**Mycoses with reference to Dermatomycoses and opportunistic mycoses**

**Medical mycology** is the discipline that deals with the fungi that causes human disease. These fungal diseases, known as **Mycoses.** Fungal diseases may be grouped into two types: 1. **Superficial mycoses (**diseases caused by fungi) or **Dermatomycoses** and 2. **Systemic mycoses.**

The fungi that cause **superficial mycoses** frequently are spread from animals to humans, a notable exception being athelete’s feet, or ringworm of the feet, which is spread from person to person in locker rooms, swimming pool areas, and other locations.

Fungi that cause **Systemic infections** generally come from soil, vegetation, or birds droppings and are transmitted by air movements. Thus infection often starts in the lungs and then spread to other organs.

**Dermatomycoses**

Fungal diseases that occur on the nails, skin, hair and mucous membranes are referred to as **superficial mycoses** or **Dermatomycoses. Black piedra is a fungal infection of hair, characterized by dark brown or black nodules on the hair shaft. It is caused by *Piedraia hortai.***

Many of these fungi cause various forms of ringworm, or tinea, and the organisms that cause them are called **dermatophytes, or ringworm fungi. Ringworm lesions are caused by *Trichophyton verrucosum*** and other species of *Trichophyton.* These fungi spread radially in the dead keratinized layer of skin by means of branching hyphae and occasional arthrospores. Inflammation of the living tissues below is very mild and only a little dry scaling is seen. Usually there is irritation, erthema, edema, and inflammation at the spreading edge; the pinkish circle gave rise to the name ringworm. Transmission is commonly by direct contact with infected people or animals and by fomites. Dry skin is a fairly effective barrier against such diseases, but a “waterlogged” skin is vulnerable. This is why the sweat laden, moist feet of the athletes get infected with tinea, giving rise to the term athlete’s foot. These diseases are widespread and difficult to control, but fortunately they are often more annoying than serious. The causative microorganisms are sometimes present in the epidermal tissues without producing symptoms. The correlation of the dermatophyte species with a characteristic disease entity has been difficult because single species can cause a variety of clinical symptoms in different parts of the body. Further, the same clinical manifestation can be caused by different species of dermatophytes. Thus, dermatologists frequently have used a terminology based on the part of the body involved. For example, onychomyccosis is ringworm of the nails caused by *Candida albicans,* tinea capitis is a ringworm of the scalp caused by a species of *Trichophyton* and tinea pedis is a ringworm of the feet caused ***Trichophyton rubrum, T. mentagrophytes*** and ***Epidermophyton flocossum.***

**Opportunistic Mycoses**

**Opportunistic Mycoses** are generally harmless in its normal environment but becomes pathogenic in a compromised host. A compromised host is seriously debilitated and has a lowered resistance to infection. There are many cause of this condition, among the following : malnutrition, alcoholism, cancer, diabetes, leukemia, or another infectious disease, trauma from surgery or injury, an altered microbiota from prolonged use of antibiotics and immunosuppression by drugs, viruses (HIV), hormones or genetic deficiencies.

The most common opportunistic mycoses include aspergillosis, candidiasis and *Pneumocystis* *carinii* pneumonia.

**Aspergiollosis- *Aspergillus*** is omnipresent in nature, being found in wherever organic debris occurs. ***Aspergillus fumigates*** is the usual cause of aspergiollosis. ***A. flavus*** is the second most important immunosuppressed patients.

The major portal entry for ***Aspergillus***is the respiratory tract. Inhalation of the **conidiospores** can cause several types f pulmonary aspergillosis. One type is allergic aspergillosis. Infected individuals may develop an immediate allergic response and suffer typical asthmatic attacks when exposed to fungal antigens on the conidiospores. In bronchopulmonary aspergillosis the major clinical manifestation of the allergic response is a bronchitis resulting from both type I and type III hypersensitivities Although tissue invasion seldom occurs in bronchopulmonary aspergillosis, *Aspergillus* often can be cultured from the sputum. A most common manifestation of pulmonary involvement is the occurrence of colonizing aspergillosis, in which *Aspergillus* forms colonies within the lungs that develop into “fungus balls” called **aspergillomas**. These consist of a tangled mass of mycelia growing in a circumscribed area. From the pulmonary focus, the fungus may spread, producing disseminated aspergillosis in a variety of tissues and organs. In patients whose resistance has been severely compromised, invasive aspergillosis may occur and fill the lung with fungal mycelia.

**Candidiasis-** Candidiasis is the mycosis caused by the dimorphic fungus ***Candida albicans. C.* *albicans*** is a member of the normal microbiota within the gastrointestinal tract, respiratory tract, vaginal area and mouth. In healthy individuals ***C. albicans***does not produce disease. Growth is suppressed by other microbiota.However, if anything upsets the normal microbiota, ***Candida*** may multiply rapidly and produce candidiasis. Most infections involve the skin or mucous membranes. This occurs because ***C. albicans***is a strict aerobe and finds such surfaces very suitable for growth. Cutaneous involvement usually occurs when the skinbecomes overtly moist or damaged.

**Oral candidiasis,** or **thrush**, is a fairly common disease in newborns. It is seen as many small white flecks that cover the tongue and mouth. At birth, newborns do not have a normal microbiota in the oropharyngeal area. If the mother’s vaginal area is heavily infected with *C. albicans,* the upper respiratory tract of the newborn becomes colonized during passage through the birth canal. Thrush occurs because growth of *C. albicans* cannot be inhibited by the other microbiota. Once the newborn has developed its own normal oropharyngeal microbiota, thrush becomes uncommon.

**Paronychia** and **onychomycosis** are associated with ***Candida***infections of the subcutaneous tissues of the digits and nails,respectively. These infections usually result fromcontinued immersion of the appendages in water.

**Intertriginous candidiasis** involves those areas of the body, usually opposed skin surfaces, that are warm and moist: axillae, groin, skin folds. **Napkin (diaper) candidiasis** is typically found in infants whose diapers are not changed frequently and therefore are not kept dry. **Candidal vaginitis** can result from diabetes, antibiotic therapy, oral contraceptives, pregnancy, or any other factor that compromises the female host.

*Pneumocystis* *carinii* are eucaryotic protists found in the lungs of a wide variety of mammals. The natural history of ***P.carinii*** is poorly understood, in large part because of a lack of a continuous in vitro culture system for its propagation. Although it was once considered a protozoan parasite, recent comparisons of rRNA and DNA sequences from several geneshave shown that ***P. carinii*** is more closely related to fungi than protozoa.

**pneumocystis pneumonia** or ***Pneumocystis carinii* pneumonia (PCP),** occurs almostexclusively in immunocompromised hosts. Extensive useof immunosuppressive drugs and irradiation for the treatment ofcancers and following organ transplants accounts for the formidableprevalence rates noted recently. This pneumonia also occursin more than 80% of AIDS patients. Both the organism andthe disease remain localized in the lungs—even in fatal cases.Within the lungs *Pneumocystis* causes the alveoli to fill with afrothy exudate.