ERYTHRASMA

THESIS

Submitted for Partial Fulfilment of
Master Degree in
(Dermatology and Venereology)

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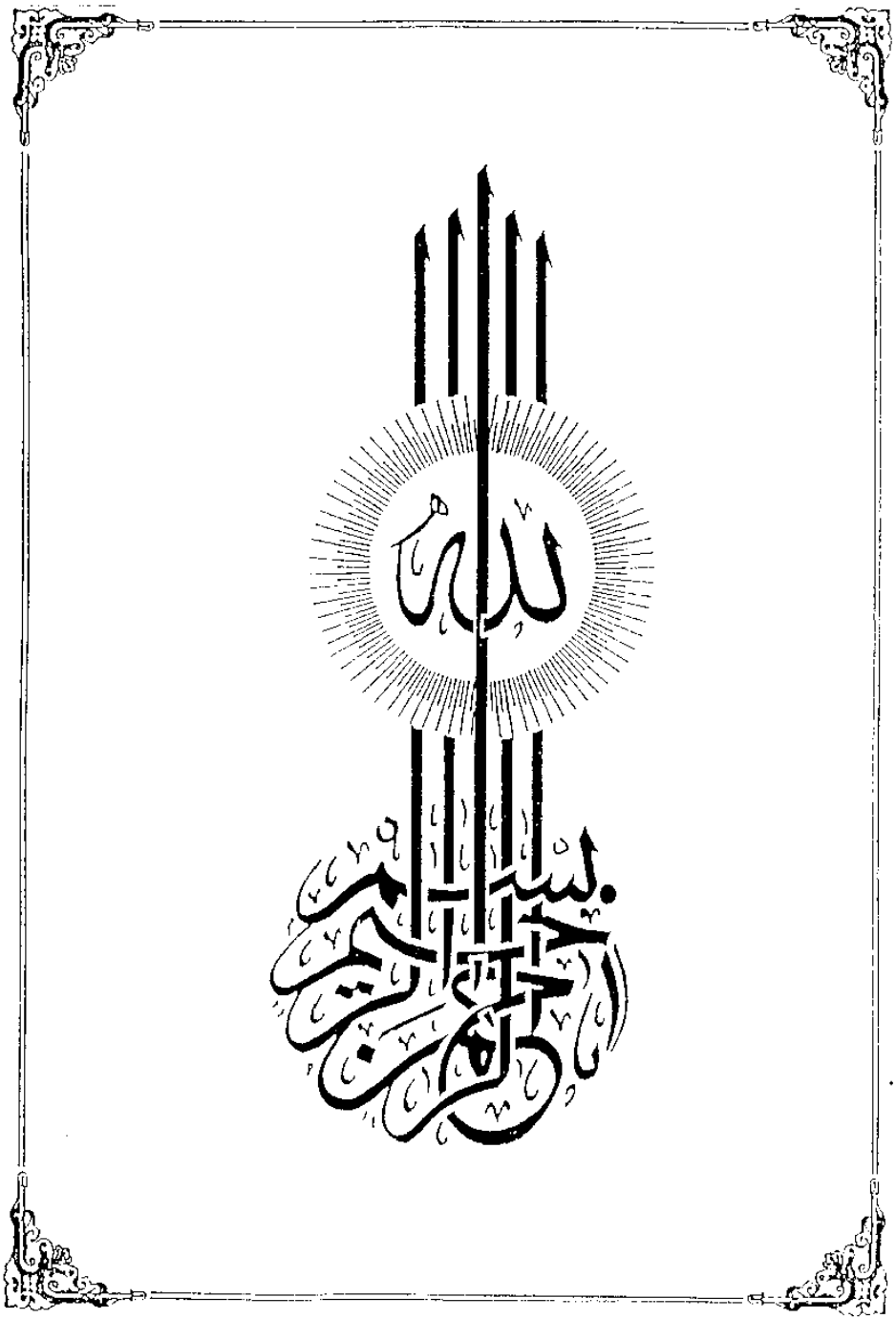
1985

ACKNOWLEDGMENT

I was greatly honoured to have the chance to work under the supervision of Professor Dr. ZENAB EL-GOTHAMY, Professor of Dermatology and venereology, Ain Shams University, whose supervision, guidance and constructive creticism made the accomplishment of this review possible. I would like to express my supreme gratitude and indebtedness to her.



C O N T E N T S

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INTRODUCTION AND AIM OF THE WORK

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Erythrasma is a mild, chronic, localized, superficial infection of the skin caused by Corynebacterium minutissimum (Rook, 1979).

Erythrasma is characterized by sharply delineated, dry, brown, slightly scaling patches occurring in the intertriginous area, especially the axillae, the genitocrural crease, and the webs between the fourth and fifth toes and, less commonly, between the third and fourth toes. The intergluteal cleft and the inframmary area are sites to be also affected. Rarely, widespread eruption with lamellated plaques occur. The nails may be affected too (Negroni, 1976).

The lesions are asymptomatic except in the groins, where there may be some itching and burning. Patients with extensive erythrasma frequently have been found to have diabetes mellitus or other debilitating diseases (Domonkos et al., 1982).

In the present study we aim to review fully the various aspects of the disease and to discuss the views of previous authors.
This will entail : historical review, aetiology, predisposing factors, clinical picture, histopathology, differential diagnosis and management of erythrasma.

REVIEW OF LITERATURE

HISTORICAL REVIEW

In 1862 Von Bärensprung first used the term erythrasma to describe a contagious disease characterized by sharply defined, round or oval patches and confined mainly to the inguinal and axillary regions. He termed the causative organism Microsporum minutissimum.

The clinical picture was first delineated by Von Bärensprung's pupil, Burcharadt in 1859. While most of the subsequent workers had no doubt that erythrasma was a separate entity (Köbner, 1884; Balzer and Dubreuilh, 1883; Unna, 1896), some, including Weyl (1884), considered that various transitional forms existed between erythrasma and pityriasis versicolor.

Gougerot (1936) recognized the disseminated and subacute forms of erythrasma and pointed out (1931) that the condition could be complicated by eczematization or associated with coccal or fungus infection.

Rabeau and Guerra (1936) gave an account of 16 patients with this condition affecting the toe webs and added that some of the cases had an associated fungus infection.

Nikolowski and Stähle (1949) reported erythrasma in unusual sites, including a case in which the lesions were confined to the forearms. The generalized form, characterized by well-defined, scaly, lamellated plaques on the trunk and limbs, has been recognized for some time and was recently reported on by Goncalves and Mangeon (1960).

AETIOLOGY

Causative organism:

The causative organism of erythrasma has long been considered to be a fungus, variously named Microsporum minutissimum, Nocardia minutissima, Sporotrichum minutissimum, Microsporoides minutissimum, Oospora minutissima, and Discomyces minutissimus. Renewed interest in the aetiology of this long chronic infection of the stratum corneum has been stimulated by the clinical finding that erythrasma, unlike dermatophytic infections, fails to respond to treatment with the antifungal agent, griseofulvin, but may be cured by erythromycin administered systemically.

That the disease might be of bacterial origin was first suggested by Langa (1960) who isolated a corynebacterium and a hemolytic staphylococcus from scrapings of the skin of patients with erythrasma.

More recently, Sarkany et al., (1962) reported culturing, from scales of the affected patients, a diphtheroid which, when inoculated onto the skin of human voluntears, gave rise to clinical erythrasma.

The biochemical reactions of the organism has been described and has been named Cornyebacterium minutissimum (Montes et al., 1965; Montes and Black, 1967; Dodge et al., 1968; Marks et al., 1972).

In 1964 Pepin and Littlejohn found that Cornyebacterium minutissimum organism is widespread among lower animals.

Burns et al., (1967) mentioned that Corynebacterium minutissimum is common in certain sites on both normal and abnormal human integument of almost any age. Its presence (except possibly in classical erythrasma) is poorly correlated with disease process.

In 1972 Somerville said that many non-fluorescent skin sites harbour fluorescent diphtheroids and these organisms are now considered to be members of the normal flora of the skin. They live generally in intertriginous areas without causing damage to the host, but multiply under certain conditions, as yet undefined, to produce the skin lesions of erythrasma.

In 1976 Tachibana reported that the fluorescent diphtheroids are members of the normal skin flora since they can be isolated from non fluorescent skin sites that appear healthy. The figures reported by various workers

show that the organisms range from 5% to 36% in the normal population.

Diphtheroids:

The term diphtheroids is used to include a wide range of bacteria belonging to the genus Corynebacterium, all of which are gram-positive, pleomorphic, nonsporing rods with metachromatic granules. They are found as parasites of animals and plants and are also commonly found in soil, water, and air.

The cutaneous diphtheroids, together with the coagulase negative, gram-positive cocci, form the major component of the human skin flora. These diphtheroids comprise a large heterogenous group of organisms with extremely varied biochemical characters and nutritional requirements. Taxonomic schemes based on DNA base composition and cell wall carbohydrates should help to clarify some seemingly large differences among species, but these have not yet been applied to epidemiological or ecological studies (Tachibana, 1976).

In 1972, Sommerville proposed a broad grouping scheme for the cutaneous diphtheroids. The groups include (a) the lipophilic and nonlipophilic diphtheroids; (b) those producing porphyrins on tissue culture medium No.199

and showing coral red fluorescence when viewed under Wood's light; (c) those associated with trichomycosis axillaris, possessing some form of keratinolytic enzyme, and (d) the anaerobic diphtheroids.

Bacteriology of Corynebacterium minutissimum:

Direct examination:

Potassium hydroxide preparations demonstrate the organisms in the scales.

Stained preparations with methylene blue, Gram, Giemesa or periodic acid Schiff, examined under the oil immersion lens, are preferable.

Stained imprints of the horny layer, using slides coated with an adhesive solution, are particularly suitable for diagnostic purposes.
These show rod-like organisms, filaments and coccoid forms.

The relative proportion of these organisms varies in different areas examined, and sometimes, only bacteria - like rods are seen (Goldschmidt and Kligman, 1961).

Electron microscopic examination of ultra-thin sections of scales:

Sections of scales show that the majority of the organisms lie between the keratinized cells of the stratum corneum, but some bacilli are intracellular (Sarkany et al., 1962).

Cultures and nutritional requirements:

Scales scraped from lesions of the trunk and feet which show red fluorescence under Wood's light are those used for cultures.

The routinely used solid isolation medium consists of 78 % tissue culture medium No.199 (Morgan, Morton, and Parker) without bicarbonate, 20% fetal bovine serum, 2 % agar, and 0.05% hydroxy methyl aminomethane.

The prepared medium is autoclaved for 10 minutes at 15 Lb . per square inch.
Plates are poured by decanting the host liquor from the coagulated proteins which are discarded. Medium 199 without phenol red (Capell laboratories) was used for photofluorometric studies.

Within 24 - 48 hours small (1-2mm), shiny, round, translucent, colorless, slightly convex colonies appear.

There is no pigment production in visible light, but a red fluorescence diffusing into the surrounding medium can be observed under Wood's light (Sarkany et al.,1962).

A pink fluorescence in and around the colonies is also seen on sheep blood agar, chocolate agar, and yeast extract casein agar, but the fluorescence assumes striking proportions only on the tissue culture medium.

The presence of phenol red in the medium 199 may interfere with the red fluorescence, particularly in the presence of acid-producing organisms such as staphylococci.

At acidic pH the phenol red itself produces strong yellow fluorescence. Some batches of fetal bovine serum have an inhibitory effect on growth of the organism.

Autoclaving the medium or using a dialysate of the fetal bovine serum instead of the whole serum helped to promote both growth and fluorescence.

Inhibition of growth also takes place when unautoclaved medium No.199 is used with human or horse serum. Certain batches of tissue culture medium No.199 are marked with the addition of antibiotics (Penicillin, Streptomycin, etc.). Such media suppress growth of the organism and are unsuitable (Sarkany et al., 1962).