Subcutaneous Mycoses

The disease includes a wide range spectrum of fungal infections characterized by development of lesions, usually at the sites of trauma where the organisms are implanted in the tissues. Several features are common about these groups of infections, including the following:

1. Usually associated with some form of trauma, occurring at the site of the infection before the lesions developed such as thorn and splinter.
2. The infections occur on parts of the body that are most prone to be traumatized such as feet, hand and arms.
3. The etiologic agents are usually organisms commonly found in the soil or on decaying vegetation.
4. Several bacterial infections such as actinomycotic mycetoma mimic the subcutaneous fungal infections. For that reason the etiologic agent must be established and identified, since most of the bacterial infections can be managed with antibiotics.
5. With one or two exceptions, it is difficult to treat and excision or amputation is frequently employed.

Etiology and clinical syndroms:

The causative agents are a heterogeneous group of fungi with low pathogenic potential that are commonly isolated from soil. The clinical manifestations of these diseases appear to be interplay between the organism and the host responses. In general, patients who develop disease have no underlying immunological defect.

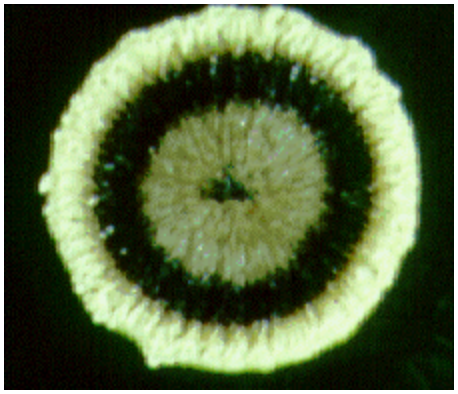
Lymphocutaneous Sporotrichosis:

Chronic infection is characterized by nodular and ulcerative lesions that develop along lymphatics and drain at the primary site of inoculation. The causative agent is dimorphic fungi called *Sporothrix schenckii*.

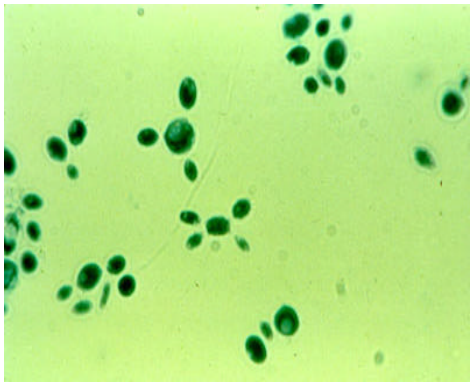
Clinical appearance

Laboratory diagnosis:

The causative agent appears as a budding yeast cell in tissue and in culturing incubated at 37C. Incubation of culture at 25 C for 3-5 days will develop as radiating colonies moist and white at first then slowly become brown to black pigmentation. Confirmation is established by converting the mycelial growth to the yeast form by subculturing at 37C.



Colony appearance



direct microscopic examination

Treatment:

A saturated solution of potassium iodide given orally, extracutaneous sporotrichosis requires systemic therapy with amphotericin B.

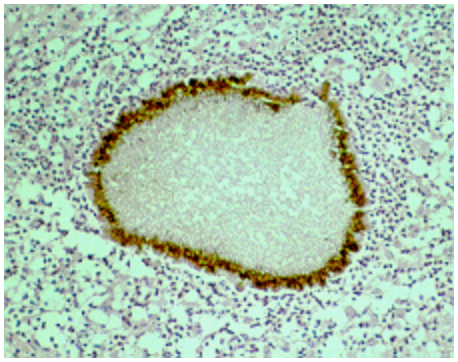
Eumycotic Mycetoma:

It is includes a wide spectrum of manifestation involving the skin, deeper tissues of the dermis and subcutaneous. The disease is characterized by indolent, deforming and swollen lesions that contain numerous draining sinus tracts.

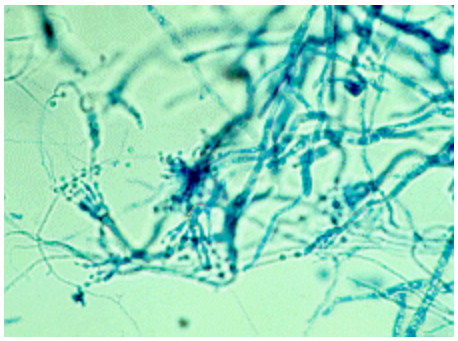
Mycetoma

Laboratory diagnosis:

The purulent fluid that exudes from the sinus tract often reveals small grains of fungal tissue. These elements may be white, brown, yellow or black on histological examination of tissue biopsies of the lesion. The etiologic agents causing these diseases consist of various actinomycetes, actinomadura as well as a whole host of fungi such as *Pseudallescheria boydii*, *Madurella mycetomatis* and other fungi.



Grains in biopsy



Direct microscopic examination

Treatment:

In the case of bacterial infections, several antibacterial antibiotics can be used for examples *Actinomyces israelli* respond well to high doses of penicillin while *Nocardia asteroids* respond to sulfa drugs in combination with streptomycin. However, if a fungal organism is the causative agent, total excision of the lesion or amputation of an affected limb, if the disease is extensive since antifungal therapy in generally is unsuccessful.

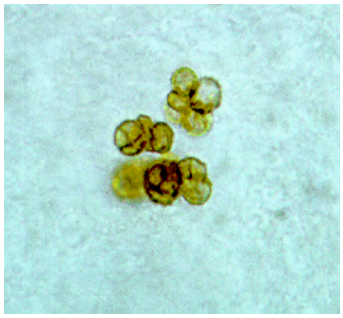
Chromoblastomycosis:

The disease is characterized by the development of verrucose (warty) nodules at the site of inoculation and takes on a "cauliflower-like" appearance. The organisms responsible for the disease are common soil inhabitants that are collectively called the dematiaceous fungi (fungi that have brown to black melanin pigments in their cell wall).

Clinical appearance

Laboratory diagnosis:

Histopathology examination of the clinical material from lesions will show a characteristic tissue response termed as "pseudoepitheliomatous hyperplasia", which means that the tissue exhibits an epithelial overgrowth. In addition to the histopathology, copper-colored spherical cells in various stages of cell division are seen (sclerotic bodies).



Copper-colored cells

Treatment:

The treatment is achieved by surgical removal of infected lesions as will as treatment with oral 5-Fluorocytosine.

Phaeohyphomycosis:

It is a heterogeneous group of subcutaneous diseases caused by various dematiaceous fungi, such as phaeohyphomycotic cyst. The disease does not exhibit the intense

hyperplasia seen in chromoblastomycosis and usually appear as pigments septate hyphal fragments in the tissues.

The Subcutaneous Mycoses

These are chronic, localized infections of the skin and subcutaneous tissue following the traumatic implantation of the aetiologic agent. The causative fungi are all soil saprophytes of regional epidemiology whose ability to adapt to the tissue environment and elicit disease is extremely variable.

Disease	Causative organisms	Incidence
Sporotrichosis	*Sporothrix schenckii*	Rare
Chromoblastomycosis	*Fonsecaea, Phialophora, Cladosporium* etc.	Rare
Phaeohyphomycosis	*Cladosporium, Exophiala, Wangiella, Bipolaris, Exserohilum, Curvularia*	Rare
Mycotic mycetoma	*Pseudallescheria, Madurella, Acremonium, Exophiala* etc.	Rare
Subcutaneous zygomycosis (Entomophthoromycosis)	*Basidiobolus ranarum Conidiobolus coronatus*	Rare
Subcutaneous zygomycosis (Mucormycosis)	*Rhizopus, Mucor, Rhizomucor, Absidia, Saksenaea* etc.	Rare
Rhinosporidiosis	*Rhinosporidium seeberi*	Rare
Lobomycosis	*Loboa loboi*	Rare