

Treatment:  
Fungal infections in the critically  
ill pediatric population

Tore G. Abrahamsen  
Dept of Pediatrics  
Rikshospitalet-Radiumhospitalet  
Medical Center

# Fungal Infections in Pediatrics

- Premature newborns → neonatal intensive care unit (NICU)
- Fever/neutropenia (Leukemia/lymphoma)  
→ pediatric intensive care unit (PICU)
- Bone marrow transplantation/solid organ transplantations → PICU
- Primary immunodeficiency (Chronic mucocutaneous candidiasis etc.)

Colonization-superficial infections-systemic infection

# Yeast → *Candida albicans*

- Premature newborns → neonatal intensive care unit (NICU)

→ High mortality in Norway in the <1000g population

462 infants with birthweight <1000g:

VEOS (1 day): 1 patient

EOS (2-7days): 1 patient

LOS (after 7 days): 13 patients (-of the 8 patients that died, 5 had *C.albicans* isolated)

Rønnestad et al. Pediatrics 2006

# Yeast → *Candida albicans*

- Prophylaxis (when birth weight <1000g):
  - Fluconazole (effect? Selection of *candida* spp with decreased susceptibility to flu? *C.krusei*, *C.glabrata*)
- Colonization:
  - 1992-2005: 10 isolates from CVK (mostly *C.albicans*)
  - Surveillance cultures?? Prerequisite for invasion?
- Candidemia:
  - 1992-2005: 28 isolates (mostly *C.albicans*, but also *C.parapsilosis*, *C.lipolytica*)

# Yeast → *Candida albicans*

- Treatment of candidemia in neonates
  - Amphotericin B deoxycholate 0.5mg/mg i.v. over 2 hours once daily
  - Liposomal amphotericin B 3mg/kg i.v. over 1 hour once daily
  - Fluconazole (?) 6-12mg/kg i.v.
  - Caspofungin ? (1mg/kg i.v. over 1 hour once daily)

# Yeast → *Candida albicans*

- Fever/neutropenia (Leukemia/lymphoma)
  - pediatric intensive care unit (PICU)
  - Candidemia: consequence of broad spectrum antibiotics?
  - Value of surveillance cultures??
- Empiric treatment:
  - Amphotericin B deoxycholate 0.5-1mg/kg i.v. 2h
  - Liposomal amphotericin B 3mg/kg i.v.1h (when renal impairment, serious sideeffects of ampho)
  - Fluconazole ? (6-12mg/kg i.v.; depend on the pattern of local fungal isolates)

# Molds → *Aspergillus fumigatus*

- Invasive aspergillosis
  - Lungs
  - Sinuses
- Risk groups
  - Children under treatment for AML
  - Children who have undergone BMT
    - With GVHD
  - Children after lung transplantation
  - Children with aplastic anemia

# Molds → *Aspergillus fumigatus*

- Treatment
  - Liposomal amphotericin B 3-5mg/kg i.v. 1h
  - Voriconazole
    - Day 1: 6mg/kg x 2 i.v. 2h
    - Then: 4mg/kg x 2 i.v. 2h
    - (drug interactions, transient visual disturbances, rash, increase of liver parameters)
  - Surgery



# Primary immunodeficiency

- Chronic mucocutaneous candidiasis
  - Yeast infection
  - Prophylaxis/treatment with fluconazole
  
- Chronic granulomatous disease
  - Mold infection
  - Prophylaxis with itraconazole