UNIVERSITAS CAROLINA PRAGENSIS

Univerzita Karlova v Praze - 1. Lékařská fakulta

Mycoses in immunocompromised patients

Dermatovenerologická klinika

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Candidosis

- Candida albicans
- Non-albicans species
- Candida glabrata
- Candida krusei
- Candida parapsilosis

Mucosa of the digestive tract

- Etiology: mainly C. albicans
- Commensal flora – endosaprobe
- Under normal circumstances yeast cell count very low
- Growth of 1 – 5 colonies on Petri dish is considered normal

Pathogenesis

- adherence to epithelial cells
- invasion into the epithelium
- invasion into submucosa, angioinvasion
- adherence to endothelial cells
- dissemination, systemic candidosis

Host defense mechanisms

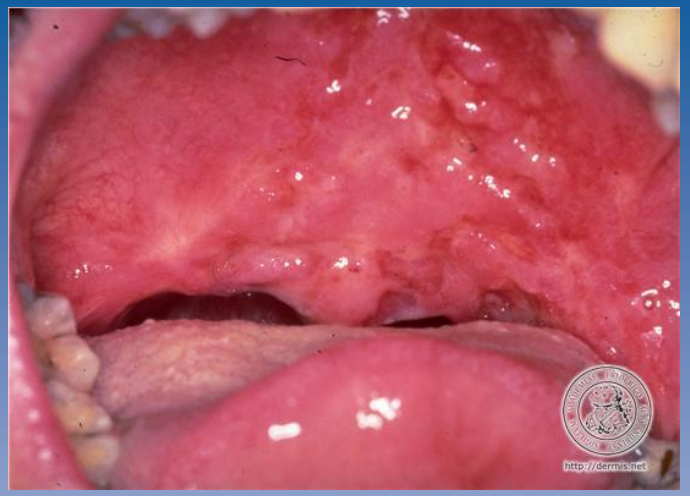
- CD4 T-lymphocytes (against superficial candidosis)
- neutrophil leucocytes (against systemic candidoses)
- secretoric IgA
- desquamation of the epithelium
- saliva production
- fungistatic factors in saliva – lactoferrin, lactoperoxidase, lysozymes
- interaction with resident bacterial flora
- mucins (glycoproteins) – adherence inhibitors

Predisposing factors

- malabsorption
- kachexia
- haematologic malignancy
- diabetes mellitus
- long-standing steroid therapy
- radiotherapy, chemotherapy
- antibiotics
- age
- HIV/AIDS

Clinical presentation of oral candidosis

Clinical presentation of oral candidosis



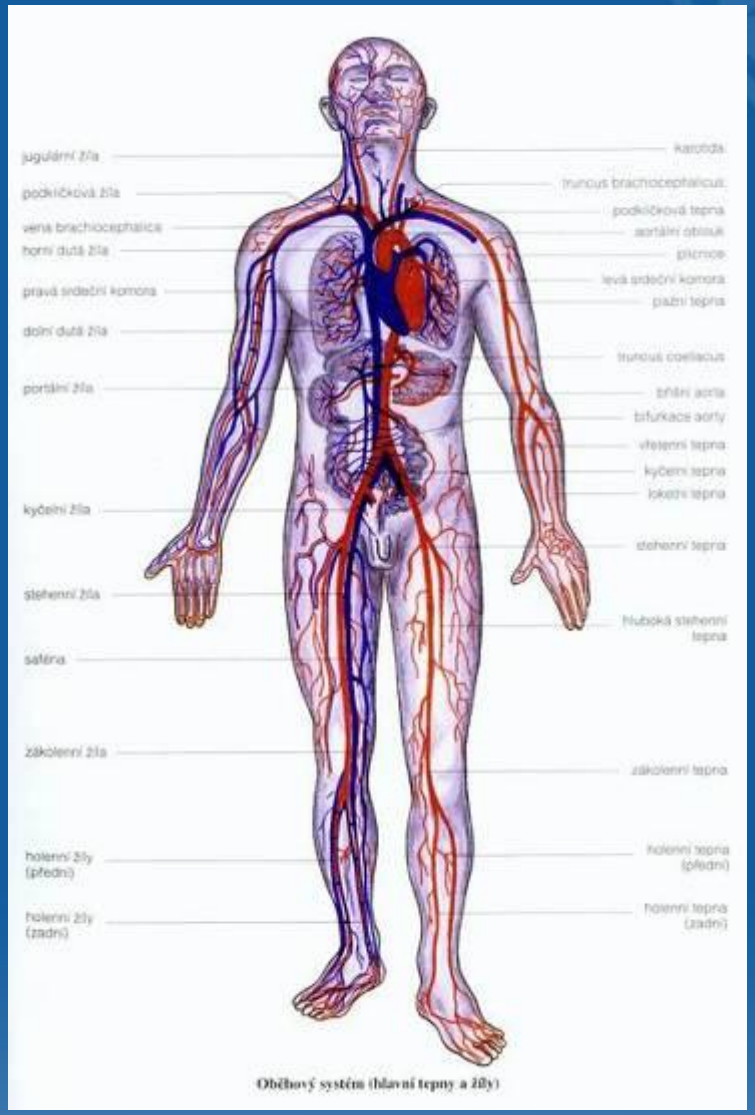
Vulvovaginal candidosis

Chronic mucocutaneous candidosis

Candida oesophagitis

- diagnosed by endoscopy
- subjective symptoms: dysphagia, retrosternal pain, odynophagia
- found in 0,9 – 1,6 % routine endoscopies
- immunocompromised subjects:
  - HIV = 15 – 20 %
  - tumors = 17 %
  - myeloproliferative syndrome = 20 %

Dissemination of Candida



Oběhový systém (hlavní tepny a žíly)

Nosocomial candidosis

- the fourth most frequent cause of nosocomial septicaemia
- the most frequent nosocomial mycosis
- catheter septicaemia

Clinical samples

- sputum
- mucosal swabs
- skin scales
- subungual debris
- stools
- urine
- blood

- microscopy (Gram stain, KOH mount, fluorescent dye)
- cultivation on Sabouraud´s agar at room temperature and at 37°C

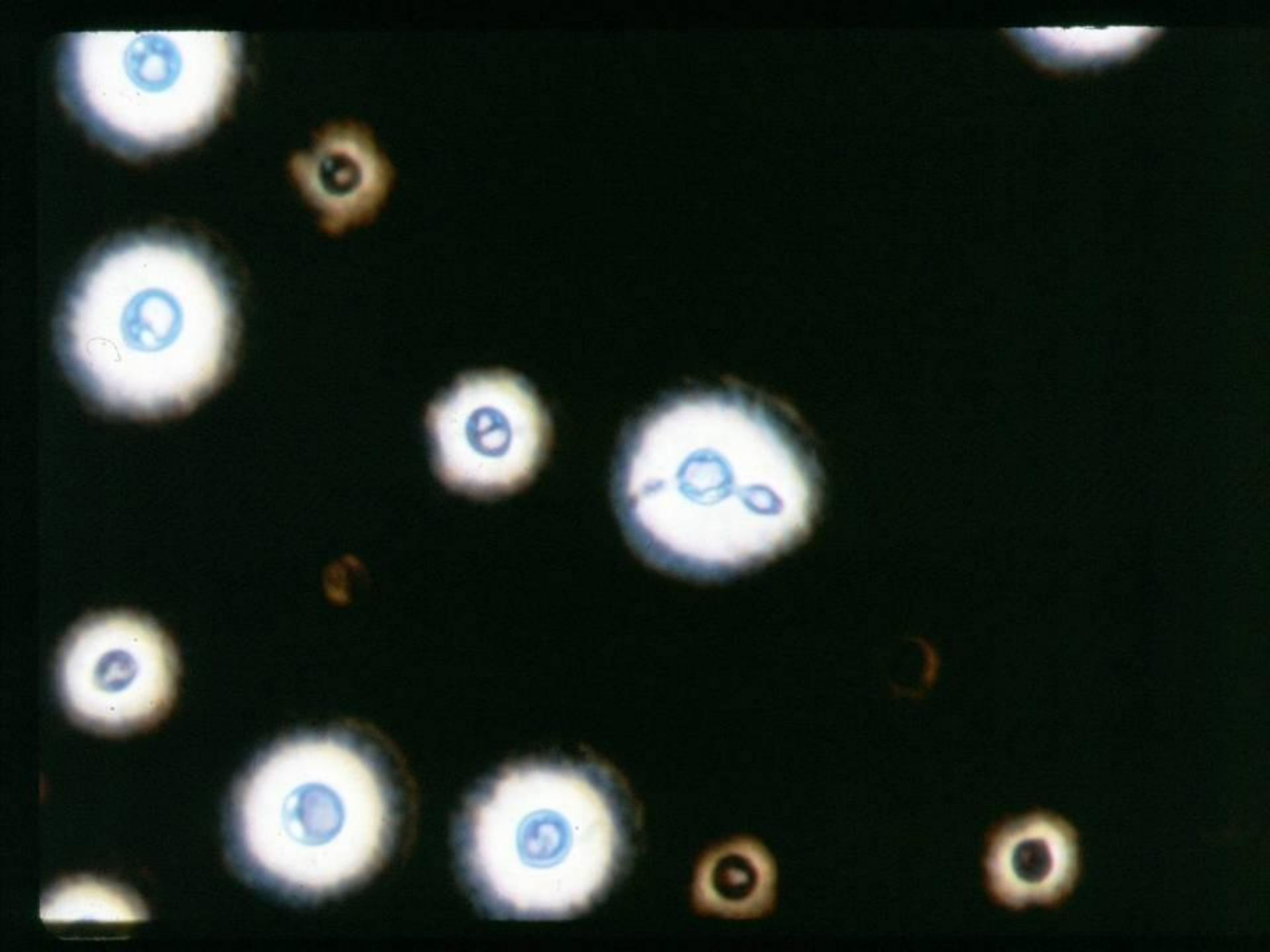
Serology

- detection of antibodies (IgG, IgM)
- detection of antigen (galactomannan, beta-glucan)
- detection of DNA

Therapy

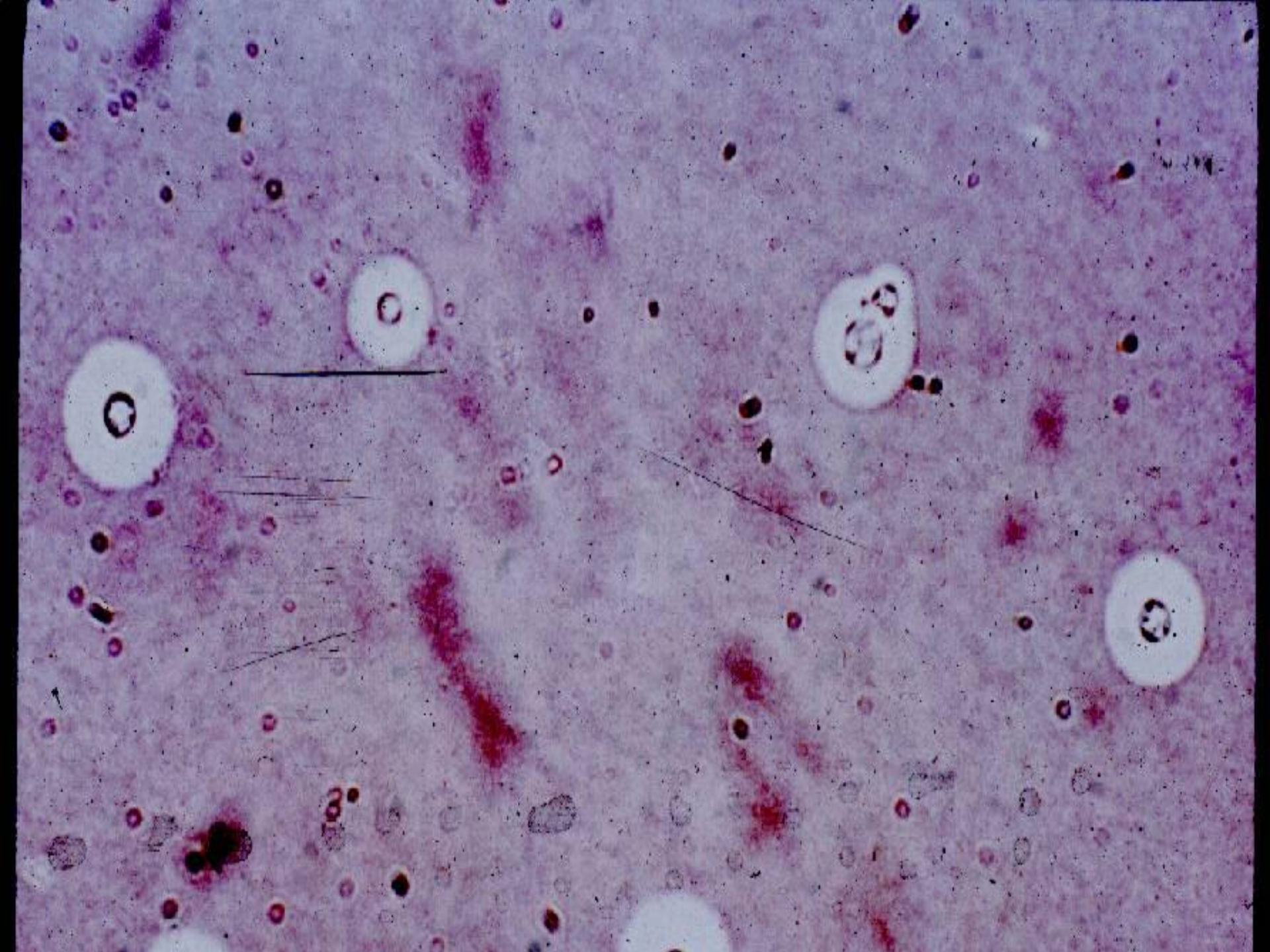
- topical polyene antimycotics
- Fluconazole
- Itraconazole
- Amphotericin B
- Voriconazole
- Posaconazole
- Caspofungin

Cryptococcosis



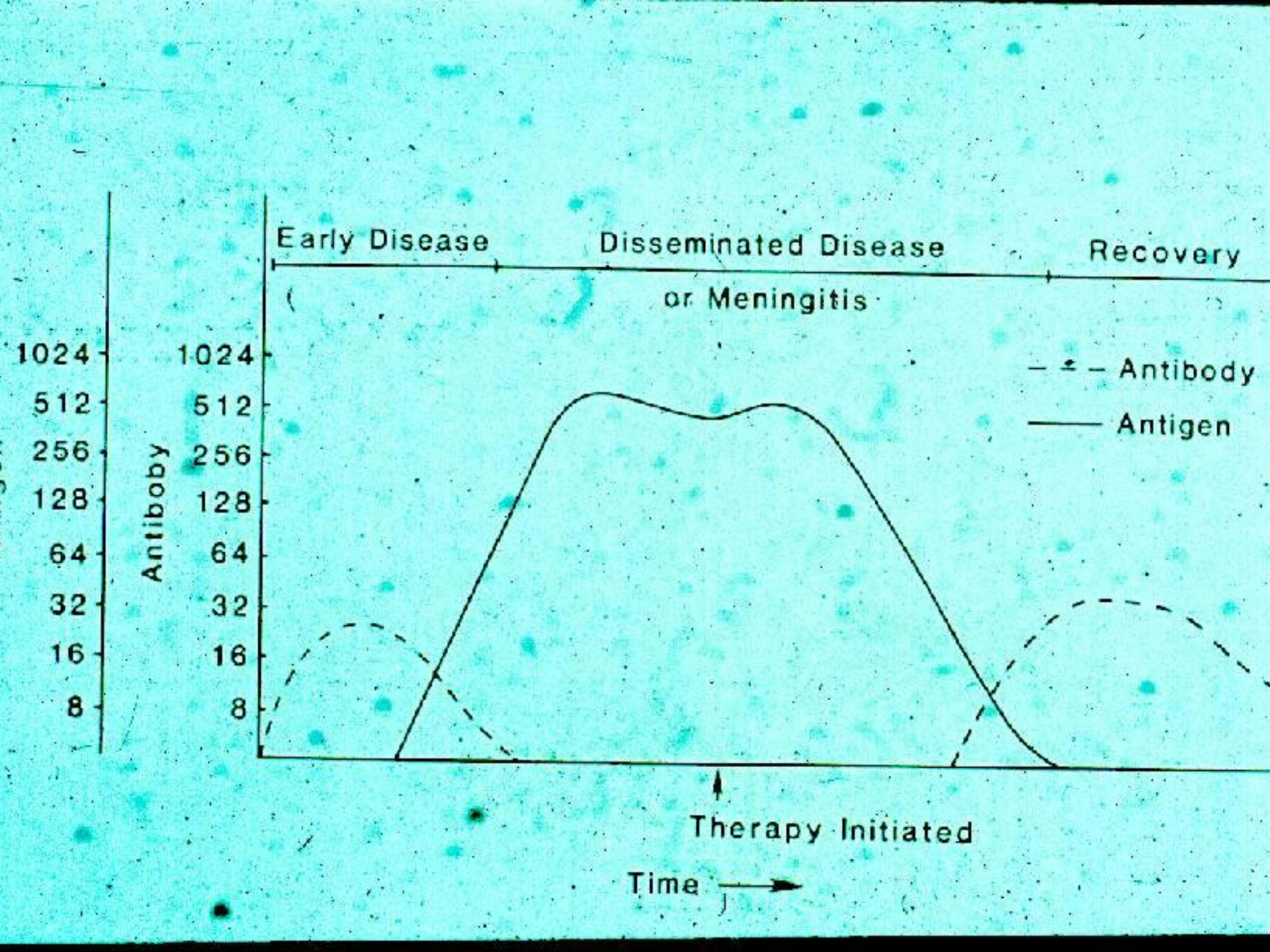
Pathogenesis

- infection occurs by inhalation
- mild respiratory disease
- latency
- hematogenous dissemination
- severe meningoencephalitis



Clinical samples

- cerebrospinal fluid
- sputum
- urine
- blood


Early Disease
Disseminated Disease
or Meningitis
Recovery
Antibody
Antigen
1024
512
256
128
64
32
16
8
Antiboby
Therapy Initiated
Time

Serology

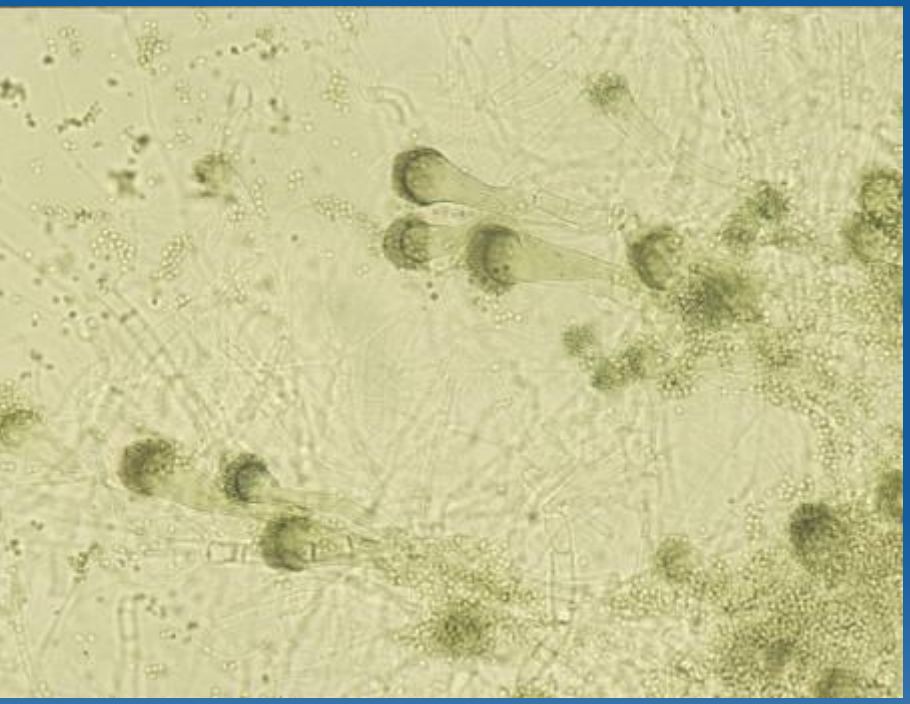
- detection of capsular antigen in CSF

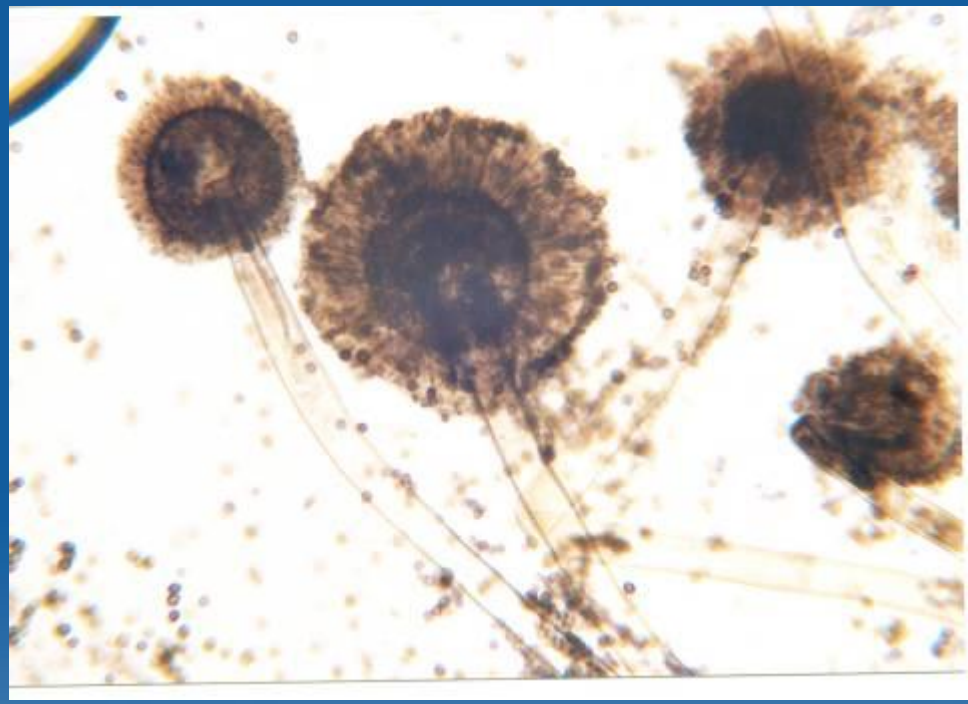
Therapy

- Amphotericin B + 5-fluorocytosine
- Amphotericin B + fluconazole

Aspergillosis

- Aspergillus fumigatus
- Aspergillus niger
- Aspergillus flavus





Clinical presentation

- allergic bronchopulmonal aspergillosis
- aspergilloma
- invasive pulmonal aspergillosis (IPA)

Nosocomial infection

- construction works in the hospital
- air-conditioning malfunction
- flowerpots
- some foods (black tea, fruit teas, unpeeled raw fruit, breakfast cereals)

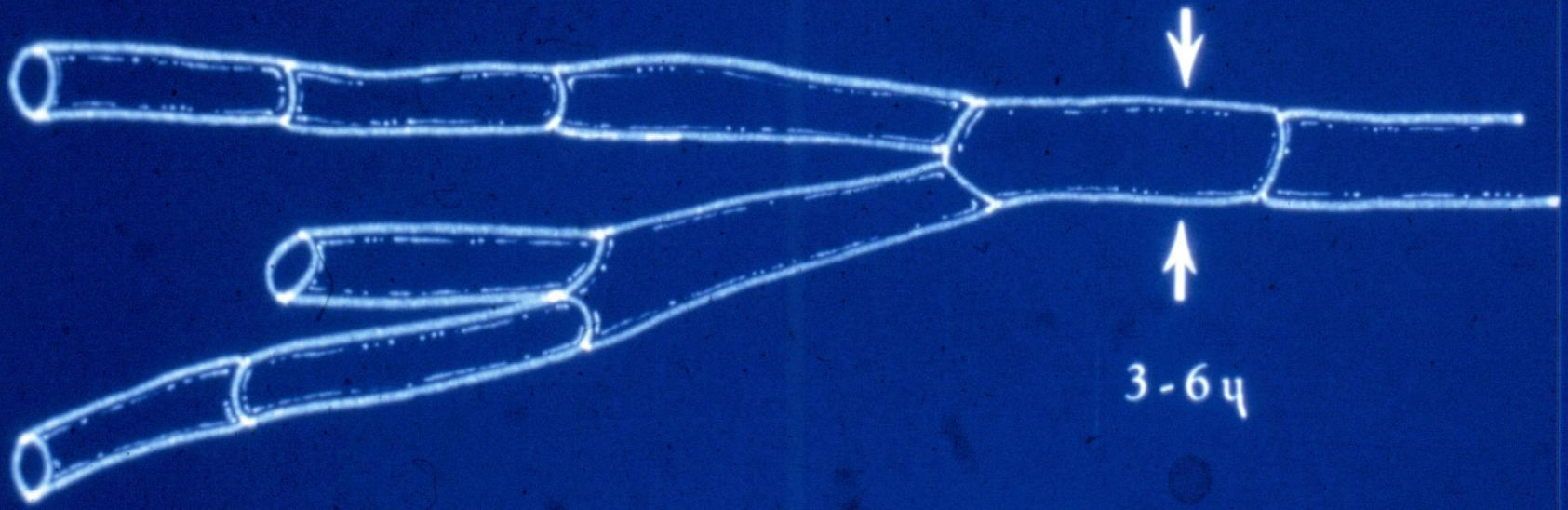
Pathogenesis

- main defense mechanism – phagocytosis (alveolar macrophages, neutrophil leukocytes)
- virulence factors: enzymes (proteases, phospholipases), toxins (gliotoxin, restrictocin)
- angioinvasion

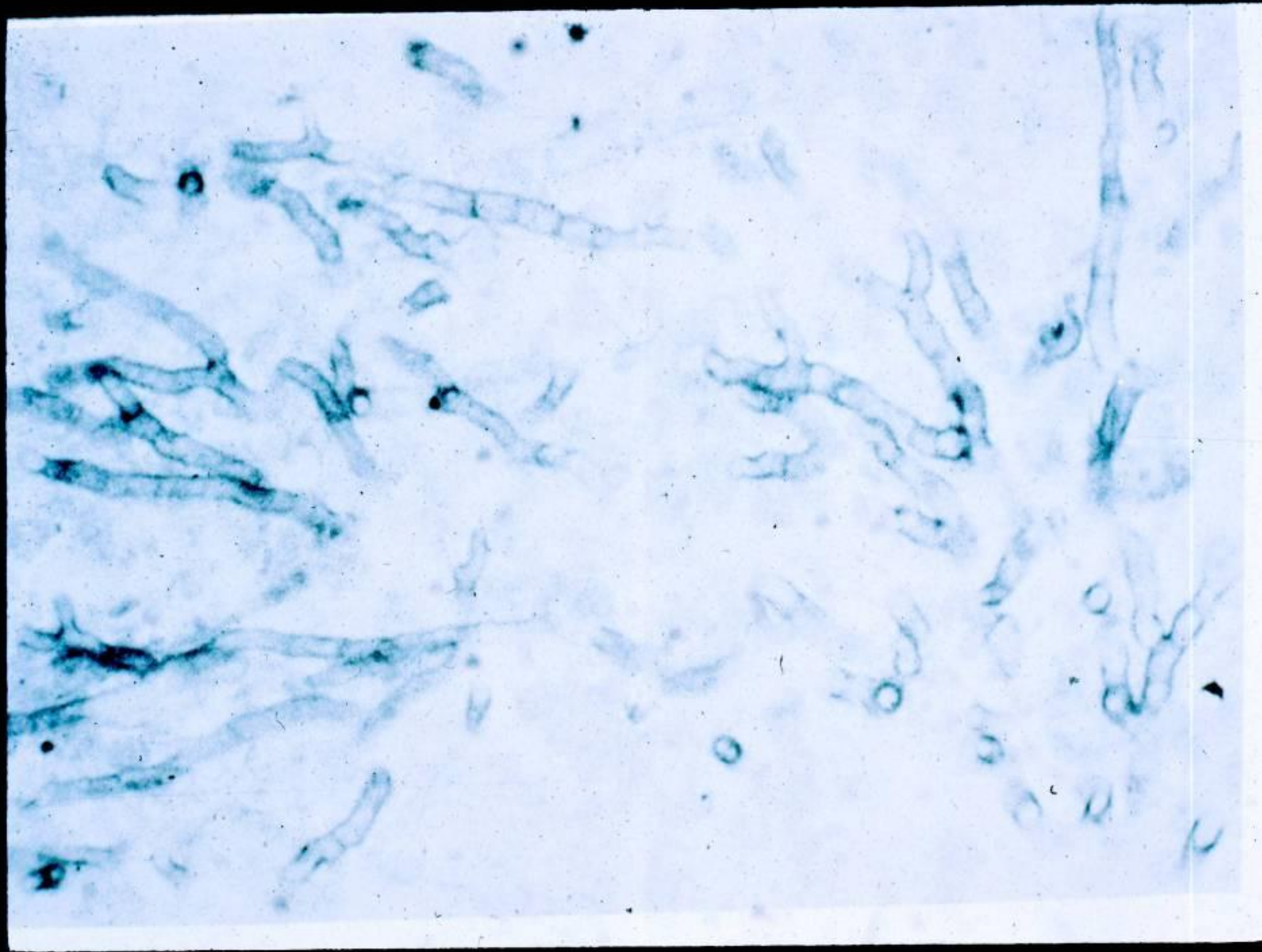
Diagnosis of IPA

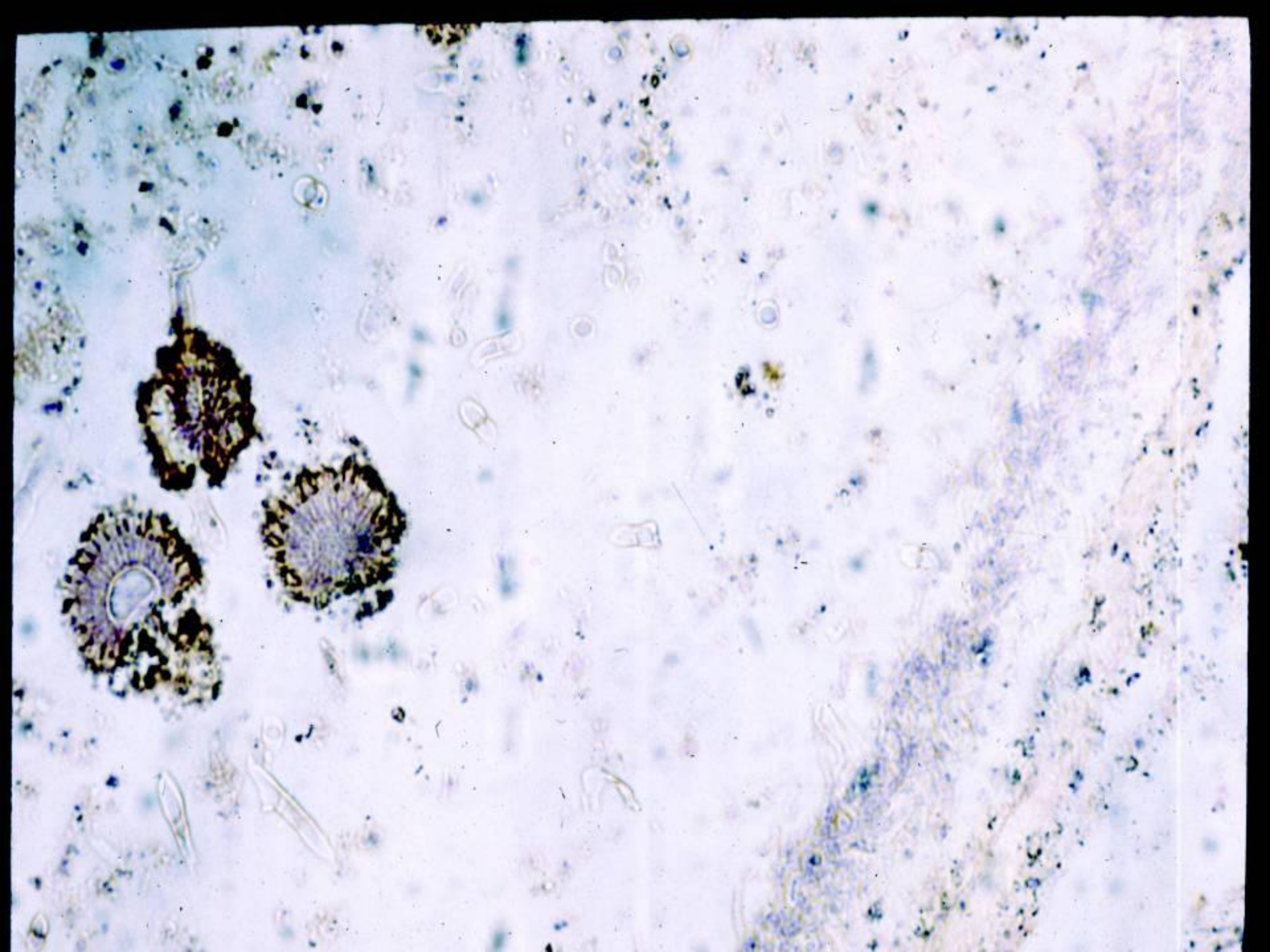
- clinical signs non-specific: fever, pleural pain, dyspnoe, event. hemoptysis
- unspecific bronchopneumonia on X-ray
- culture from sputum = contamination?
- bronchoalveolar lavage
- biopsy

ASPERGILLUS



DICHOTOMOUS BRANCHING





Serology

- detection of antibodies (aspergilloma, allergic bronchopneumonia)
- detection of galactomannan in serum (IPA in neutropenic patients)

Therapy

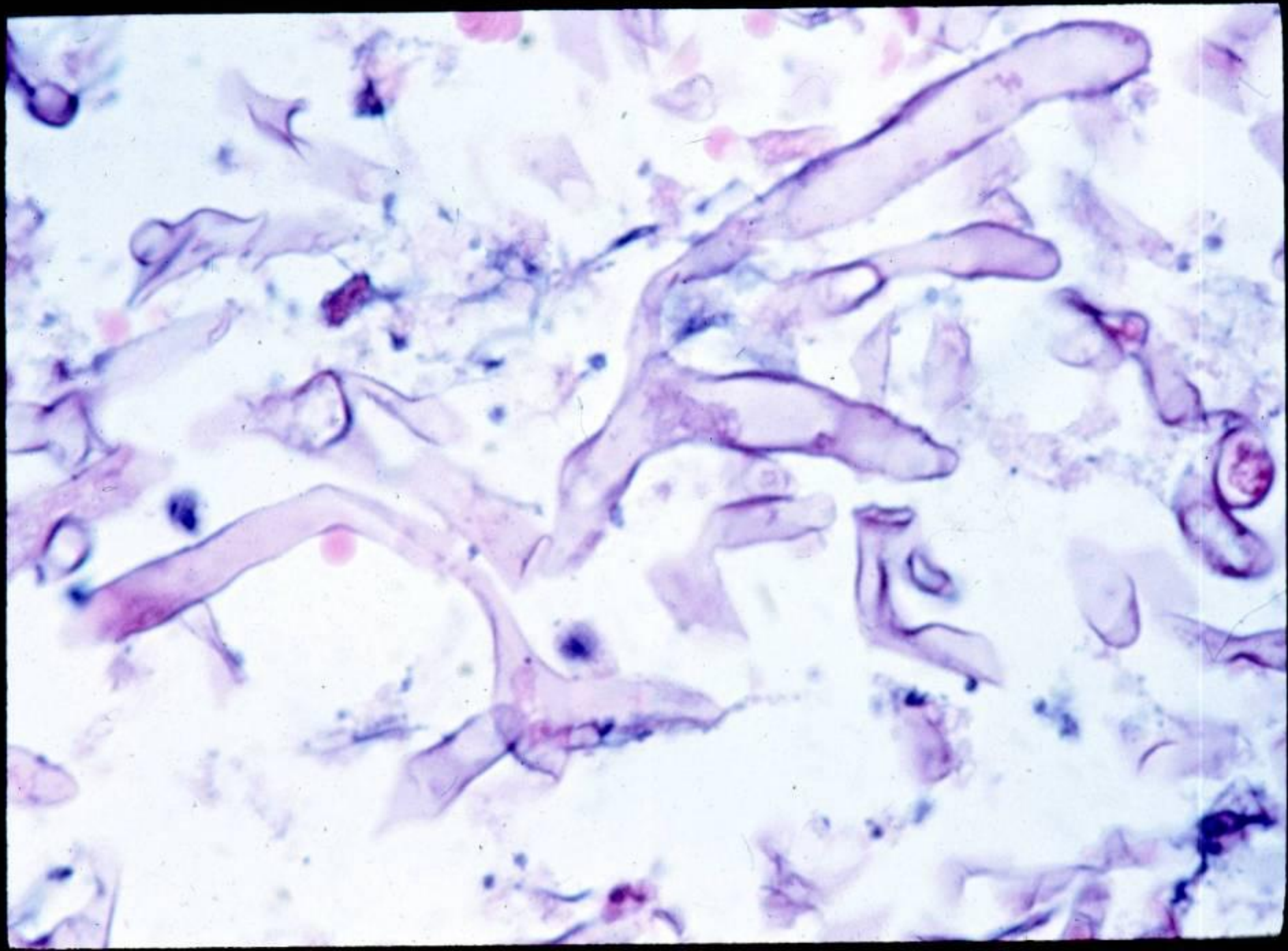
- voriconazole
- amphotericin B

Mucormycosis

- Mucor sp.
- Rhizopus sp.
- Absidia sp.

Pathogenesis

- risk factor: decompensated diabetes with ketoacidosis
- infection occurs by inhalation
- invasion into paranasal sinuses, orbit, brain = rhinocerebral mucormycosis
- angioinvasion, thrombosis, massive necrosis



Therapy

- surgical debridement
- amphotericin B
- posaconazole

Thank You for Your attention