DOI : 10.35124/bca.2020.20.1.1981

Biochem. Cell. Arch. Vol. 20, No. 1, pp. 1981-1983, 2020 | www.connectjournals.com/bca | *ISSN 0972-5075*

HISTOMORPHOLOGICAL STUDY OF CEREBRAL AND CEREBELLUM IN GUINEA FOWL (*NUMIDIA MELEGRIDIS*)

Fatimah Swadi Zghair*, Hassaneen Al Sharoot, Raed Gahat Mehjal and Mustafa Al Sharoot

Department of Anatomy and Histology, College of Veterinary Medicine, University of AL-Qadisiyah, Iraq.
*e-mail : fatimah.Zghair@qu.ed.iq

(Received 29 September 2019, Revised 21 December 2019, Accepted 24 December 2019)

ABSTRACT : In the present study, the cerebral cortex ranges of six layers with gray matter. Molecular, external granular, external pyramidal, internal granular and multiform layers, though medulla formed white matter with dens bundles of galial nerves cells and nerves fibers. The cerebellar cortex is made upthree types of layers (molecular, purkinje cell and internal granular).

Key words : Cerebral, cortex, cerebellum, histology.

INTRODUCTION

Bird brain analysis was very significant as it guided physical action, retaining the organism's equilibrium. Regulation and function of muscle tension (Ma and Zheny, 1984; Sturkie, 1986). The brain is made up of three major prefrontal, cerebellum and oblongata medulla pieces. The birds have relatively large cerebral hemispheres and cerebellas, as well as large optical lobes and smaller olfactory bulbs (Husband, 1999).

There were no variations in importance in the birds ' central nervous system compared to that mammalian (Shively, 1985). The hemisphere of the avian cerebral was pear in shape. The two olfactory bulbs are located at the front of the cerebral hemisphere, A longitudinal fissure divided the right and left hemispheres and a transverse fissure separated the cerebral hemispheres from the cerebellum (Dyce *et al*, 1987) and (Sultan, 2005) observed that four-layered birds (swifts and falcons) do not have a large cerebellum during brain studies. The optic lobe in birds is relatively large due to the importance of vision or most bird, whereas the olfactory lobes are relatively small due to poor sense of smell (Gunturkum, 2000). The brain in avian consist of two components, gray matter and white matter situated externally while the white matter situated internally (Dellman and Meclure, 1975).

The cerebral cortex consists of sex layers with a molecular layer, an outward granular layer, an inner granular layer, an inner pyramid layer as well as a multiform layer, whereas the medulla comprises a thick bundle of fibers and gallial nerve cells (Pal *et al*, 2003). The brain also consists of three layers of molecular layer, purkinje layer of cells and granular layer (Bunyamin, 2001).

The medulla oblongata of birds consists entirely of three zones of gray matter and seems to be irregular, with a first zone on the medial side getting large nerve cells and that the last zone on the lateral side of both the medulla oblongata having small nerve cells (Goodmon and schein, 1974). These work to explain the histology of guinea fowl brain due to very little studies of the histology of guinea fowl brain.

MATERIALS AND METHODS

Ten birds of adult of guinea fowl were used in current study, after slaughtered birds were washed with 0.9 percent NaCl. Specimen fixed by 10 percent NBF and sectioning by tissue processor, then section 6-7μ and stain by H and E stain (Galigher and Kozolff, 1964; Luna, 1968).

RESULTS AND DISCUSSION

Histological result of the brain was consist of two main constituents, the gray matter composed of big nervous of perkarya, their dendrites, glial cells, blood vessel and small extent of nerves fibers that were may be myelinated, the cerebrum consist of cortex and medulla, the cortex consist of gray matter which covered the apex of brain and partial surface and position under the pia matter, also the cerebral cortex has 6 cellular layers (molecular, external granular, external pyramidal, internal granular and multiform) (Figs. 1, 2). This result study was parallel with Lind and Bacha (1990), Yokyma and Hoh (2004), Samulson (2007). Both structures have all

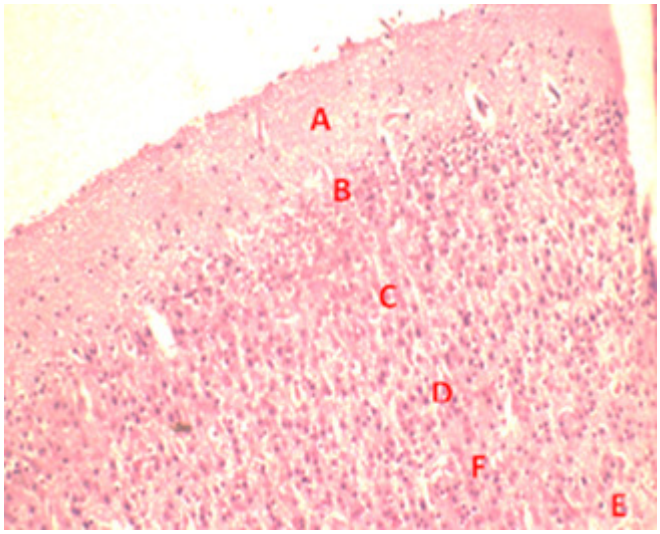

Fig. 1 : Microhistological section of the cerebral cortex A-molecular layer B-external granular layer C-layer of medium-sized pyramidal cell D- internal granular layer F-internal layer of large pyramidal cell E- multiform layer. 400X H and E

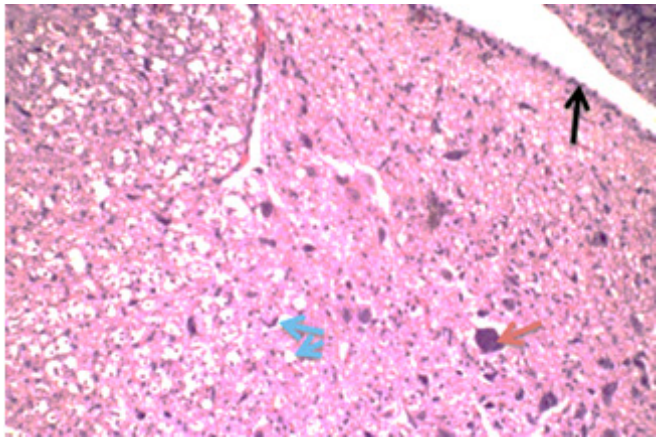

Fig. 2 : Histological section of the cerebral cortex, pia mater (black arrow), pyramidal cell (red arrow) , intercellular areas (nerve fibers and neuroglia) (blue arrow). H and E100X.

shown the presence of large numbers of pyramidal cells, satellite cells, and blood vessels. Pale large nuclei with Nissals granule in cytoplasm defined the pyramid cells (Fig. 1). The brain medulla formed of dense nerve fiber bundles with uni-polor glial cells (Fig. 2). These findings have been valued (Riner, 2005). The present study shows that three layers of both the cerebellar cortex, the external molecular layer, consist of pyramidal cells including purkinje cells axon. The purkinje layer formed positioned between the molecular layer and the internal granular layer and constitutes of multipolor purkinje cells, regarded by large pale nuclei and huge numbers of granules of the nissal. The latter layer of just the cerebellar cortex was attributed to as granular layer with a huge number of granular cells. Containing large nuclei, certain cells appear large or tiny (Fig. 3). Such results were similar to Bunyamin (2001), which suggested the dark and strongly

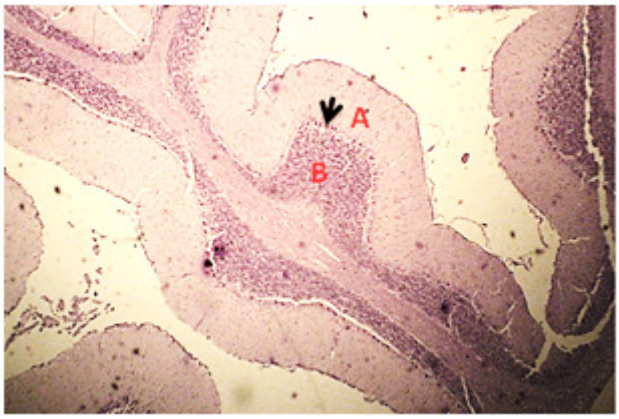

Fig. 3 : Microhistological section of the cerebellum A-molecular layer purkinje cells (black arrow) and B-granular layer 100X H and E.

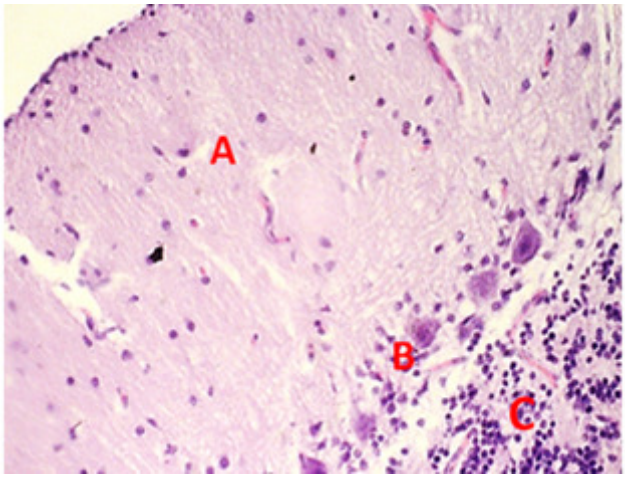

Fig. 4 : Microhistiological section of the cerebellum A-white matter B- purkinje cells C-granular layer. 100X H and E.

basophilic cytoplasm of the purkinje cells. The cerebellum medulla made with bundles of thick nerve fibers, originating in the presence of glial cells (Fig. 4). Such results were similar to Lind and Bacha (1990).

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