AETIOLOGY OF SPRING CATARRH
(VERNAL CONJUNCTIVITIS)

THESIS

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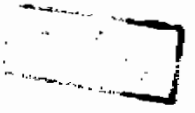

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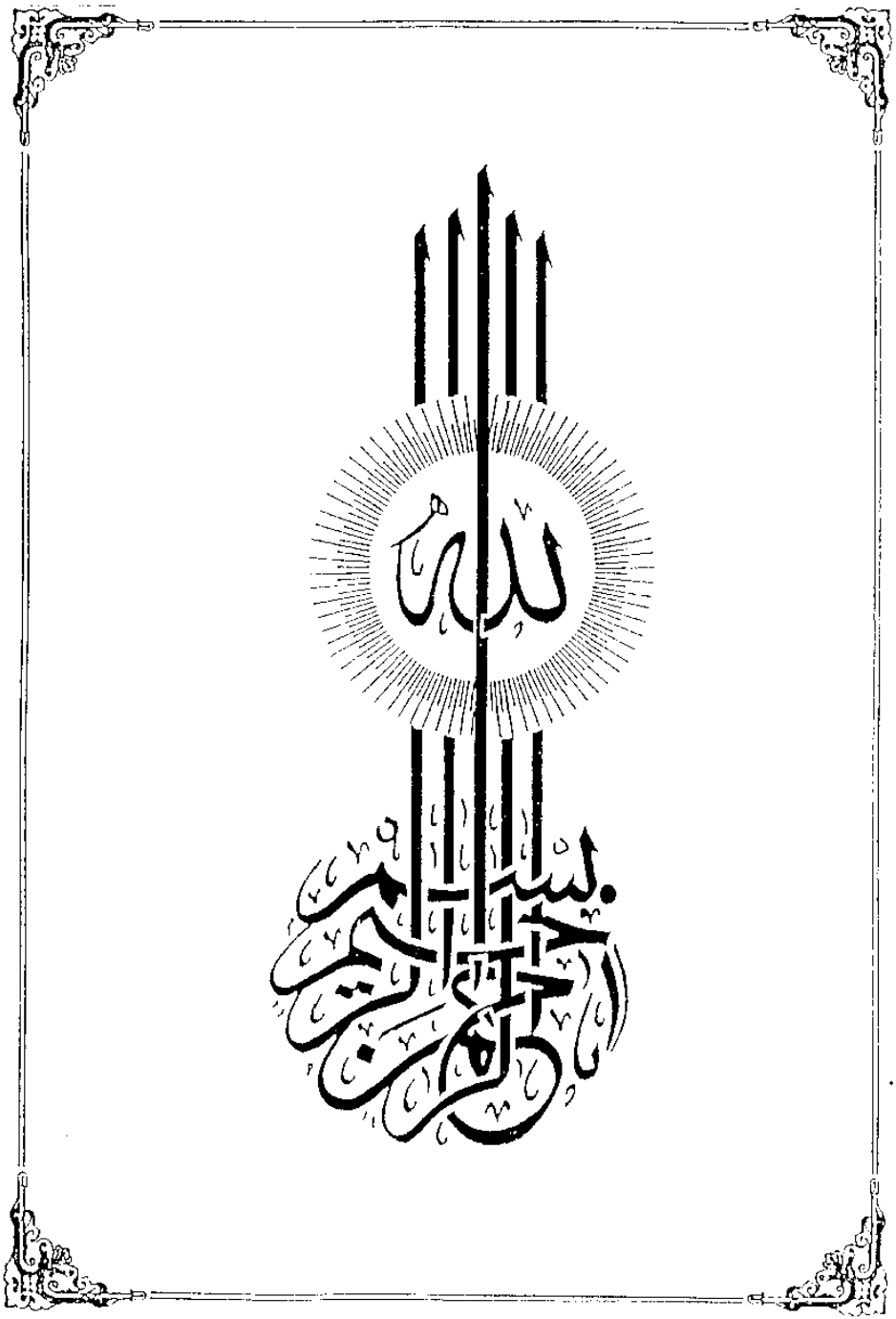

INTRODUCTION

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The aim of this work is to arrive at the possible aetiology of spring catarrh, which was in question until now.

The aetiology of spring catarrh was studied from three angles: allergy and sensitivity, endocrine disorder usually associated with vagotonia, and physical factors as heat, dust, humidity and light (Duke-Elder 1965). The idea of photosensitivity was elaborated by Covara (1914) who suggested that the photosensitive substance which rendered the individual sensitive to ultra-violet rays was haematoporphyrin. Inheritence of subclinical porphyria is the most probable cause of spring catarrh because it was found to be of inheritance nature, accurring in growing age period, of self-limited course and predominant in males (males: females 4 : 1).

These criteria coincided with the age, sex and heridity incidence of spring catarrh.

It is found that:

a) Endocrine disturbances, chronic septic foci, and associated allergic diseases are associated factors.

b) Physical factors as heat, dust, and humidity act as exciting factors.

ANATOMY OF THE CONGUNCTIVA

A N A T O M Y

The conjuctiva: is a thin translucent mucous membrane which derives its name from the fact that it joins the eyeball to the lids.

It lines the posterior surface of the lids, and is reflected forwards on to the globe. Its epithelium becomes continuous anteriorly with the epithelium of the cornea. So it forms a complex space, the conjunctival sac which is open in front at the palpebral fissure

Gross anatomy: The conjunctiva is devided into the following regions:

1- Palpebral
   a) marginal b) torsal a) orbital
2- The conjunctiva of the fornix:
   a) superior fornix b) inferior fornix
   c) lateral fornix d) medial fornix
3- The bulbar:
   a) Scleral conjunctiva b) limbal conjunctiva.
4- Plica Semilunaris.

1- Palpebral conjunctiva:

Lines the inner surface of the eyelids.

a- Marginal conjunctiva:

Is actually a transition zone between skin and conjunctiva proper. The structure of the marginal zone

c) The lateral fornix:

Is placed at a depth of 5 mm from the surface, i.e. 14 mm from the limbus, and extends to just behind the equator of the globe.

d) The medial fornix:

Is the shallowest, and is merly represented by the medial ends of the superior and inferior recesses. The fornix conjunctiva is in contact with and adherent to loose fibrous tissue, which is derived from the fascial expansions of the sheaths of the levator and recti muscles, and which is easily distensible.

The conjunctival glands of krouse open into it. By means of this fibrous tissue the levator and recti can act on the fornix, deepening it when they contract. Centrally, the fibrous tissue becomes continuous with the tarsus.

In the intertendinous interval, that is, in the diagonal regions of the fornix, the conjunctiva is in contact with the orbital fat, and it is in this regions that infiltrations and haemorrhage, such as arise in fracture base of the skull, reach the conjunctiva.

The fornix is well supplied with vessels, and a rich venous network can be especially well seen in

At the point of union the conjunctiva is sometimes raised by a slight ridge, which becomes very apparent in inflammatory conditions. This portion of the conjunctiva is known as the limbal conjunctiva. At the limbus in the angle between the epithelium and the sclera, the dermis of the conjunctiva, fascia bulbi, and the episdera are fused into a dense tissue. Wolff E. (1976).

The Structure of the Conjunctiva

Varies fundamentally in its different regions. On this depends the limitation of certain pathological processes to definite areas.

Only in the new-born is the conjunctiva really normal, for awing to its exposed condition slight pathological changes are apt to take place from the earliest age.

The conjunctiva, like all ether mucous membranes, consists of two layers-the epithelium and the submucosal lamina propria.

The Epithelium: The greater portion of the free margin of the lid is covered by keratinised stratified epithelium. The mucocutaneous junction lies at the level of the posterior margin of the openings of the torsal glands i.e. at the junction of "dry" and "moist" portions where the marginal strips of tear fluid end in a sharp line. Here the eleidin and keratin layers of the skin end quite sharply, giving place to about five layers of non-keratinised squamous epithelium, the most superfacial cells of which still retain their nucli. The deeper portion of the epithelium does not not alter at all at the mucocutaneous junction. It retains the same papillary structure.

At this point, then, the mucous membrane is much like that of the mouth, i.e. the deepest layer consists of high cylindrical cells as in the epidermis; this is followed by several layers of polyhedral cells, while the most superficial cells are flattened but still retain their nuclei. As we travel backwards the number of layers of squamous cells is gradually reduced and replaced by columner and cubical ones. The total number of layers is also reduced, but the deepest layers remains cylindrical. Also in this region goblet cells, which, however, never reach the muco-cutaneous junction, begin to appear and are particularly numerous just beyond the subtarsal fold. The epithelium of the tarsal conjunctiva of the upper eyelid consists, as classically described, of two layers. The deeper layer is composed of cubical cells whose oval nuclei lie with their axes parallel to the surface. The superficial layer consists of tall cylindrical cells, whose oval nuclei lie near the base of the cells and have their long axis at right angles to the surface.

As the fornix is approached, there is a tendency for a third layer of polyhedral cells to be inserted between the other two. So that at the fornix, although generally the structure is like that of the palpebral conjunctiva, we often find three layers instead of two.

The epithelium of the tarsal conjunctiva of the lower eyelid differs from the upper in having three or four layers of cells over nearly the whole of its extent, a two-layered arrangment as in the upper is only rarely present; sometimes five layers may be found. When four layers are present the basal cells are cubical as in all the tarsal conjunctiva, the next layer is polygonal, superficial to this are elongated wedge-shaped cells, their narrow ends jutting between the cells of the most superficial layer which are cone-shaped.

From the fornix to the limbus the epithelium becomes less and less glandular with a disappearance of the goblet cells, and more like that of the epidermis, but it never becomes keratinised.

More and more polyhedral layers are added between the superficial and deep cells. The superficial cells become flatter, while the deep cells grow taller. At the limbus the epithelium is definitely statified with the formation of papillae, which give the deep aspect of the epithelium a characteristic wavy outline. Here the deepest or basal cells form a single layer of small cylindrical or cubical cells, with a large, darkly staining nucleus and little protoplasm. It is this

fact that produces the dark line or seam seen under the low power of the microscope, and characteristic of the limbal conjunctiva. Moreover, the basal cells often contain pigment granules. There are several layers of polygonal cells, and superficially one or two layers of flattened cells with oval nuclei parallel to the surface. The polygonal cells deffer from those of the cornea inhaving no prickles between them.

Goblet cells: Large, oval, or round cells which look like fat cells. The nacleus is flattened, and is near the base of the cell. The Goblet cells are true, unicellular mucous glands, moistening and protecting the conjunctiva and cornea. Although goblet cells occur normally in the conjunctiva they are greatly increased in inflammatory conditions.

Melanocytes are present in the conjunctiva of the coloured races. In the white races the cells are present but not usually pigmented. The melanin can, however, always be brought out by the Dopa reaction or silver stains.

The Conjunctival Glands

They are number of small glands differentiated both histologically and topographically into differing types known as the conjunctival glands.

The glands of Krause:are accessory lacrimal glands having the same structure as the main gland. There are some 42 in the upper and 6-8 in the lower fornix. They are largely on the lateral side. Their ducts unite into a rather long duct or sinus which opins into the fornix.

The glands of Wolfering: are also accessory lacrimal glands, but larger than the glands of krause. There are 2-5 in the upper lid setuated in the upper border of the tarsus about its meddle and two glands in the inferior edge of the lower tarsus.

Henle's Glands: Occur in the palpebral conjunctiva between the tarsal plates and fornices. They are probably not true glands, but folds of mucous membrane cut transuersely.

The Conjunctival submucosa: has superficial lymphoid layer and a deeper fibrous layer. Both end at the limbus; neither layer passes over the cornea.

Conjunctival papillae: True papillae are found only at the limbus and at the lid margins.

Arteries:- The arteral supply of the conjunctiva comes from three sources:

1- The peripheral arterial arcades.

2- The marginal arterial arcades.

3- The anterior ciliary arteries.

of these, so far at any rate as the upper lid is concerned, the peripheral arcade supplies by far the greatest area, i.e. almost the whole of the tarsal conjunctiva, the fornix, and the bulbar conjunctiva up to 4 mm from the cornea.

The Peripheral Arcade:

In the upper lid is situated at the upper border of the tarsus between the two portions of the levator. It gives off the peripheral perforating branches, which pass above the tarsal plate and pierce the palpebral muscle to reach the conjunctiva, under which it sends branches upwards and downwards.

The descending branches supply nearly the whole of the tarsal conjunctiva. They run perpendicularly to the lid margin, and anastomose with the much shorter branches of the marginal artery which have pierced the tarsus at the subtarsal fold.

The ascending branches pass upwards to the fornix, then bending round this, descend under the bulbar conjunctiva as the posterior conjunctival arteries. They pass towards the cornea, at 4 mm from which they anastomose with the anterior conjunctival arteries branches of the anterior ciliaries. The posterior conjunctival vessels are mobile, moving with the bulbar