CENTRAL SEROUS RETINOPATHY

ESSAY

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By

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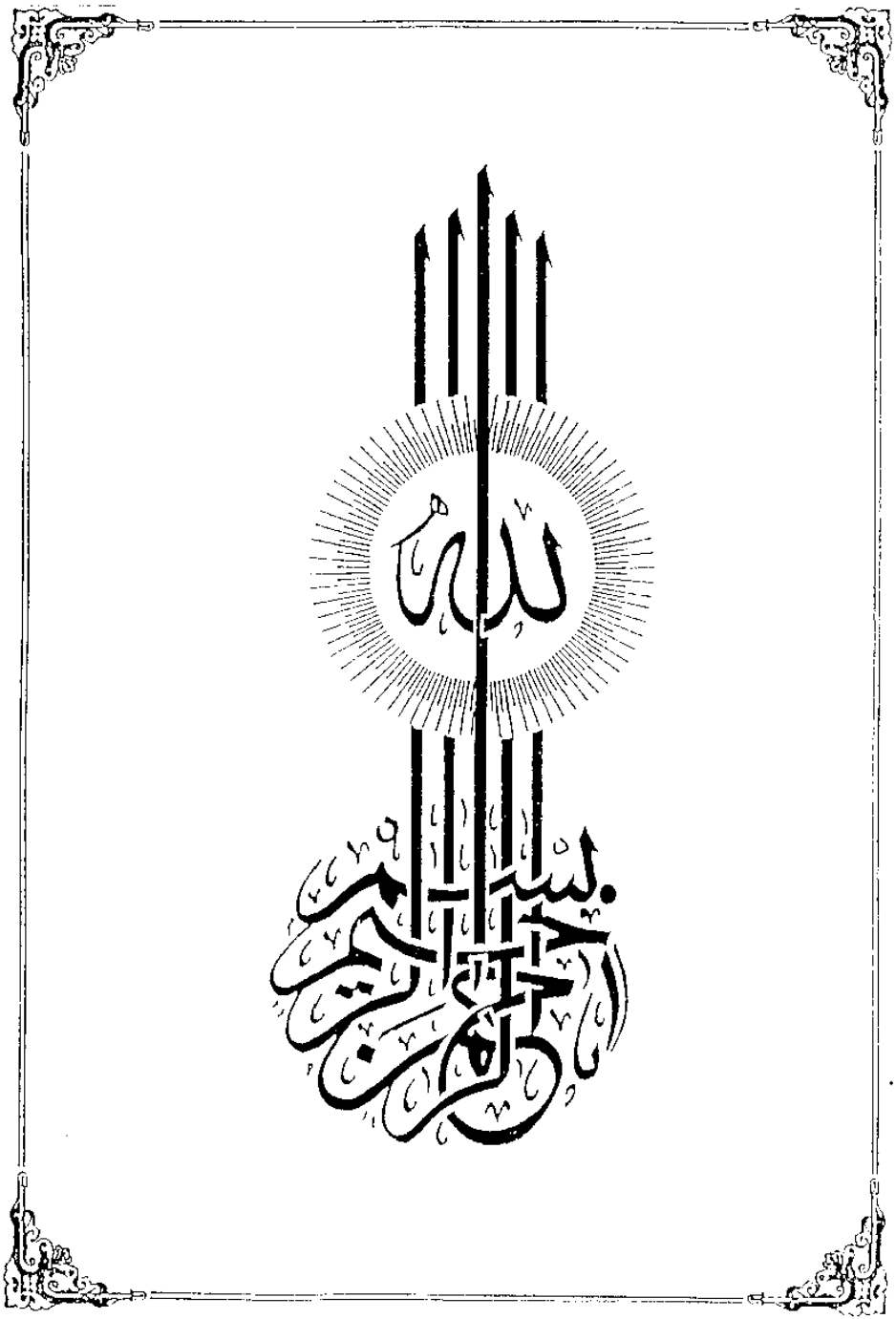

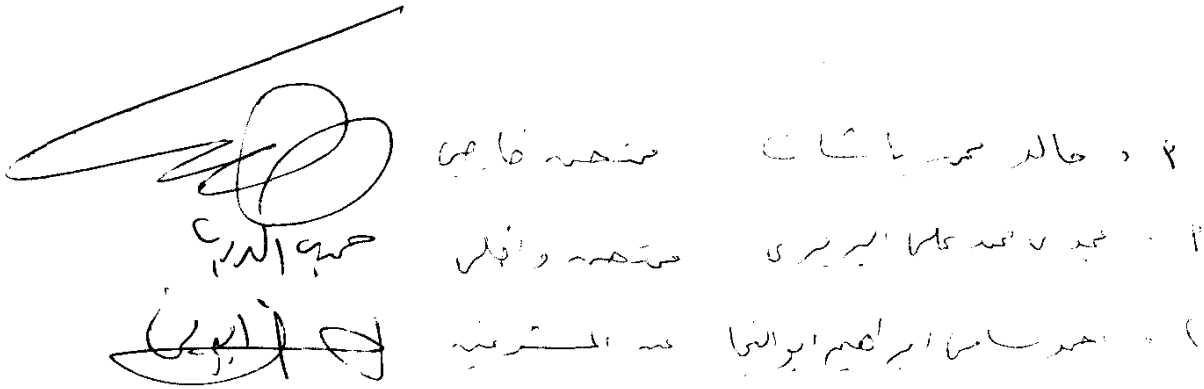

To

my Family

List of Abbreviations

CSR	Central Serous Retinopathy
ICG	Indocyanine Green
RPE	Retinal Pigment Epithelium

INTRODUCTION

Introduction

Historical Review:

Central serous retinopathy was first recognized by ***Albrecht von Grafe*** in 1866, who proposed the name, Central recurrent retinitis.

After him ***Fuchs*** in 1916 proposed the same term suggesting that the condition was caused by a circulatory disturbance due to syphilis.

Horniker (1930) suggested the term central agniospastic retinitis and he brought an evidence of vasomotor instability.

Walsh and Sloan in (1936) reported cases of the same clinical picture and said to be of unknown etiology and called it idiopathic flat detachement of the macula.

Gifford and Marquardt (1939) described new cases and suggested the name central agniospastic retinopathy.

Maumenee (1965) suggested the name of serous disciform detachement of the macula.

Spitzans (1989) postulated that the disease most appropriate name is central serous retinopathy.

Persumed Etiology:

The cause of central serous retinopathy with its marked subjective symptoms has aroused much speculation, but it is not yet known with certainty ***(Duke - Elder, 1968).***

It has been speculated that psychological factors might play a causative role in central serous retinopathy ***(Spitzans, 1989).***

Werry and Arends (1978),used the Minnesota Multipahsic Personality Inventory (MMPI) to compare patients with CSR with an age and sex matched group of healthy individuals. They found that patientswith CSR show significantly higher values on the hypochondria and hysteria scale and concluded that these patients have a neurotic personality structure with a tendency toward development of a conversional neurosis.

The emotional element was previously stressed by ***Harrington (1946),*** he concluded that emotional shock in a susceptible indivisual could produce the condition.

An infective basis has been postulated by many writers, but no particular organism has been incriminated with the exception of ***Sie Boen-Lian (1964);*** who claimed isolation of clementary virus from 12 cases of CSR.

Klein (1961) attributed the etiology, to wide spread haemodynamic disturbances, as increased intracarnial pressure, that cause stasis in intrabital and intraocular venous system.

Bennet (1955) and ***Maumenee (1959)*** stressed the relationship between CSR and haemorrhagic disciform macular lesions and suggested that they were of the same etiology.

Macy and Baervelodt (1983) suggested that CSR may be mechanical in nature resulting from prolonged hyptony, thus it may follow intraocular surgery, they reported a case of 73 years old female who experienced a serous macular detachment following an uncomplicated extracapsular catarct extraction with posterior chamber intraocular tens.

Fastenberg and Ober (1983); Gass (1991) reported CSR to occur as an infrequent complication of pregnancy.

It is entirely possible that multiple etiologies may be involved in the development of the disease ***(Gass, 1967).***

Anatomy of Central Area of Retina

Retina; Inner Nervous Coat of the Eye:

It is a thin transparent membrane having a purplish-red color in living subjects. Its thickness varies from 0.56 mm near the optic disc, to 0.1 mm at the ora serrata. It is thinnest at the center of the fovea.

The retina consists of an outer pigmented layer and inner neuro sensory layer **[Fig. 1]**.

At the center of the posterior part of the retina, is an oval yellowish area, the macula lutea, which is the retinal area for the most distinct vision. It has a central depression, the fovea centralis ***(Wolff, 1976).***

Central Retina (Macula Lutea):

This region is about 4.5 mm in diameter, it extends from the fovea centralis nasally almost to the optic disc, about the same distance temporally, and a similar distance above and below the fovea centralis.

In this region, the ganglion cell layer has more than one layer of nuclei. The retinal layers of the central retina from the outer inward have a yellow carotenoid pigment , xanthophyll ***(Wolff, 1976).***

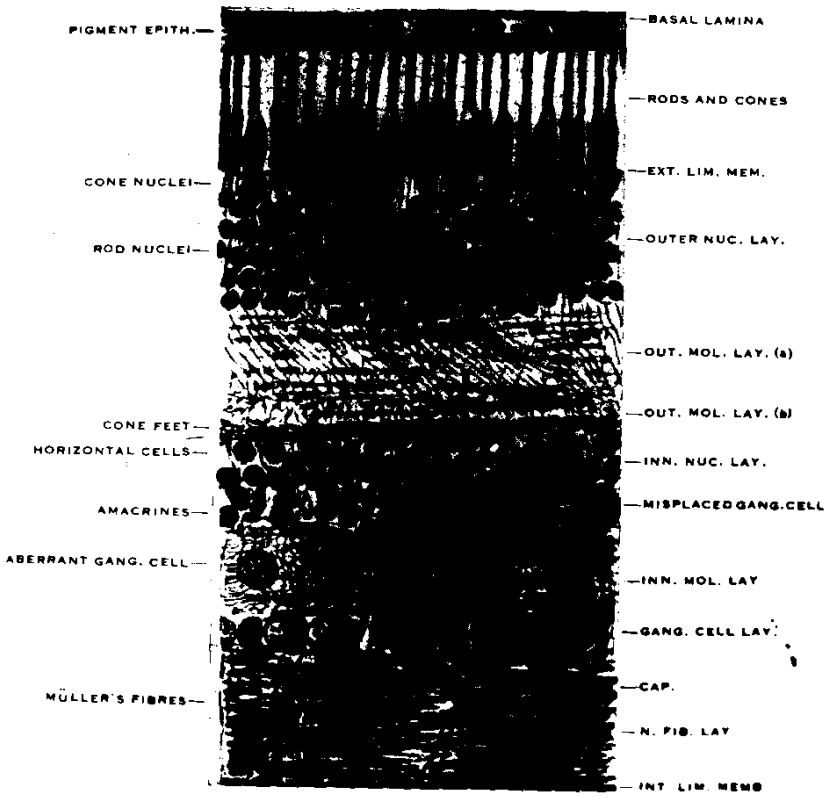

FIG. 96.—VERTICAL SECTION OF RETINA.
(Wolff's preparation.)

Fig. 1 ***Vertical Section of Retina***
(Wolff, 1976).

The fovea centralis is a depressed area located in the central retina about 3 mm temporal to the optic disc and 0.8 mm below the horizontal meridian.

It measures (1.5 mm) in diameter. The sides of the depression form the clivus, its center is the foveola and measures about (0.4 mm) in diameter. Parafovea (2.1 mm) perifovea (1.5 mm) ***Peyman et al., 1980)*** **[Fig. 2].**

The photoreceptors at the fovea centralis are exclusively cones. The outer segments of cones in the foveola are densely packed, thin long and attennated. The cone cells are long slender cells measuring about 65 to 74 µm in length. They are formed of an outer segment, a connecting stalk and an inner segment.

The outer segment is conical, considerably wider than a rod at its base, and tapering down to a rounded tip. The membranes of the transversely arranged discs are continuous with the outer plasma membrane, thus the lamina of the discs, unlike those of the rods, are continuous with the extracellular space. The tips of the cones are not phagocytosed by the pigment cells **[Fig. 3].**

Several photochemicals are found in the cones and are known as idopsins. The photo sensitive pigments are incorporated into the disc membranes ***(Wolff, 1976).***

FIG. 149.—SECTION THROUGH THE MACULA NEAR THE CENTRE OF THE FOVEA. (Based on same slide as Fig. 148.)

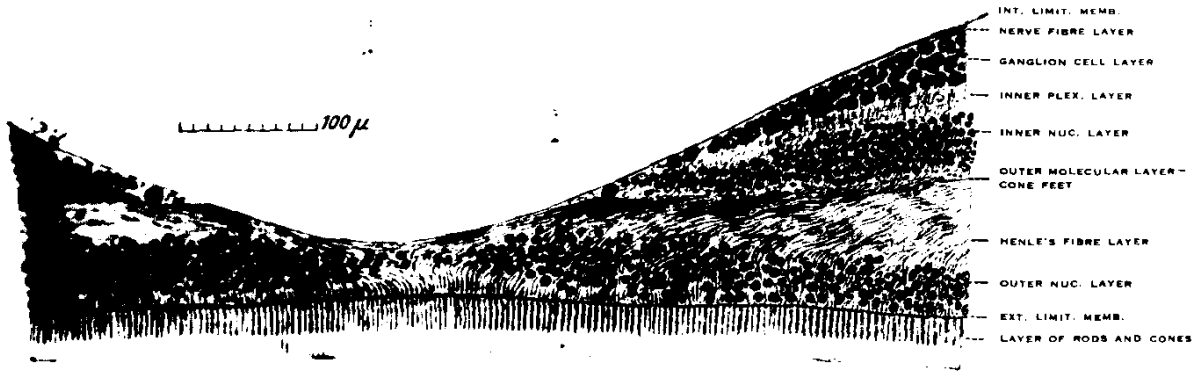

Fig. 2 ***a. Section through the macula near the center of the fovea.***

b. Section through the center of the fovea centralis.

(Peyman et al., 1980).

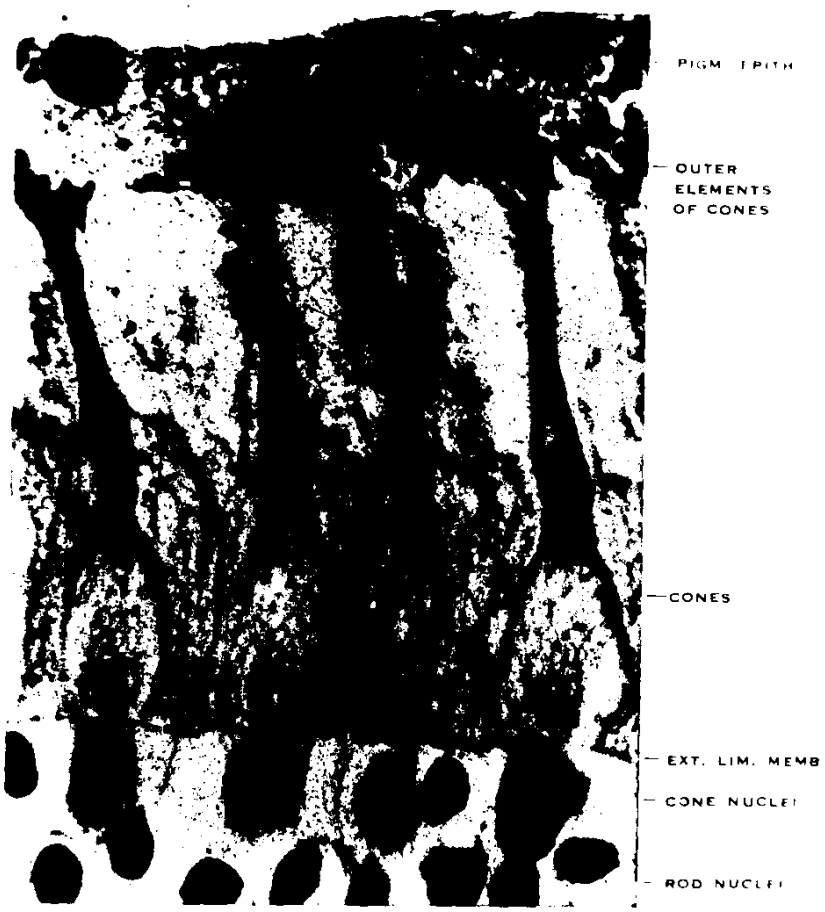

Fig. 3 ***The passage of retinal pigment into the cones.***
(Wolff, 1976).

The cone outer segment is connected to the inner segment by an eccentrically placed modified cilium. The structure of the inner cone segment ressembles that of the inner segment of the rod. It contains many mitochondria, Golgi apparatus, ribesomes, endoplasmic.

The inner segment of the cone merges with the body which contains a large pale-staining nuclues.

The body of the cone is connected by the inner fiber to the expanded end, called the cone pedicle. This synapses with the dendrites of the bipolar cells ***(Snell, Lemp 1989).***

Retinal pigment epithelium consists of a single layer of cells that extends forward from the margin of the optic nerve to the ora serrata anteriorly, here it continues forward with the continuation of the nervous layer at the pigmented ciliary epithelium. The cells are narrow and tall at the posterior pole and become flattened at the ora serrata. On tangential section, the cells are hexagonal. The based end of each cell is much infolded and rests on a basement membrane, which forms part of Bruch's membrane of the choroid. The apical ends of the cell show multiple microvilli measuring 5 to 7 µm long. These project between and surround the outer segments of rods and cones, and there are no specialized attachment between them. The microvelli are embedded in glycosaminoglycans. The adjacent cell membranes are bound together in the basal region