types of mycoses

superficial mycoses

as listed above, in superficial mycoses infection is localised to the skin, the hair, and the nails. an example is "ringworm" or "tinea", an infection of the skin by a dermatophyte. ringworm refers to the characteristic central clearing that often occurs in dermatophyte infections of the skin. dermatophyte members of the genera trypophyton, microsporum and epidermophyton are responsible for the disease. tinea can infect various sites of the body, including the scalp (tinea capitis), the beard (tinea barbae) the foot (tinea pedis: "athlete's foot") and the groin (tinea cruris). all occur in the united kingdom although tinea infections, other than pedis, are now rare.

candida albicans is a yeast causing candidiasis or "thrush" in humans. as a superficial mycoses, candidiasis typically infects the mouth or vagina. c. albicans is part of the normal flora of the vagina and gastrointestinal tract and is termed a "commensal". however, during times of ill health or impaired immunity the balance can alter and the organism multiplies to cause disease. antibiotic treatment can also alter the normal bacterial flora allowing c. albicans to flourish.

subcutaneous mycoses

these are infections confined to the dermis, subcutaneous tissue or adjacent structures. infection may arise following the wounding of the skin and the introduction of vegetable matter. these mycoses are rare and confined mainly to tropical regions. they tend to be slow in onset and chronic in duration. an example is sporotrichosis caused by sporothrix schenckii. the fungus is dimorphic, being a mould that can convert to a yeast form at 37°C on rich laboratory media or in infection. sporotrichosis was once common in europe but cases are now rare. the disease is most prevalent the americas, south africa and australia. infection usually follows and insect bite, thorn prick or scratch from a fish spine. certain occupation groups appear to have increased risk from infection. these include florists, farm workers and others who handle hay and moss. the most common symptom is a ulcerative lesion that may develop into lymphangitis.

systemic mycoses (primary and opportunistic)

these are invasive infections of the internal organs with the organism gaining entry by the lungs, gastrointestinal tract or through intravenous lines. they may be caused by: (i) primary pathogenic fungi or (ii) by opportunistic fungi that are of marginal pathogenicity but can infect the immunocompromised host.

primary pathogenic fungi

infection occurs in previously healthy persons and arises through the respiratory route. examples include histoplasmosis, blastomycosis, coccidiomycosis and
paracoccidioidomycosis. the fungi occur throughout the world but not in the united kingdom.

**histoplasmosis.** this is caused by histoplasma capsulatum. the organism is dimorphic (being a mould that can convert to a yeast form). h. capsulatum is endemic in many parts of the world including north and south america. it is found in the soil and growth is enhanced by the presence of bird and bat excreta. environments containing such material are often implicated as sources of human infection. the lungs are the main site of infection but dissemination to the liver, heart and central nervous system can occur. pulmonary infection can resemble symptoms seen in tuberculosis.

**opportunistic fungi**

here, patients usually have some serious immune or metabolic defect, or have undergone surgery. the diseases include aspergillosis, systemic candidosis and cryptococcosis. exceptionally, other fungi that are normally not pathogenic, such as trichosporon, fusarium or penicillium, may cause systemic infections.

**aspergillosis.** this is the name given to a number of different diseases caused by the mould aspergillus. it produces large numbers of spores and occurs world-wide. in the united kingdom, a. fumigatus is the most common species causing disease. the organism can infect the lungs, inner ear, sinuses and, rarely, the eye of previously healthy persons. in the immunosuppressed host, aspergillus can disseminate throughout the body.

**candidosis.** in severely immunocompromised patients (e.g. those receiving chemotherapy) c. albicans, that is part of the normal human flora (see above), can proliferate and disseminate throughout the body.

**cryptococcosis.** this is a systemic infection caused by the yeast cryptococcus neoformans. the commonest manifestation is a subacute or chronic form of meningitis resulting from the inhalation of the organism. pulmonary infection can also occur. the disease affects both healthy and immunosuppressed individuals and occurs world-wide. c. neoformans can be isolated in large numbers from pigeon droppings in the environment, although such birds do not appear to harbour the yeast.