PATHOGENIC MYCOLOGY
(MCB 310)

GENERAL CHARACTERISTICS OF PATHOGENIC FUNGI

Introduction

- Brief overview of the Pathogenic fungi
- Pathogenic fungi and their role in causing diseases in humans, animals, and plants

Classification of Pathogenic fungi based on the morphology, reproduction and types of disease

- Major genera responsible for fungal infections (*Candida*, *Aspergillus*, *Cryptococcus*, *Pneumocystis*) with respect to the history of their emergence as agent of disease
- Other pathogenic fungi from the phylum Mucoromycotina.
- Specific morphological structures contribute to pathogenicity
- Examples of adaptive strategies, such as yeast-like forms and dimorphic transition

Reproduction

- Modes of reproduction exhibited by pathogenic fungi (sexual and asexual)
- Importance of reproduction in survival and spread of fungal pathogens

Types of Diseases

- Differentiation between primary pathogens and opportunistic pathogens

Key Characteristics of Fungal Pathogens

- Ability to change form or adapt to different environments
- Capacity to survive at mammalian body temperature
- Production of specialized structures for environmental adaptation and host tissue invasion
- Production of tissue-degrading enzymes
- Evasion of host immune system

PRINCIPLES OF INFECTION, PATHOGENESIS AND IMMUNITY

Introduction

- Importance of understanding fungal diseases and host responses
- Overview of mycoses and mycotoxicoses as fungal infections

Categories of Fungal Pathogens

- Primary pathogens vs. opportunistic fungi
- How these categories differ in pathogenicity and target hosts

Mechanism of Infection

- Definition of mycoses as fungal infections of tissues

- Categories of mycoses: superficial, sub-cutaneous, and systemic

Mycotoxicoses

- Definition and characteristics
- Example: aflatoxicosis caused by *Aspergillus flavus*
- Other mycotoxins and their effects on human health

Hypersensitivity Reactions

- Definition and triggers
- Example: allergic reactions to fungal spores, hyphae, or other structures
- Symptoms and management of fungal allergies

Host Immune Response

- Immune response to fungal infections
- Role of innate and adaptive immunity in controlling fungal pathogens
- Immune evasion mechanisms employed by fungal pathogens
- Immune Suppression and Fungal Infections. The impact of immunodeficiency and immunosuppression on susceptibility to fungal infections

LABORATORY DIAGNOSIS OF FUNGAL INFECTIONS

Different types of laboratory tests used for diagnosing fungal infections

- Microbiological tests (culture, microscopy)
- Molecular tests (PCR, sequencing)
- Serological tests (antibody detection, antigen detection)
- Histopathological tests (biopsy, tissue staining)