COMPARATIVE ACCOUNT OF BRAIN IN VERTEBRATES

Brain of all vertebrates, from fish to man, is built in accordance with the same basic architectural plan. However, form of brain differs in different vertebrates in accordance with the habits and behaviours of the animals.

A. Brain of Cyclostomes (e.g Petromyzon)

In petromyzon, the brain is of primitive type. The brain is covered by a single meninx, the meninx primitiva. It is divided into three parts. i) Fore brain or prosencephalon ii) midbrain or mesencephalon and iii) Hind brain or rhombencephalon.

i) Fore brain or prosencephalon: It is anteriormost part of brain. It is divided into three parts.

(a) Olfactory lobes. The olfactory lobes have a pair of large and widely separated olfactory bulbs.

b) Cerebral hemispheres. These are a pair of smooth, small lobes. These have poorly developed corpora striata. The ventricle or cavities of cerebral hemisphere are called lateral or Second ventricle. The cerebral hemispheres and olfactory lobes collectively form telencephalon.

C) Diencephalon. It is comparatively large sized and has better developed epiphyseal apparatus than other vertebrates. It has photosensitive pineal eye. Hypothalamus is well developed with small lobi inferiores, saccus vasculosus and prominent infundibulum. epithalamus has two unequal habenular ganglia, left is smaller than right. The ventricle present in diencephalon is called diacoel or 3rd ventricle.

ii) Mid brain or Mesencephalon: It is represented by two optic lobes on dorsal side and crura

cerebrain on ventral side. Between the optic lobes, there is present a membranous choroid plexus which is fused with the plexus present over fourth ventricle of medulla oblongata

iii) Hind brain or Rhombencephalon: It is formed of two parts:

a) Cerebellum. It is present in the form of transverse band of Nerve fibres.

b) Medulla oblongata. It is a larger and well developed part of brain in Petromyzon. It has giant neurons (Mauthner cells). It has fourth ventricle

Functions.

i) Prosencephalon is mainly concerned with sense of smell and sensation of light.

2. Mesencephalon is mainly connected with sense of sight.

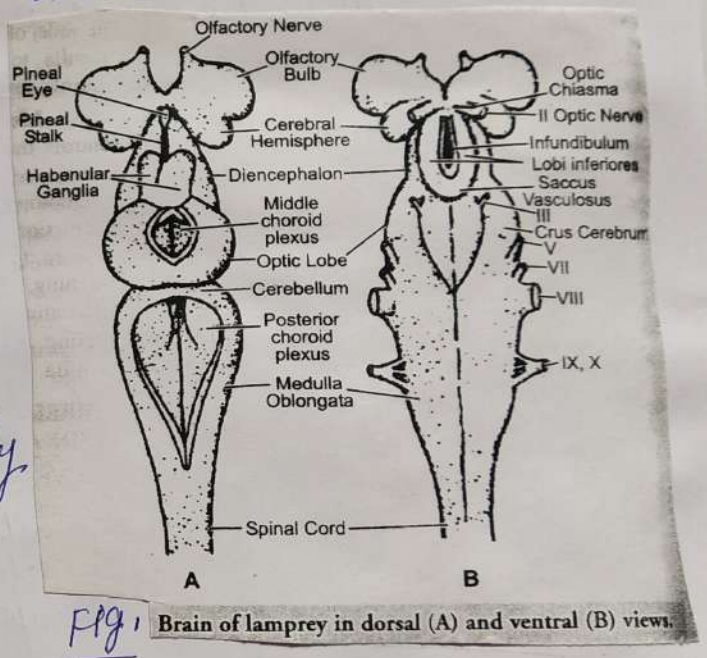

Fig: Brain of lamprey in dorsal (A) and ventral (B) views.

3. Rhombencephalon is mainly connected with acoustic, lateral line system and taste buds.