FACULTY OF MEDICINE
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Fungal Infections

IN CHILDHOOD

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A C K N O W L E D G E M E N T

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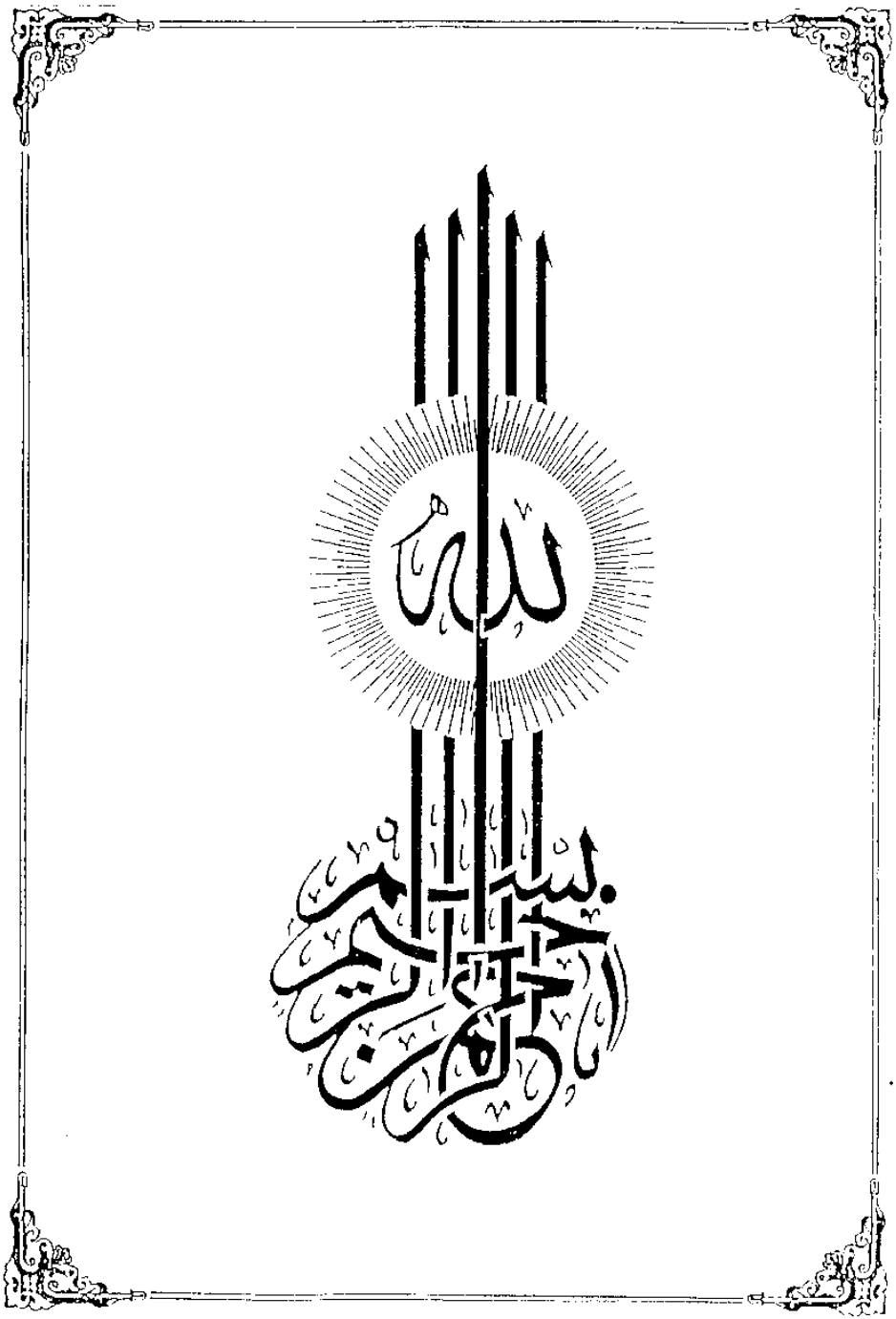

C O N T E N T S

Introduction

I N T R O D U C T I O N

Fungal infections in children are classified into superficial scalp & skin infections which are simple and deep fungal infection carrying the danger of severe systemic disease with high mortality rate.

There is an increased incidence of fungal infections in children especially after the excessive use of antibiotics in treatment.

There is also a definite relationship between atopic asthma, bronchopulmonary allergy and fungal infection in children (Wong, 1979).

Diagnosis and treatment of fungal infections are very easy, but negligance of the diagnosis and delay in treatment carry a great risk.

The aim of the essay is to show the importance of fungal infection in pediatric practice & their clinical picture. Uptodate informations about methods of the diagnosis and recent trends in treatment will be also discuosed.

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G L O S S A R Y

This glossary has been prepared to make the reader familiar with the terminology used in this work.

(A)

Asexual spore: Spore formation which does not involve fusion of nuclei.

Anagen phase: growing phase of hair.

Anthropophilic: Man is the natural host.

(C)

Conidium: A sexual spore which is freed from the hyphae by abstriction at the point of attachment. Conidia vary greatly in their size, shape, number of septations and colour. Such differences serve to separate the numerous genera and species among the fungi imperfecti. They are borne laterally or terminally, pedunculated or sessile. They are produced on specialized hyphae (conidiophores).

Conidiophore: A specialized, typically erect areal branch which produces successive conidia by abstriction.

(D)

Dermatophyte: A group of fungi which parasitise the skin of man or animal.

Dermatophytosis: Any fungus disease of the skin caused by dermatophytes.

(E)

Ectothrix: The dermatophyte growth is found on the surface of the hair shaft but does not penetrate inside the hair.

Endothrix: Dermatophyte growth which penetrate inside the hair shaft.

Emollient Soothing and softening medication.

(F)

Faviform: Resembling a honey comb in structure.

Floccose: Woolly.

Fungus: A class of Thallophyta characterized by the absence of chlorophyll. The vegetative structure is known as mycelium and the reproductive structure as a spore.

(G)

Genus: A division of the family which contains related species.

Geophilic: Soil is the natural habitat.

(H)

Hypha: One of the thread like elements of the mycelium of a fungus.

(K)

Kerion: A pustular disease of the scalp in which the dermatophyte infection produces a boggy lesion.

(M)

Macroconidium: A large conidium, pleurisèptate.

Microconidium: A small conidium.

Multiseptate: Having multiple dividing walls as partitions.

Mycelium: The mass of interwoven hyphae forming the vegetative portion of the thallus of fungus.

Mycosis: Any disease due to infection by a fungus.

(P)

Pseudohyphae: Incomplete hyphae, usually produced by elongation of blastospores.

(S)

Saprophyte: A contaminant or organism which does not cause disease.

Septate: Having a dividing wall or partition.

Species: A category of classification lower than a genus or subgenus and above the subspecies or variety,

its members possess certain characteristics in common.

Sporangium: A sac or spore within which asexual spores are produced.

Spore: Small or minute reproductive bodies typically unicellular.

Scutulum: Dry yellow whitish favus crust.

(T)

Thallophyta: The phylum of plants to which fungi belong.

Thallus: The vegetative portion of a fungus.

Telogen phase: Resting, nongrowing phase of hair.

Tinea: A term given to some fungus skin disease especially ringworm.

(V)

Vegetative mycelium: That part of the mycelium which penetrates into the substrate and absorbs food for further growth.

Verrucose: Covered with wart like elevations.

Versicolor: Having various colours.

(Z)

Zoophillic: Animal is the natural habitat.

Abbreviations

M.	Microsporum
T.	Trichophyton
C. albicans	Candida albicans
H. Capsulatum	Histoplasmosis
C. immitis	Coccidioides immitis
C. neoformans	Cryptococcus neformans
B. dermatitidis	Blastomyces dermatitidis
A.	Aspergillus
ELISA	Enzyme linked immuno absorbent assay.

Classification

CLASSIFICATION OF FUNGI

General characters:

By definition, fungi constitute a group of living organisms devoid of chlorophyll. They resemble green plants in that, with few exceptions, they have a definite cell wall. They are usually, nonmotile although they may have motile reproductive cells. They reproduce by means of spores. They do not posses stems, roots or leaves; but generally fungi are filamentous and multicellular. These filaments constitute the body of the fungus and elongate by apical growth.

Nowadays, fungi are regarded as neither plants, nor animals, but they are placed in a separate group (Bear et al, 1975).

Somatic structure:

It mainly consists of microscopic threads or filaments which branch in all directions. Spreading over or within the substratum utilized for food. The filament is called hypha (= web) which has partitions or cross walls called septa. The mass of hyphae constituting the thallus of a fungus is called the mycelium (= mushroom).

In most fungi, the cell wall is continous with other organic materials. The external enviroment will profoundly influence the composition of fungal wall.

The spores are minute propagating units produced by most fungi which serve in the production of new individual of the same species.

Classification:

Fungal classification presents innumerable difficulties. Also, there are different opinions due to various interpretations of our known data on morphology, reproduction and physiology of fungi.

The system used in the classification of fungi is as follows: kingdom/Division/Class/Order/Family/Genus/ Species. Modern systematics place fungi in division (mycota),subdivision (Thallophyta), which include two main groups.

1) Algae: possess chlorophyll, and can depend on themselves in formation of their own food.

2) Fungi: devoid of chlorophyll, depend on either living or dead material to live.

For practical purposes, four varieties of fungi are described:

(I) Moulds, which grow as long hyphae and interlace to form a meshwork e.g. saprophytic histoplasmosis, trichophyton ect.

(II) Yeasts, which grow by budding only e.g. Cryptococcosis.

(III) Yeast like fungi, which grow partly as yeast and partly as hyphae; called pseudohyphal e.g. candidiasis.

(IV) Dimorphic fungi; which grow either as hyphae or yeast depending on the cultural media e.g. Histoplasmosis and candidiasis (Jawetz and Melnck, 1972).

Fungal diseases to humman being are classified clinically into three main groups:

(I) Superficial mycoses

They affect the skin, skin appendages and mucous membranes causing: (A) Dermatophytosis (Ringworm)

(B) Superficial candidosis

(C) Pityriasis versicolor.

and uncommon tinea nigra, black or white piedra.

(II) Subcutaneous mycoses

They are mainly tropical infections involving subcutaneous tissue and adjacent structures including skin or bone causing:

(A) Sporotrichosis

(B) Chromoycosis

(C) Mycetoma

Uncommon, subcutaneous zgyomycosis, phaeohyphomycosis.