Phaeohyphomycosis
Synonyms: Cerebral chromomycosis, chromoblastomycosis, chromomycosis, cladosporiosis, phaeomycotic cyst, phaeosporotrichosis, subcutaneous mycotic cyst.

Definition

• Phaeohyphomycosis
  – consists of a group of mycotic infections characterized by the presence of dematiaceous (dark-walled) septate hyphae and sometimes yeast or a combination of both in tissue. (DoctorFungus)
  – Refers to dark pigment, phaios being the Greek word for black.
  – Deuteromycete

Etiological Agents

• Cladophialophora bantiana
• Curvularia spp.
• Bipolaris spp.
• Exserohilum spp.
• Exophiala jeanselmei
• Scedosporium prolificans
• Ochroconis gallopava
• Coniothyrium fuckelii
• Phialophora parasitica
• Phialophora repens
• Wangiella dermatidis
• Lasiodiplodia theobromae

Types

• Respiratory tract
  – Nasal, sinus, pneumonia
    • Dark lesion on the septum is a common presentation; sinusitis is associated with allergic rhinitis, polyps and/or some form of immunosuppression

• Subcutaneous
  – Infection is produced by traumatic inoculation of the etiologic agent
  – Abscess formation is frequent

• Cutaneous
  – Dermatomyosisis
    • Infection affects keratinized tissue and produces extensive destruction
  – Onychomycosis
• Superficial
  – Skin infection
    • Minimal if any tissue response.
    • In hairy areas, the fungi grow around the hair shaft

SYMPTOMS

• Cyst-Lump produced by over-secreting gland
• Skin lesions
• Skin infections
• Skin discolouration
• Pigmented lesions

• Pruritus
  – Causes
    • Iron deficiency anemia
    • Cimex lectularius (bed bugs)
    • Allergic conjunctivitis
    • Bacterial conjunctivitis
    • Dermatitis
    • Herpes zoster
    • Chronic lymphocytic leukemia
    • Lichen simplex chronicus
    • Chronic myringitis
    • Pediculosis
    • Pityriasis rosea
    • Psoriasis
    • Scabies
    • Tinea pedis
    • Urticaria
    • Vaginitis

• Causes
  – Bipolaris
    • is a dematiaceous, filamentous fungus.
  – Wangiella
    • is a dematiaceous, cosmopolitan fungus that inhabits the soil and plant material.
  – Phialophora verrucosa
    • a dematiaceous filamentous fungus that inhabits the soil, plants, and decaying food. It is widely distributed in nature
  – Exophiala
    • dematiaceous fungus widely distributed in soil, plants, water, and decaying wood material.
  – Cladophialophora
    • a mitosporic dematiaceous (pigmented) mould, found in soil and rotten plant material

TESTS
• Culture
  – Clinical specimens are inoculated onto primary isolation media i.e. Sabouraud's dextrose agar.
• Direct Microscopy
  – Biopsy
    • Visceral organs
    • Tissue stained using H&E, PAS digest and GMS
  – Sputum
  – Bronchial washings
    • With 10% KOH and Parker ink

HISTOPATHOLOGY
• Tissue reactions associated with walled abscesses to active tissue invasion by hyphae.
• Hyphae will stain positive for the Fontana-Masson or other melanin stains.

Treatments
• Itraconazole
• Amphotericin B
• Oral phenytoin
• Voriconazole

Epidemiology and Ecology
• Most commonly found in tropical and subtropical areas.
• Found in soil
• Wood
• Decaying plants
• Rotten food

Case Study 1
• Surgical Neurology 60.4 (2003), 354-359.
• In 2000, an 18-year-old boy presented with onset seizures.
• 2 years prior developed cutaneous phaeohyphomycosis after splinter scratch on chest wall.
• Culture/Laboratory Work
  – MRI
    • Revealed a hypointense lesion
CT scan
• Revealed an interhemispheric frontal hypodense lesion

Blood
• Normal results for CD4, CD8, and leukocytes
• Unexplained eosinophilia (20%)
• AID test was negative

Skin lesions
• Appeared to be ulcerative with pinkish gray color
• Scraping
  – Showed dermaiaceous branching hyphae.

Case Study 1

• Histopathology
  – Showed chronic granulomatous reaction with hyphae
  – Cornmeal Agar
    • Revealed velvety black colonies
    • Cylindrical cells with a swollen apex and branched conidiophores consistent with F. pedrosi.

• Complication of skin lesions
  – Nasopharyngeal and ethmoidal sinus

• Treatment
  – Cutaneous lesions
    • No response to antifungal agents
  – Amphotericin B (IV)
  – Nasopharyngeal lesions and cervical nodes
    • 200 mg Oral Itraconazole
    • Oral phenytoin
      • Given for one year

• Patient is doing well making monthly visits to hospital

Case Study 2

• 76 year old male complaints of nodules on right forearm for more than 2 years.

• History
  – Farmer
  – Has diabetes mellitus
  – coronary artery disease
  – Cushing’s syndrome

• Tests
  – Mycobacterial cultures were negative
  – Skin biopsy
    • Showed epithelioid granuloma with multinucleated giant cells.
    • Nodules were asymptomatic, variable in size, brownish and crusted.
  – (after 17 months)
    • Masson Fontana stain(fig 3)
      – Positive stain indicated presence of melanin
    • Sabouraud dextrose agar and potato media (fig 4)
      – Grayish brown velvety colonies after 2 weeks.
      – Colonies showed erect and straight conidiophores

Fig 2 upper Closer view of the crusted nodules on the left forearm;
Lower: More erythematous crusted nodules and plaques on the left upper limb and the right forearm
• H&E
  – Brownish beaded hyphae and yeast-like cells 3-5 micrometers.
  – Scattered in stroma and within multinucleated giant cells.
• GMS and PAS stains (fig 3)
  – Hyphae and yeast-like cells stained black and pink

• **Figure 3** Yeast-like cells are stained pink and black with PAS (left)
  the Masson-Fontana (right) stains respectively

• **Treatments**
  – Initially treated with itraconazole (200mg).
    • Gradual improvement for 5 weeks until he failed to keep up with medication.
    • Returned to clinic after 17 months for relapsed cutaneous lesions.
  – Amphotericin B
    • was given due to poor response to the initial treatment.
    • After 17 days of treatment lesions seemed dryer.
    • Renal function had deteriorated
    • Unfortunately patient suffered a heart attack and was discharged against medical advice.

**References**