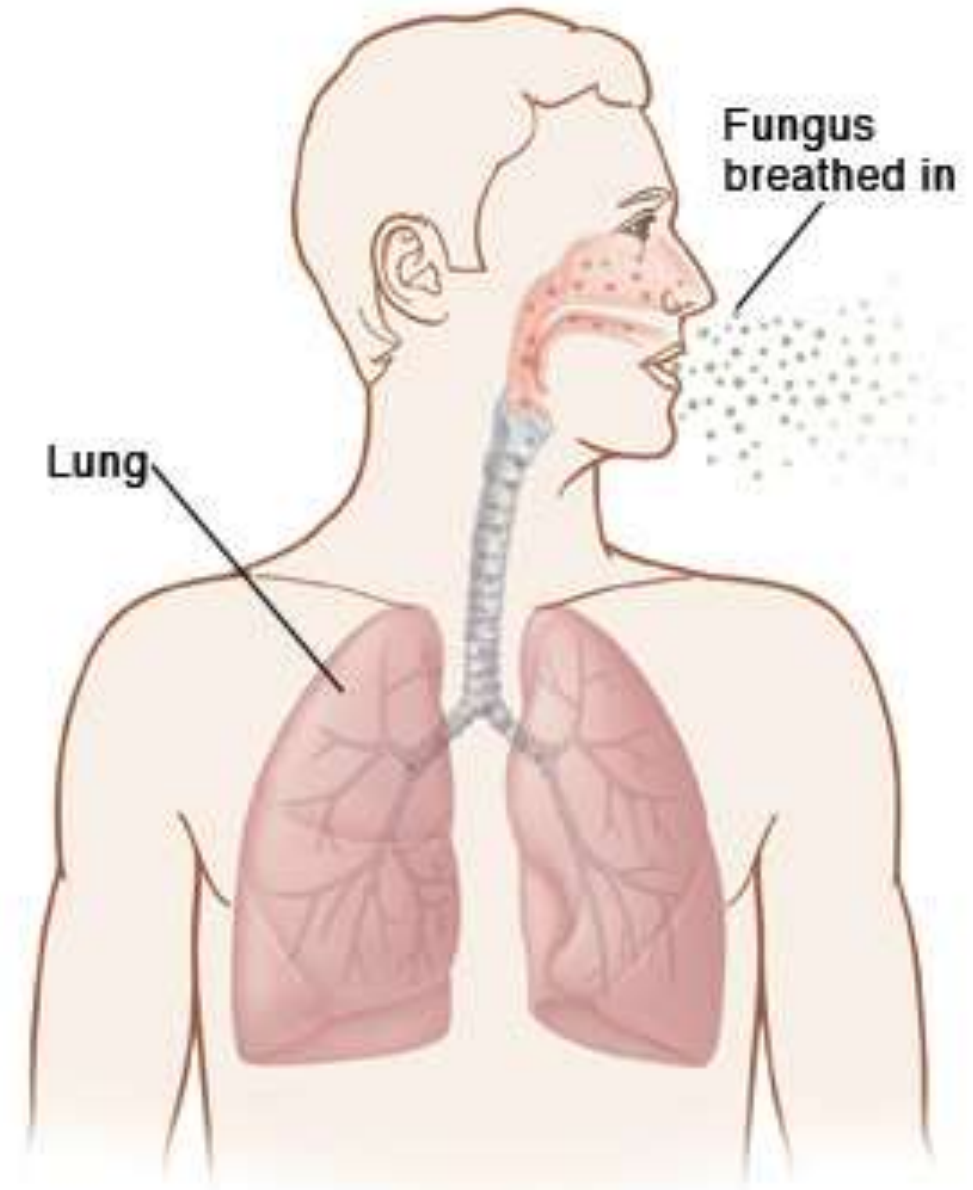
- This type of disease is fatal, and are usually caused to immunocompromised and prolonged antibiotic, steroid treatment patient



Allergic Bronchopulmonary Aspergillosis (ABPA)



- ABPA is a form of lung disease that occurs in some people who are allergic to persistent *Aspergillus fumigates* in the airways.
- It usually occurs in patients with **asthma or cystic fibrosis (CF)**





Chronic Pulmonary Aspergillosis



- **Long-term** *Aspergillus* infection of the lung
- *Aspergillus fumigates* is a reason for illness
- Chronic obstructive pulmonary disease, post-pulmonary tuberculosis will be occurred

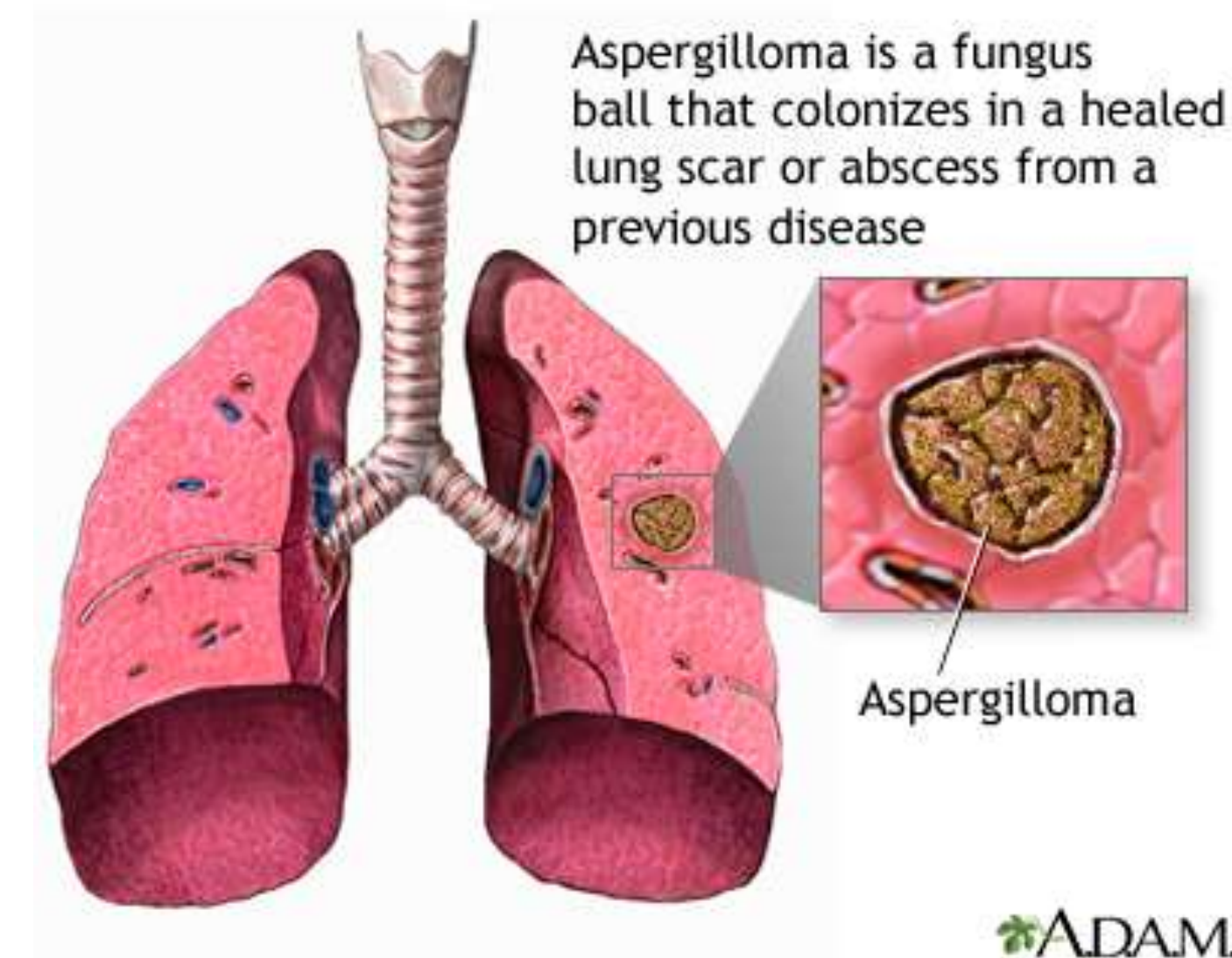




Aspergilloma



- Aspergilloma, also known as a **fungus ball**
- Normally found in injured or scarred lung tissue, such as bronchiectasis areas or **pre-existing cavities**.
- Aspergillus species **colonizing the respiratory tract**
- It can secrete digestive enzymes into the surrounding lung parenchyma and create space for the **growth of the fungus ball**.





Cutaneous Aspergillosis



- Cutaneous aspergillosis is a rare form of a **locally invasive disease**
- *Aspergillus* entering the body through a break in the **skin** of people who have weakened immune systems



Symptoms

- Coughing frequently (sometimes may cough up blood)
- Fatigue
- Wheezing
- Shortness of breath
- Chest pain or tightness
- Fever (repeated attack)
- Weight loss
- Sputum production



Shortness of breath



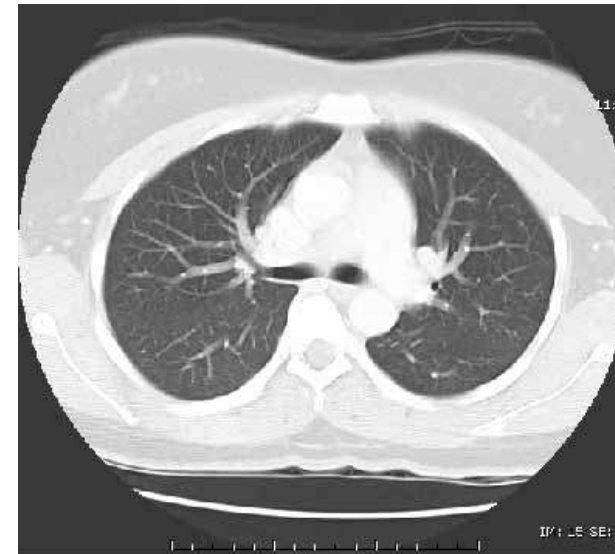
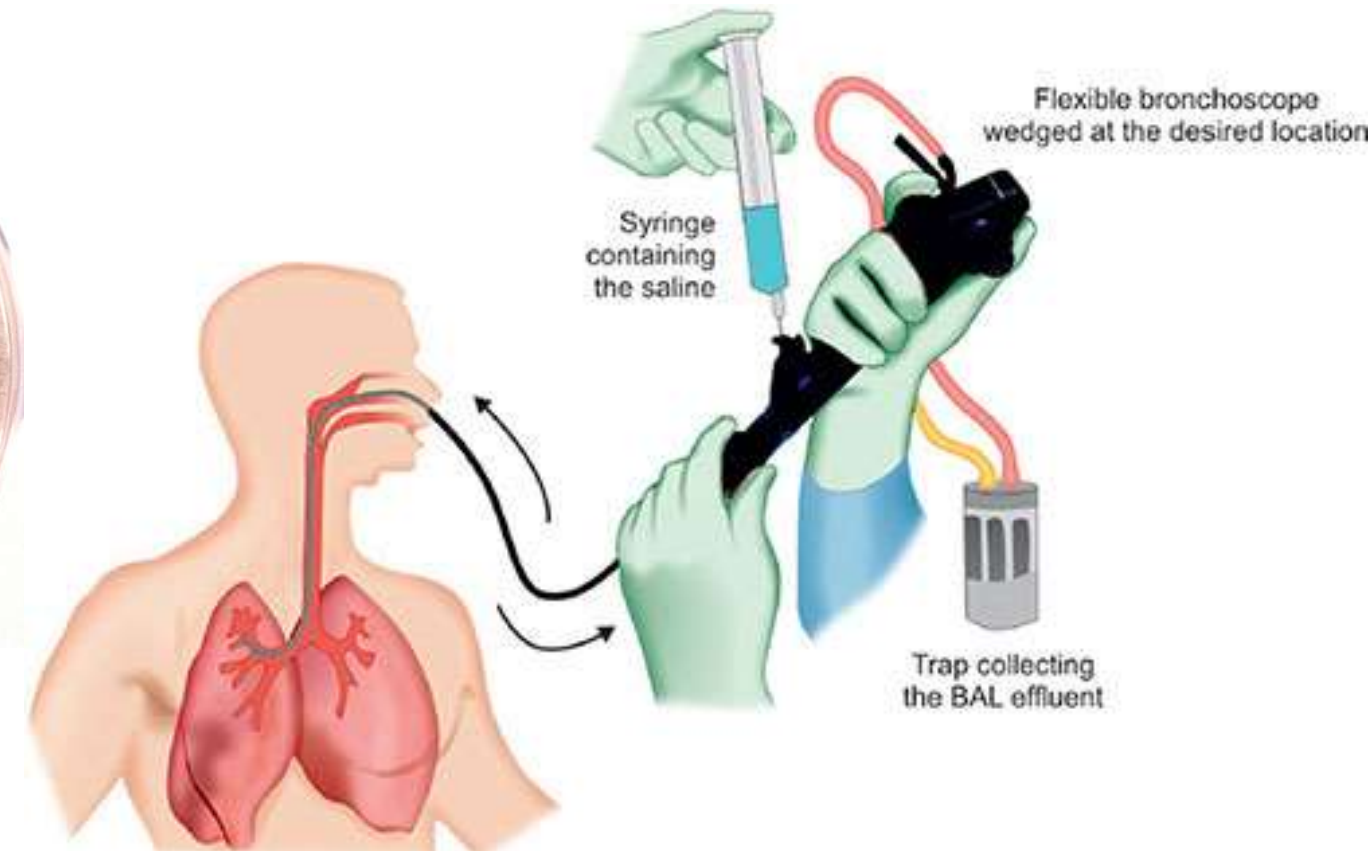
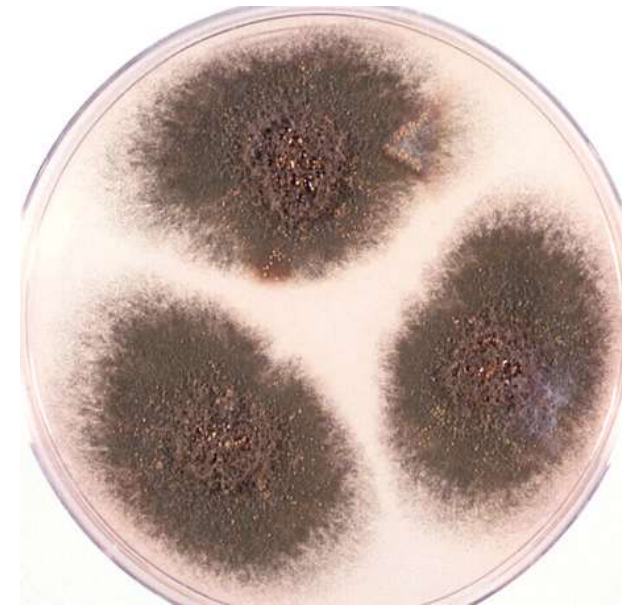


Diagnosis



Diagnosis

- Culturing of *aspergillus* spp
- Biopsy
- Sputum and/or broncho-alveolar lavage (BAL) specimens for fungal staining
- X-ray
- CT scan
- Blood test for antibodies
- IgE levels for allergic evaluation
- Polymerase chain reaction (PCR)
- Radiological and histopathology analysis





Treatment



- Antifungal – **voriconazole, amphotericin**
- Oral corticosteroids and antifungal drugs
- Long-term antifungal treatment is required and **micafungin or amphotericin b** is prescribed





Reference



- Moss, R.B. Treatment options in severe fungal asthma and allergic bronchopulmonary aspergillosis. *European Respiratory Journal*. 2013, 43(5): 1487-1500.
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- Dagenais, T.R.; Keller, N. P. Pathogenesis of *Aspergillus fumigatus* in invasive aspergillosis. *Clinical microbiology reviews*. 2009, 22(3): 447-65.
- Denning, D.W.; *et.al.* Chronic pulmonary aspergillosis: rationale and clinical guidelines for diagnosis and management. *European Respiratory Journal*. 2015, 47(1): 45-68.
- Kucharczuk, J.C.; Kaiser, L.R. Resection of Symptomatic, Complex Aspergilloma. 2007.



THANK YOU