**Paracoccidioidomycosis**

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**Definition**
- A systematic endemic disease produced by *Paracoccidioides brasiliensis*
  - Primarily a pulmonary disease
  - Disseminated forms affect the entire body
  - Can become a chronic disease
- Most illnesses are believed to be reactivations of latent, asymptomatic infections

**History**
- First discovered in 1908 by Adolfo Lutz
  - Sao Paulo
  - Two patients with lesions in the nasal region
  - Disease was renamed many times (*Blastomyces dermatitidis, Blastomyces brasiliensis*)

**Paracoccidioides brasiliensis**
- Sole member of this genus
- Mitosporic
- Dimorphic
  - Hyphae in environmental conditions
  - Yeast during pathogenesis
- Isolated from soils rich in proteins and digestive systems of fruit bats/armadillos

**Epidemiology**
- Subtropical humid areas
  - Mild temperatures (17°-24°C)
  - Moderate rainfall (900-1810 mm/y)
- Central and South America
  - Highest incidences: Brazil, Columbia, Venezuela, Argentina, and Ecuador

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**Spectrum of Disease**

- Primarily affects male adults
  - Male to female ratio of 13:1 in Brazil
  - Ratios as high as 70:1 in other South American countries
- A juvenile form occurs rarely but affects both genders equally
  - A more severe form with a high lethality rate
- Most patients are from rural areas and have jobs related to agriculture

**Clinical Manifestations and Symptoms**

- Begins with inhalation of conidia
- Lungs are the main portal of entry for *Paracoccidioides brasiliensis*
- Areas the disease affects:
  - The lungs and mucosa of the upper respiratory tract
  - Oropharyngeal region
  - Skin
  - Lymph nodes
  - Adrenal glands
  - Central nervous system

**Clinical Manifestations and Symptoms (cont.)**

- Adult form usually manifests with painful ulcerated lesions in the mouth
  - Other clinical presentations include cutaneous lesions, lymphadenopathy, dysphasia, and hoarseness of voice
- Disease can spread to any organ by lymphatic routes

**Histopathology**

- Areas of granulomatous inflammation
  - Focal areas of central caseation
  - Giant cells of PCM present in granulomata
- Occurs as budding yeast
  - Cells 12-14µm in diameter
  - Central cell surrounded by numerous blastoconidia

**Diagnosis**

- Multiple manifestations lead to differential diagnoses dependent on the organ or system affected
- Depending on microscopic visualization of fungal elements
  - *P. brasiliensis* present as globose large cells surrounded by narrow-necked multiple budding yeasts or mother cells presenting only two buds

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Treatment

- Itraconazole (6-18 months) is the drug of choice for most clinical forms of the disease
- To treat more severe and disseminated forms, an intravenous formulation of antifungal drug is required
  - Cotrimozazole (18-24 months)
  - Amphotericin B (30-90 days)

Case Report 1


- Paracoccidioides brasiliensis in an adolescent
  - 12 year old boy with a history of daily fever and enlarged lymph nodes
  - Acute form of paracoccidioidomycosis, with irregular treatment for 6 years

Case Report 1 (cont.)

- He presented the following:
  - A daily fever
  - Pain in the right groin
  - Enlarged lymph nodes
  - A febrile lymphoproliferative syndrome that is frequently seen in children with PCM
  - A psoas abscess, which is a rare complication of PCM

Case Report 1 (cont.)

- In 2001, lymph node biopsy and bone marrow aspiration performed for diagnosis
- Initial treatment began with Sulfametoxazole-Trimetoprin (SMX-TMP)
- March 2004: child was hospitalized and received intravenous treatment of SMX-TMP
- Child showed improvement in December 2006

Case Report 1 (cont.)

- Hospitalized again in April of 2007
  - Presented lymph node fistulization to the skin for the first time
- Hospitalization in September 2007
  - Lymph node fistulized to the skin, and several other lymph nodes forming a coalescent mass
  - Added itraconazole to treatment
  - 6 days later, developed rare complication: Psoas abscess
Case Report 1 (cont.)

- Medication was changed to Amphotericin B and a surgical drainage was performed three times
  - Fluid contained only one microorganism: *P. brasiliensis*
  - Observed a clinical improvement following the treatment and the patient was sent to ambulatory follow-up

Case Report 2


- 57 year old man presented severe occipital headache with reduced vision
- Preceding 3 months: progressive right hemiparesis, gain disturbance, anorexia, loss of weight

Case Report 2 (cont.)

- Patient History:
  - Diabetic
  - Heavy smoking habit and heavy alcoholism
  - Lived in Brazil for 2 years, 30 years before PCM
  - Frequent visitor of rural areas around periphery of Brazil

Case Report 2 (cont.)

- Diagnosis
  - CT/MRI revealed nodular lesions on the brain and lungs
  - *P. brasiliensis* found in lung biopsy sample
  - Histopathological revision study in brain samples finally revealed fungus
  - Double immuno-diffusion test for *P. brasiliensis* positive

Case Report 2 (cont.)

• Treatment
  - Received trimethoprim plus sulfamethoxazole associated with dexametasone
  - Also received cortico-steroid

References


References (cont.)


Questions!

• 1. What is the main method of entry for PCM?
  A. Ingestion
  B. Inhalation
  C. Skin contact
  D. Sexual intercourse

Questions! (cont.)

• 2. What group is usually effected by the disease?
  A. Adolescent females
  B. Adolescent males
  C. Adult females
  D. Adult males

• 3. What areas of the body can be infected by the disease?
  A. Oropharyngeal region and the lungs
  B. Skin and the lymph nodes
  C. Adrenal glands
  D. All of the above

• 4. What is the drug of choice for most clinical forms of the disease?
  A. Cotrimozazole
  B. Tylenol
  C. Itraconazole
  D. Amphotericin B
Questions! (cont.)

- TRUE or FALSE: Multiple manifestations of the fungus lead to differential diagnoses dependent on the organ or system affected.