بسم الله الرحمن الرحيم

PSYCHOPHYSIOLOGICAL ASPECTS OF SKIN DISEASE IN INFANTS AND CHILDREN

رسالة

E S S A Y

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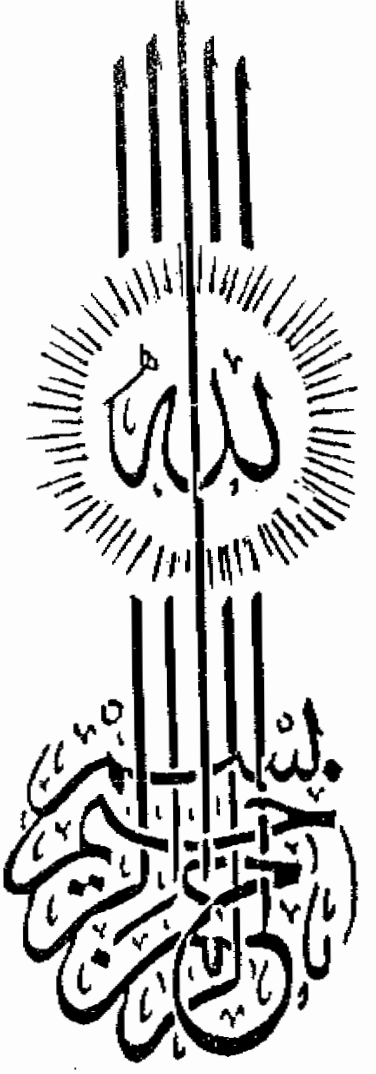
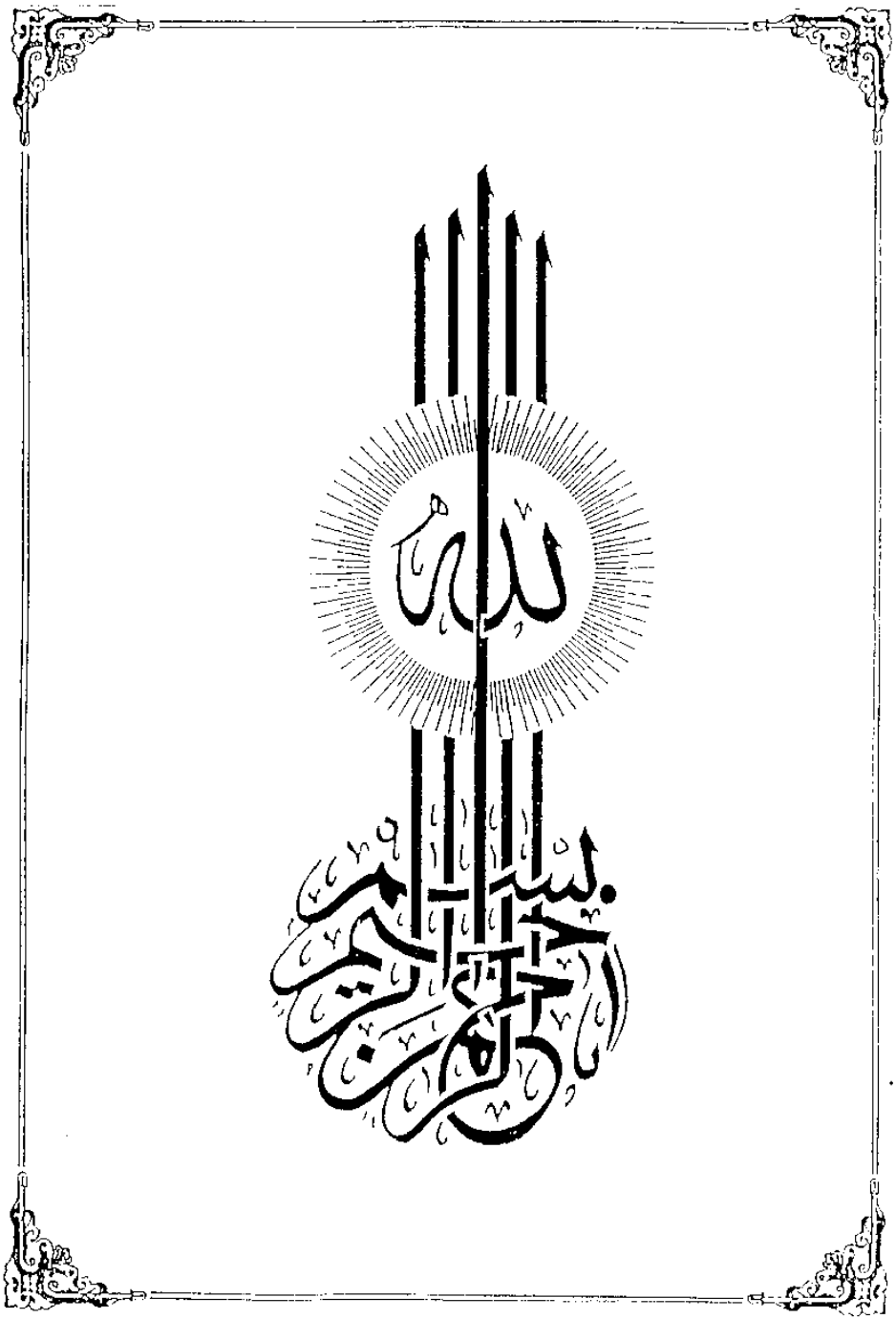


" وما أوتيتم من العلم إلا قليلا "

صدق الله العظيم



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INTRODUCTION

Skin is not only the boundary excluding the world and defining our limits, but it is also the surface of contact between ourselves and the environment.

The skin like the eye, is an organ of expression. Both the eye and the skin, including the hair are said to sparkle and glow with vitality or to be dull and lifeless.

The newborn infant experiences much of the world through the skin. Warmth and the gentle touch of the mother, encounters with the sharp edges in the world.

Psychosomatic disease may be related to difficulties occuring in the very earliest period of patient's life, even before the development of speech and another means of expression.

Emotional stress might give rise to peripheral changes which alter many skin functions and predispose to its injury by physical, or infective agent, or might aggravate an existing lesion.

BASIC SKIN HISTOLOGY

Some knowledge of normal skin biology is obviously essential for the proper understanding of pathological states.

The skin is composed of three distinct layers. From the surface downward, they are :

* The epidermis.
* The dermis.
* And the subcutaneous fat.

The epidermis is the thinnest layer. It is a metabolically active, stratified, squamous, cornifying epithelium that is populated by four types of cells, keratinocytes for the most part, and melanocytes ,Langerhans cells, and Merkel cells in decreasing sparsity.

The dermis consists mostly of comparatively non cellular connective tissue composed of collagen, elastic fibers, and ground substance, within which are embedded nerves, blood vessels, lymph vessels, muscles, and pilosebaceous apocrine and eccrine sweat units.

The dermis rests upon a thick bad of subcutaneous fat and is 15 to 40 times thicker than the epidermis (depending on location). The dermis has less energy requirements than the epidermis. The mature dermis also contains a variety of cells that are scattered freely in varying numbers throughout its structure. In descending numerical order, these " free cells of the dermis " are fibroblsts, mast cells, histocytes, Langerhans cells, lymphocytes, and very rarely, eosinophils. Plasma cells are not seen in normal dermis anywhere except at mucocutaneous junctions. The upper part of the dermis, termed the papillary dermis, and the deeper thicker layer is the reticular dermis. Fibroblsts are the most numerous cells in the dermis. The dermis is also rich in lymphatics. The cutaneous nerve supply has two components, the peripheral sensory nerves and the sympathetic autonomic nerves supplying the vasculature and hair follicles (Henry and Bernard 1985).

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THE NEWBORN AND CHILD'S SKIN

THE NEWBORN SKIN

The skin of the newborn is structurally mature, possesses an intact epidermal barrier, and is protected by a lipid film, the vernix caseosa, which is usually wiped away during the first few hours. Removal of this covering permits the observer to appreciate the intense erythema that characterizes the skin on the first day of life. The erythema fades within several hours, leaving a more normal color and a cutis marmorata pattern, more pronounced in some infants than others. This normal physiologic vascular pattern fluctuates with changes in temperature, becoming more noticeable with prolonged exposure to cold and disappearing when the infant is rewarmed. Physiologic cutis marmorata presumably reflects vasomotor instability due to immaturity. It may persist for the first several weeks or months of life in certain infants and is often extremely prominant in infants with Down's syndrome and trisomy 18.

Another rather dramatic but benign and evanescent vascular change in the newborn infant is the phenomenon known as harlequin color change. This peculiar

important not to attribute long-term significance to this skin change.

Additional minor lesions that are often present in the normal newborn include sebaceous hyperplasia and milia. Sebaceous hyperplasia is most marked in the term infant and consists of tiny, monomorphous, pin-head-sized yellow lesions representing enlarged sebaceous glands scattered over the nose, upper lip, malar regions, and chin. These small lesions fade away during first month of life and rarely cause concern. Occasionally the sebaceous glands of the lower lip may enlarge and can be confused with herpetic vesicles. Milia are also commonly found on the skin and mucous membranes of the term infant. These pearly white papules are often scattered over the forehead and malar areas. Milia are noninflammatory and lack an erythematous base. The palate is the most commonly affected mucosal region (Epstien's pearls), but the gingivae are also a site of predilection. These cysts spontaneously exfoliate during the first few weeks of life (Nancy and Mary 1985).

In the newborn, skin appendages are incompletely

formed, and eccrine sweat glands is scanty or absent in many areas. Because of inadequate peripheral circulation, and meager subcutaneous fat, temperature regulation is difficult in the newborn. (Robert 1983) .

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CHILD'S SKIN

During the early years of childhood, cohesion of epidermal cells to each other and to the underlying basement membrane is weak. As a result, blisters in the skin may commonly occur secondary to relatively minor trauma, or action of pathogenic bacteria such as staphylococci.

The lack of sebaceous secretion during the childhood contributes to dryness of the skin and a child's susceptibility to chapping, especially during the winter months. The abscence sebum on the scalp in prepupertal is thought to contribute to the increased incidence of tinea capitis in this age group. Tinea pedis,on the other hand, is very uncommon before adolescence.

Children's skin may be more easily irritated by chemicals than adult skin .

A child skin probably does not allow substantially more percutaneous absorption per cm^2 than adult skin, but infants have a greater ratio of surface area (cm^2) to weigh (kilogram) . Once absorbed, any drug is then available systemically, and

Table 1 dramatically illustrates the hazards of changes in the ratio of surface area to weight. After the same strength of salicylic acid is applied to an infant and to an adult, the infant recieves 2.7 times the adult dose in milligrams per kilogram (Robert 1983) .

TABLE I. Percutaneous Absorption of Salicylic Acid (Systemic Dose = MG/KG ; Salicylic Acid = 20 % Absorbed)

	ADULTS	INFANTS
Surface area	17,000 cm^2	2200 cm^2 (13% of adult)
Topical dose	100 mg	13 mg (13 % of adult)
Patient weight	70 kg	3.4 kg (neonate)
Systemic dose	$\frac{100 \text{ mg} \times 0.2 \text{ abs.}}{70 \text{ kg.}}$ = 0.28 mg/kg	$\frac{13 \text{ mg} \times 0.2 \text{ abs.}}{3.4 \text{ kg.}}$ = 0.76 mg/kg

PHYSIOLOGY AND IMMUNOLOGICAL ASPECT OF THE SKIN