**Topic 12: Sporotrichosis**

Sporotrichosis

A chronic mycosis caused by *Sporothrix schenckii* characterized initially by nodular lesions of the cutaneous and subcutaneous tissue and adjacent lymphatics which suppurate, ulcerate and drain; systemic forms rare, but occur.

Main route of infection - traumatic implantation

Infrequently - primary lung infection

Major differences from chromoblastomycosis, phaeohyphomycosis and mycetoma:

1. agent - *S. schenckii* — hyphomycetous molds
   
   *S. cyanea*?

2. general (common) lymphatic involvement & initial nodular lesions

*dematiaceous???but not member of black yeast "clade"

**tissue form a budding yeast

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**History**

Schenck - 1898 - involved patient at Johns Hopkins Hospital in Baltimore, M.D., 1st case

isolated "sporotrichia"- like fungus;

with Smith, named the fungus *Sporothrium*

Hektoen & Perkins - 1900 - 2nd recorded case - fungus isolated and named *Sporothrix schenckii* in honor of Schenck’s original description of first case; also U.S. case

Early switch in form-genus name

\[ \rightarrow \text{disease} \rightarrow \text{Sporotrichosis} \]

\[ \rightarrow \text{form-genus} \rightarrow \text{Sporothrix} \]

deBeurmann - 1900 to 1912 - best descriptions because he and associates identified and studied 10 cases and tabulated some 200 more during a mini-epidemic in France.

By 1932 ~ 200 U.S. cases

Today based on 1982 hospital release data, it is estimated that there may be as many as 1000 new cases/year in U.S. and ~4 deaths/year.

1940 epidemic in S. Africa ~ 3000 cases

1988 epidemic in U.S. ~ 84 cases in 15 states

Disease currently considered to be a trauma & occupation/activity-related mycosis. This mycosis is very common in parts of Mexico and possibly the most common subcutaneous mycosis there.
**Taxonomy**

*Sporothrix schenckii*

*anamorph*

Hyphomycetes Form-class

Teleomorph (suspected)

Ascomycota  
Euascomycotina  
Pyrenomycetes*  
Ophiostomatales  
Ophiostomataceae  

Phylum  
Subphylum  
Class  
Order  
Family

*Ophiostoma stenoseras*  
- close cousins of the agent of Dutch elm disease caused by *O. ulmi* and oak wilt disease caused by *O. fagacearum*.

*by ascus structure a plectomycete but by 18 S rDNA and chitin synthase gene fragment analysis a pyrenomycete.

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**Clinical types of Sporotrichosis**

1. lymphocutaneous*  
2. fixed cutaneous  
   traumatic implantation types  
3. mucocutaneous  
4. extracutaneous and disseminated  
5. primary pulmonary

50 - 75% of all cases are of the lymphocutaneous (gummatous) type  
#2 also common  

*1st sign of infection after trauma is nodule (moveable) formation

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**Pathology of Lymphocutaneous (Gummatous)**

1. traumatic implantation of fungus  
2. formation of small, hard, moveable, nontender and nonattached subcutaneous nodule  
3. attachment of nodule to overlying skin which eventually becomes discolored;  
   pink  →  purple  →  black  
4. lesion ulceration to  →  a "sporotrichotic chancre"  
5. spontaneous cure or more frequently continued ulceration and chronic spread via lymphatic channels
Clinical types of Sporotrichosis (continued)

1. Lymphocutaneous*

2. Fixed cutaneous* - infections that remain localized for years w/o lymphatic involvement
   + immune protected hosts?
   + skin test for sporotrichin (from 5?)

3. & 4. Mucocutaneous & disseminated rare & probably opportunistic,** involvement of bone common

5. Primary pulmonary; often hospital-acquired
   a. chronic cavitary type
   b. lymph node type

*KI oral @ 10 → 40 drops of 1g/ml saturated solution/8 hrs and after meals; 3 - 6 months—mode of action?---

**no evidence of being associated with HIV (same so far for chromoblastomycoses & mycetoma, although not for all phaeohyphomycosis: CMI defects, however, may increase severity and likelihood of dissemination).

Primary Pulmonary Types

a. chronic cavitary
   formation of thin-walled cavities in the lung tissue after an acute case of pneumonitis*

b. lymph node type;
   acute, and rapidly progressive, but resolution of lesions and recovery are frequent*

*w/o culture, misdiagnosis common
To culture pulmonary forms -

bronchial washings for pulmonary -
sputum unsatisfactory because of candidal overgrowth

Serology - sporotrichin -
-a yeast cell antigen-
-strongly positive for pulmonary form of disease

Treatments

skin forms - progress or regress in chronic pattern for years if untreated

KI treatment

1g/ml supersaturated solution; 10-40 drops/8 hr
after meals for ~ 4 wks after resolution of lesions

more serious forms, oral EBIs*, Amphotericin B

* itraconazole often current drug of choice among the EBIs, also now used for treating some skin forms, particulary lymphocutaneous form.