PATHOGENIC FUNGI

Fungi: Saprophytic multicellular eukaryotes, grow in almost every niche. A few are pathogens, mostly opportunistic. Includes yeasts (single celled or dimorphic) and molds (branching hyphae).

Only 50 species are human pathogens. Superficial mycoses are common, serious infections rare.

Three mechanisms of pathogenicity:
1) Allergic hypersensitivity  _Aspergillus_ found in leaf mold, allergenic
2) Intoxication  mycotoxins _Aspergillus flavus_ (aflatoxin)
3) Infection  mycoses growth of fungus on or in the body

MYCOSES three categories:

1) superficial (dermatomycosis) infects only surface layers: skin, hair, nails, live on keratin
   Transmission direct contact, fomites (bathtubs, shower stalls, towels, etc)
   Treatment: clean & dry!
   Non-prescription: tolnaftate, undecylenic acid
   Prescription drugs: topical miconazole, clotrimazole, or griseofulvin
   (tinea = moth larva, worm)
   - _tinea capitis_ Ringworm  _Microsporum_ scalp, esp children
   - _tinea capitis_ Favus  _Trichophyton_ scalp
   - _tinea pedis_ Athlete’s Foot  _Epidermophyton, Trichophyton_ between toes
   - _tinea cruris_ Jock Itch  _Trichophyton, Epidermophyton_ inguinal

2) subcutaneous lower layers of the skin
   _Sporothrix schenckii_ ubiquitous in rotting wood in soil. Sporotrichosis is an occupational hazard of workers in contact with soil: farmers, miners etc.
   Treatment oral potassium iodide or oral ketoconazole

3) Systemic Potentially most serious.
   Primary: results from direct fungal infection in healthy person
   Secondary: host is predisposed to infection (antibiotic therapy, immunosuppressed.).
   - _Histoplasma capsulatum_ histoplasmosis, common in rural midwest more than 75% in Ohio Valley, often mild flu-like symptoms. Esp chicken farmers.
   - _Coccidioides immitis_ coccidiomycosis “San Joaquin Valley fever” spores picked up from desert and blown by wind

Systemic mycoses are especially problematic in immunosuppressed and AIDS patients. Amphotericin B only moderately effective, but is toxic to kidneys.

_Stackybotrys_ “toxic mold,” grows on cellulose, releases toxins to air. Headaches, sore throats, hair loss, flu symptoms, diarrhea, fatigue, dermatitis, general malaise, psychological depression.

Specific examples:
- _Aspergillosis_ p 632 systemic &/or respiratory, can be life threatening, treat with amphotericin B
- _Candida albicans_ p 633  _Candidiasis_ by: thrush, vulvovaginal (curd-like discharge, burning, painful intercourse), treat with nystatin (p. 606-607)
- _Pneumocystis jiroveci_ (carinii) Pneumocystic pneumonia in AIDS patients.; p. 635, 636