Chromoblastomycosis

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Alternative names
- chromomycosis
- cladosporiosis
- verrucous dermatitis
- phaeosporotrichosis
- Pedroso’s disease
- Fonseca’s disease


- Kingdom: Fungi
- Phylum: Ascomycota
- Class: Euascomycetes
- Order: Chaetothyriales
- Family: Herpotrichiellaceae
- Genus: Fonsecaea, Rhinocladiella Phialophora, Cladophialophora,

Most common:
- Phialophora verrucosa
- Fonsecaea compacta
- Fonsecaea pedrosi
  - Only species isolated from evergreen forests in tropical regions
- Cladosporium carrionii
  - Found only in spiny desert areas
- Rhinocladiella aquaspersa (Ramichloridium cerophilum)

Geographic Distribution

- Mainly tropical and subtropical regions (Brazil & Madagascar)
- Costa Rica
- Because of gradual rising temperature and increased immigration travel, cases have been spreading from tropical to temperate areas.
- Rare reports from Canada and U.S.

Life Cycle

- Fonsecaea – no known phase
- Primary conidia function as sympodial conidiogenous cells to form the secondary conidia
- In vivo morphism
- Form ascospores by sexual reproduction
Epidemiology

- Predominant in males ages 30–60
- Increased cases in agricultural workers such as farmers
- Rarely seen in adolescence
- Can occur in patients who are immunosuppressed after renal transplants

Pathogenesis

- Fungus breaks through cutaneous tissue and metastasizes to subcutaneous lymphocytes
- Transforms to parasitic stage
- Chromoblastomycosis agents elicit dense fibrous response in dermis
- Fibrosis leads to increased infection impairing lymphatic flow causing lack of circulation
- Leads to skin atrophy, deformity, and ankylosis of joints.

Chromoblastomycosis

Diagnosis

- Microscopy in 10% potassium hydroxide
  - Examining lesions covered with “black dots”
  - Testing of skin scrapings, crusts, aspirated debris
- Biopsy
  - Enhance positive culture results, due to decrease of bacterial contamination
  - Assess standards for disruption of treatment
- PCR Assays
  - Identification of Fonsecaea species and C. carrionii
- ELISA

Histopathology

- Mycotic granuloma
- Neutrophilic dermal infiltrate
- Epithelial hyperplasia
  - Epithelium involved in transepidermic elimination of fungus
- Presence of muriform cells, medlar bodies or “Copper Pennies”

Clinical Manifestations

- Tumorous, sclerotic lesions in cutaneous and subcutaneous tissue
- Elephantiasis
- Cauliflower-like masses, sclerotic plaques or keloids
- Lesions classified as
  - Nodular
  - Tumorous
  - Vernaceous
  - Cicatricial
  - Plaque

Treatment

- Itraconazole, possibly combined with terbinafine
- Flucytosine
- Posaconazole & Voriconazole
  - Expensive & long-term
  - Chemotherapy
- Local Heat therapy
  - F. pedrosoi is vulnerable in high temperatures
- Cryotherapy
- Surgery
Case Study

- 16 year old boy from Assam, India. History of thorn prick in dorsum of right foot 6 years ago.
- 8 month history of numerous well-defined papulated plaques over both upper and lower extremities, trunk, and both ears, scalp and genitalia.
- Lesions appeared initially on dorsum of right foot; radiated superiorly.
- Lesions appeared on trunk and forearm 2 months later.
- During first 6 months, plaques extended from dorsum of feet to right knee and mid calf of left leg.
- Laboratory examinations including haemogram, and blood chemistry were normal, except for slightly raised ESR.
- Patient was tested and found negative for HIV1 and HIV2 by ELISA.
- Biopsy and skin scrapings were collected for direct microscopy and cultures.
- Histopathological examination of stained biopsy tissue showed epitheliomatous hyperplasia, with marked chronic inflammation and sclerotic bodies.

Fig. 2 Mycopathologia (2010) 169:381–386

- A slide culture was also performed, microscopy showed conidiophores bearing outwardly spreading, sparsely branching, long aceretal chains of ellipsoidal, smooth-walled, symmetrical, one-celled conidia. (Fig 4)
- Isolate was also tested for thermtolerance, failing to grow at 37°C and 42°C.
- The isolate was identified as Cladophialophora carrionii.

Fig. 4 Mycopathologia (2010) 169:381–386

Case Study con’t

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Case Study con’t

- Microscopic examination of skin scraping in 10% KOH revealed oval, brown, septate sclerotic bodies (Fig 6).
- Patient was treated with Fluconazole 150mg PO/day for 6 months.
- Patient returned for follow up showing slight reduction of the lesions of his arms, with no reduction in size of rest of the lesions (Fig 7).

Fig 6 Mycopathologia (2010) 169:381–386

Case Study

- 55 year old Male working in a tea garden in Assam, India.
- Presented with Cauliflower like painless mass in left leg above ankle with 9 years duration.
- History of trauma due to burn of left leg from motorcycle silencer pipe 10 years ago.
- Scaly papule first appeared 6 months after the injury.
- Lesion spread, first becoming wart like, then forming a cauliflower like mass.
- Laboratory examinations including haemogram, and blood chemistry were also normal.
- A biopsy was taken for direct microscopy and incubation.
- Direct microscopy in 20% KOH showed brown, septate, sclerotic bodies.
- An Olivaceous–black, velvety colony appeared after 10 days of incubation at 25°C and 37°C, increasing in size to 3cm after 1 month (Fig 3).
Case Study

- A slide culture was also performed, microscopy showed cylindrical conidiogenous cells usually with an irregularly swollen apex, that is studded with scars from conidial attachment. (Fig 5)

- Patient was treated with Fluconazole 150mg PO/day for 6 months

- Patient was seen for follow up after 1 month with decrease in size of the lesion on foot

References


Questions

1. What phylum do the etiological agents of chromoblastomycosis belong to?
   a) Zygomycota
   b) Ascomycota
   c) Deuteromycota
   d) Basidiomycota

2. What is another name for chromoblastomycosis?
   a) Elephantitis
   b) Epithelial hyperplasia
   c) chromomycosis
   d) Euascomycetes

3. Who is most likely to be affected by chromoblastomycosis?
   a) Infants
   b) Businessmen
   c) Farmers
   d) Women

4. Treatment of chromoblastomycosis does not include:
   a) Chemotherapy
   b) Cryotherapy
   c) Continuous shots
   d) Itraconazole

5. Lesions are classified as all except:
   a) Tumorous
   b) Scalar
   c) Nodular
   d) Verrucous

Case Study

- Two early cases of Chromoblastomycosis have been reported from Assam, the isolates were Hormodendrum compactum and F. Pedrosoi.

- The two more recent cases shown here from Assam were C. carrionii and F. pedrosoi.

- The most common causative agent of Chromoblastomycosis is F. pedrosoi.

- The most common site of infection are the lower extremities, however one of the cases showed extensive involvement of the whole body in a short amount of time.

- Chromoblastomycosis infection follows traumatic implantation of the etiologic agent beneath the epidermis via penetration by foreign bodies.

- Early stages of treatment involve surgery, electrodesiccation, cryosurgery or topical antifungals. More advanced cases require systemic antifungals for long periods of time.

- Intraconazole and Terbinafine are the drugs of choice.

- Fluconazole is said to be a poorly effective drug for these agents, however, both patients were treated with Fluconazole due to the expensiveness of the above antifungals.