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بعض الدراسات عن خلايا الدبق العصبى البصرى للجمل
وحيد السنام السليم

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SOME STUDIES ON GLIAL CELLS OF THE OPTIC NERVE IN NORMAL ONE HUMPED CAMEL
(With 6 Figures)

By

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SUMMARY

The astroglia at the retinal layer of the intraocular portion of the optic nerve are of the fibrous variety. They are relatively scarce and are found to be numerous in the anterior than the posterior portion of the retinal layer.

In the choroidal lamina at the choroidal layer of the intraocular portion of the optic nerve, Astroglia are numerous than in the retinal layer of the optic nerve.

In the orbital portion of the optic nerve, the columns of astroglia become gradually thicker towards the caudal part of the optic nerve where they are formed of about three rows of astroglia.

INTRODUCTION

The present study is aimed to clarify the morphological and histological characteristics of the glial cells in the optic nerve of the single humped camel.

VANGHAN and ASHJRY, (1961); WOLTER, (1961); COPENHAVER, (1964); FOSTER, (1964) and FINE and YANOFF, (1972), described the neuroglial elements between the bundles of the optic nerve in man. In animals, the literatures in this direction is very rare specially with regards to the camel. The purpose of this work is to supply anatomists and the histologists with some informations about the glial cells in the optic nerve of the camel.

MATERIAL AND METHODS

For histological study of the glial cells of the optic nerve of single humped camel, specimens were collected from Cairo slaughter house.

Ten camels were taken from both sexes at different ages.

The eye was divided into different regions, from the intraocular portion and orbital portion of the optic nerve. The specimens were fixed in 10% formalin and were embedded in paraffin. Sections were cut at about 5 microns thickness at different variety.

Frozen section were cut at 20 microns thickness.

The stains were used Harris's Haematoxylin and Eosin for general histological structures (HARRIS, 1898). The measurements were made by using eye piece micrometer.

RESULTS AND DISCUSSION

The axons of the ganglionic cells run into bundles parallel to the retinal surface and converge caudally towards the optic disc. The bundles of the beforementioned axons are found to be separated by the fibers of Muller cells. As the bundles reach the periphery of the optic disc they are separated by columns of glial cells.

The astroglia at the retinal layer of the intraocular portion of the optic nerve, are of the fibrous variety. They are relatively scarce and are found to be more in the anterior than in the posterior portion of the retinal layer of the optic nerve. The astroglia at the anterior portion of the retinal layer are arranged in between the neurites (Fig. 1) and are demonstrated around the small blood vessels and capillaries (Fig. 2), however, they are disposed into concentric manner around the large blood vessels, namely, the central artery and vein of the retina. The astroglia are large star-shaped cells with thin spear-like cytoplasmic processes which are demonstrated in the vicinity of a neurite and or a blood vessel. The cytoplasm is relatively small and the nucleus is rounded or oval, large, vesicular with dust-like chromatin material (Fig. 3 and 4).

The arrangement of the neuroglia within the retinal layer of the intraocular portion of the optic nerve of the camel simulates that described by WOLTER (1961), COPENHAVER (1964); FOSTER (1964) and FINE and YANOFF (1972).

The astroglia within the choroidal lamina are of the fibrous variety and arrange themselves inbetween the unmyelinated nerve fibers passing through this lamina as well as separating the connective tissue collagenous fiber strands from the neurites.

The astroglia in choroidal layer of the intraocular portion of the optic nerve, are more numerous than that in the retinal layer and they may demonstrate themselves into columns separating the parallel bundles of neurites passing through this layer (Fig. 5). The astroglia are demonstrated also in the vicinity of the scarcely demonstrated blood capillaries within this lamina.

In the orbital portion of the optic nerve, the bundles of neurites are separated by columns of astroglia. The latter are thin at the rostral portion; where the cells are apart from each other. The astroglial columns become gradually thicker towards the caudal portion of the optic nerve where they are formed of about three rows of large astroglia (Fig. 6). The bundles of neurites range from 55-60 in number in a longitudinal section of the intraocular layer of the optic nerve. Each bundle ranges from 95-128 microns diameter.

The astroglia are mostly few at the peripheral portion of the optic nerve.

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LEGENDS

- Fig. 1: The retinal layer of the intraocular portion of the optic nerve. Note the neurites (N), the fibrous astrocytes (F) and the blood vessels (B) (Haematoxylin and eosin stain. oc. 10-x ob. 16).
- Fig. 2: The retinal layer of the intraocular portion of the optic nerve showing; the thick inner layer (A) and the thin outer layer (B) (Haematoxylin and eosin stain. oc. 10 x ob. 16).
- Fig. 3: The fibrous astrocytes (F) within the anterior layer of the retinal layer of the optic nerve arranging themselves inbetween the neurites (Haematoxylin and eosin stain. oc. 10 x ob. 100).
- Fig. 4: The fibrous astrocytes (F) within the anterior layer of the retinal layer of the intraocular portion of the optic nerve arranging themselves around the blood capillaries (C) (Haematoxylin and eosin stain. oc. 10 x ob. 100).
- Fig. 5: The astroglia within the choroidal lamina arranging themselves into columns separating the parallel bundles of neurites (Haematoxylin and eosin stain. oc. 10 c ob. 40).
- Fig. 6: The bundles of the optic nerve separated by thin columns of astroglia at the cranial portion of the optic nerve (A), and by thick columns of astroglia at the caudal portion of the optic nerve (B) (Haematoxylin and eosin stain. oc. 10 x ob. 16).

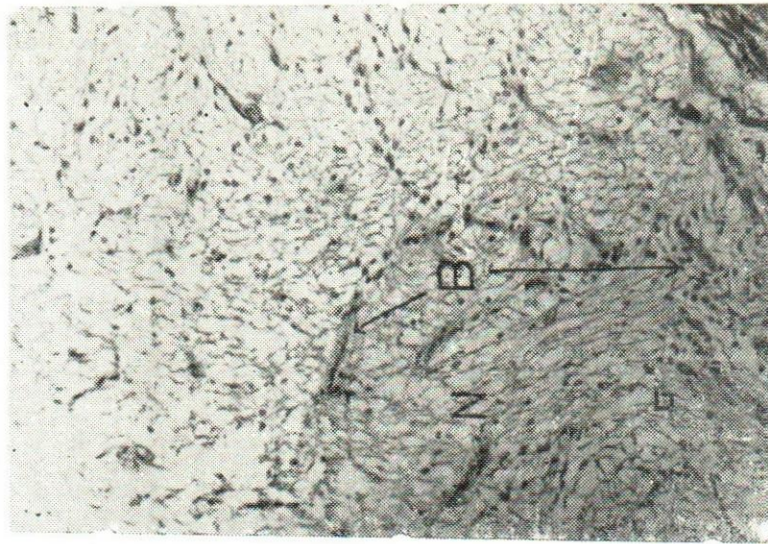


Fig. 1 : The retinal layer of the intraocular portion of the optic nerve. Note the neurites (N), the fibrous astrocytes (F) and the blood vessels (B) Haematoxylin and eosin stain oc. 10 x ob. 16).

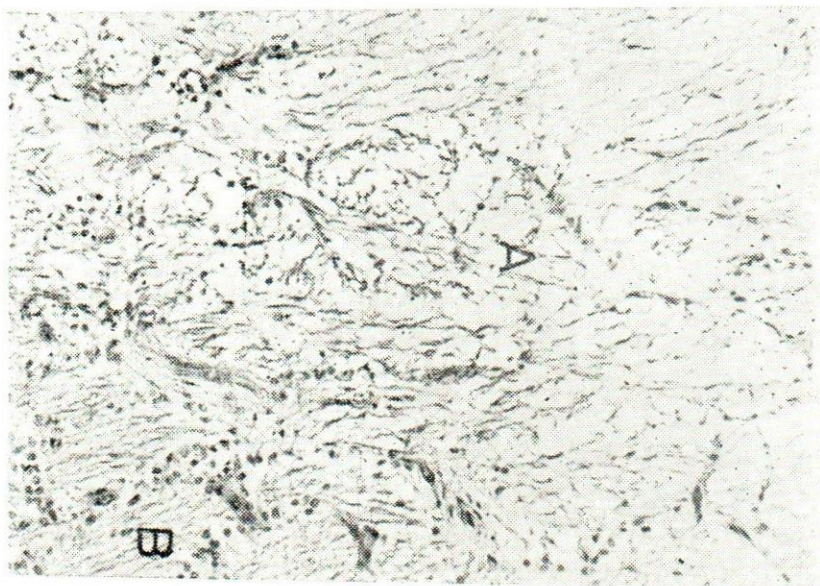


Fig. 2 : The retinal layer of the intraocular portion of the optic nerve showing, the thick inner layer (A) and the thin outer layer (B) (Haematoxylin and eosin stain, oc. 10 x ob. 16).

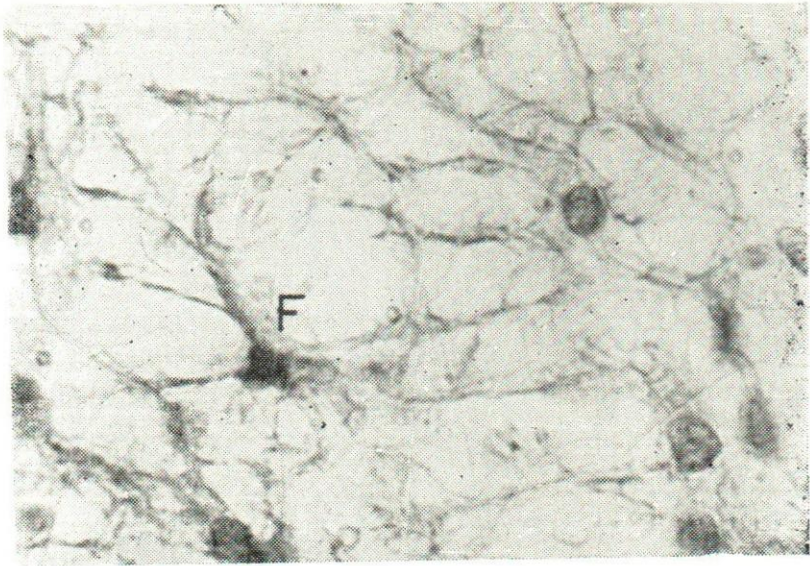


Fig. 3 : The fibrous astrocytes (F) within the anterior layer of the retinal layer of the optic nerve arranging themselves inbetween the neurites (Haematoxylin and eosin stain. oc. 10 x ob. 100),

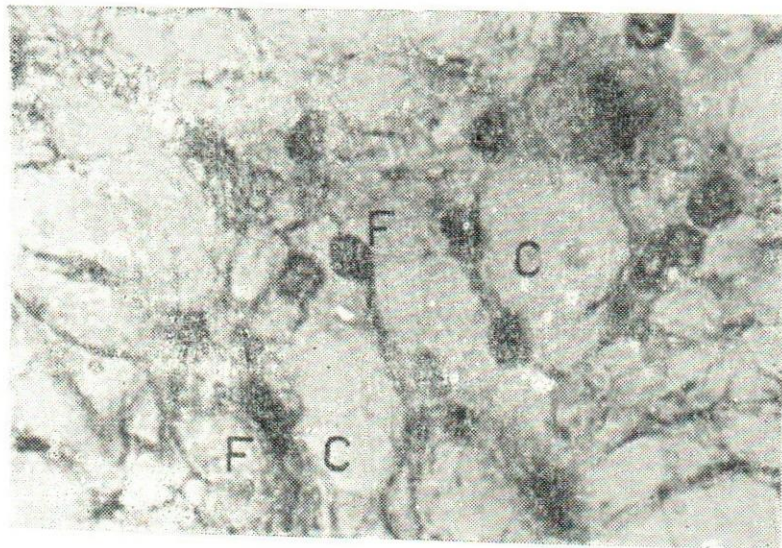


Fig. 4 : The fibrous astrocytes (F) within the anterior layer of the retinal layer of the intracular portion of the optic nerve arranging themselves around the blood capillaries (C) Haematoxylin and eosin stain. oc 10 x ob. 100).

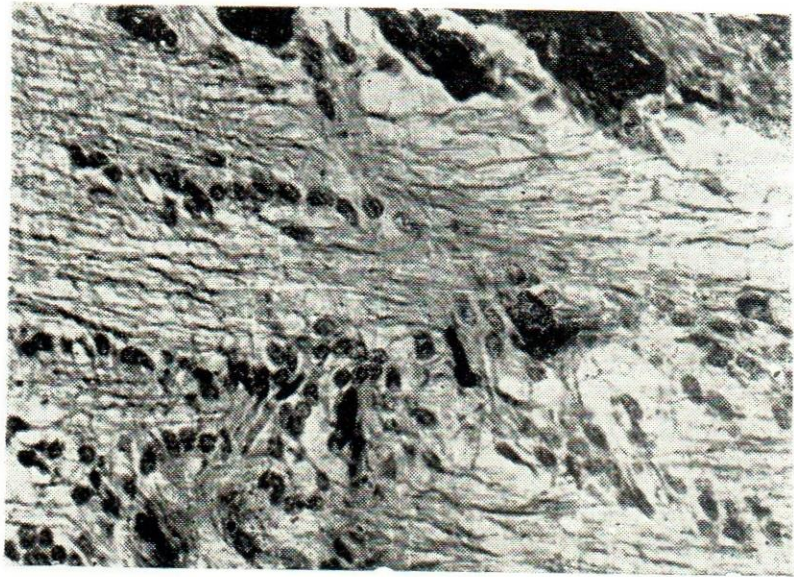


Fig. 5 : The astroglia within the choroidal lamina arranging themselves into columns separating the parallel bundles of neurites (Haematoxylin and eosin stain, $\times 10$ ob. 40).

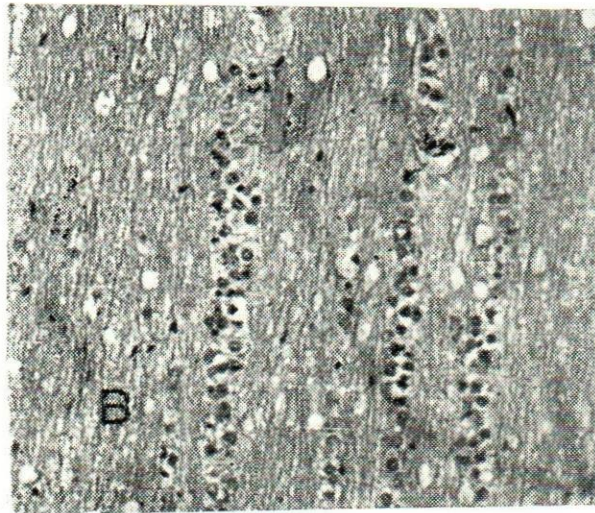
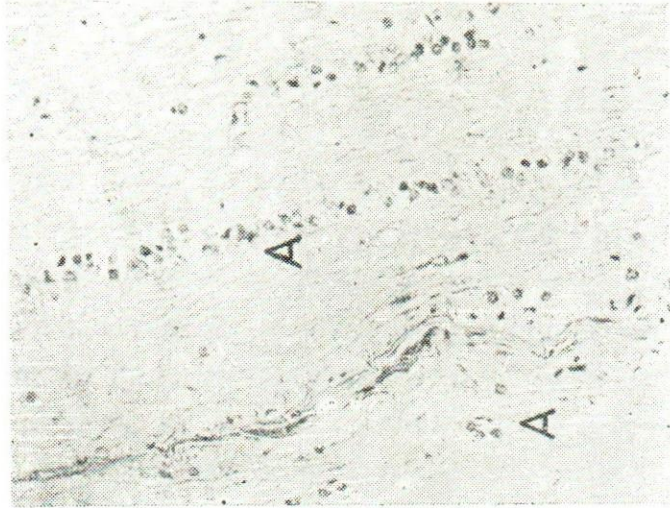


Fig. 6 : The bundles of the optic nerve separated by thin columns of astroglia at the cranial portion of the optic nerve (A), and by thick columns of astroglia at the caudal portion of the optic nerve (B) (Haematoxylin and eosin stain, oc. 10 x ob. 16).

