

Chapter 2

The Human Brain: Its Structure and Functions

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ABSTRACT

The human brain is a very complex entity with a distinctive organisation and function. There are three main structures in brain: the cerebrum, the cerebellum, and brain stem. Further, these structures are subdivided into more parts depending on their position in the brain. The cerebrum is the major portion of brain with sulcus and gyrus of folded structure and deep structures too. Corpus callosum connects the right and left hemisphere of brain to communicate. Each hemisphere of the brain is further classified into four regions: frontal, temporal, parietal, occipital lobes. Each lobe deals with different functions. For understanding any disease or doing research or treatment, one should have a depth of knowledge of the brain, its parts, and the functioning of different lobes and regions. Therefore, this chapter will deal with in-depth knowledge of the brain parts, not only anatomically but also their functionality.

INTRODUCTION

The Human Brain

The brain is the most volatile body part in the anthropological body. It creates all our considerations, activity, memory, sensation and involvement of the world. This organ like mass of tissue, slanting the scales at around 1.4 kilograms, contains one hundred billion nerve cells, or neurons.

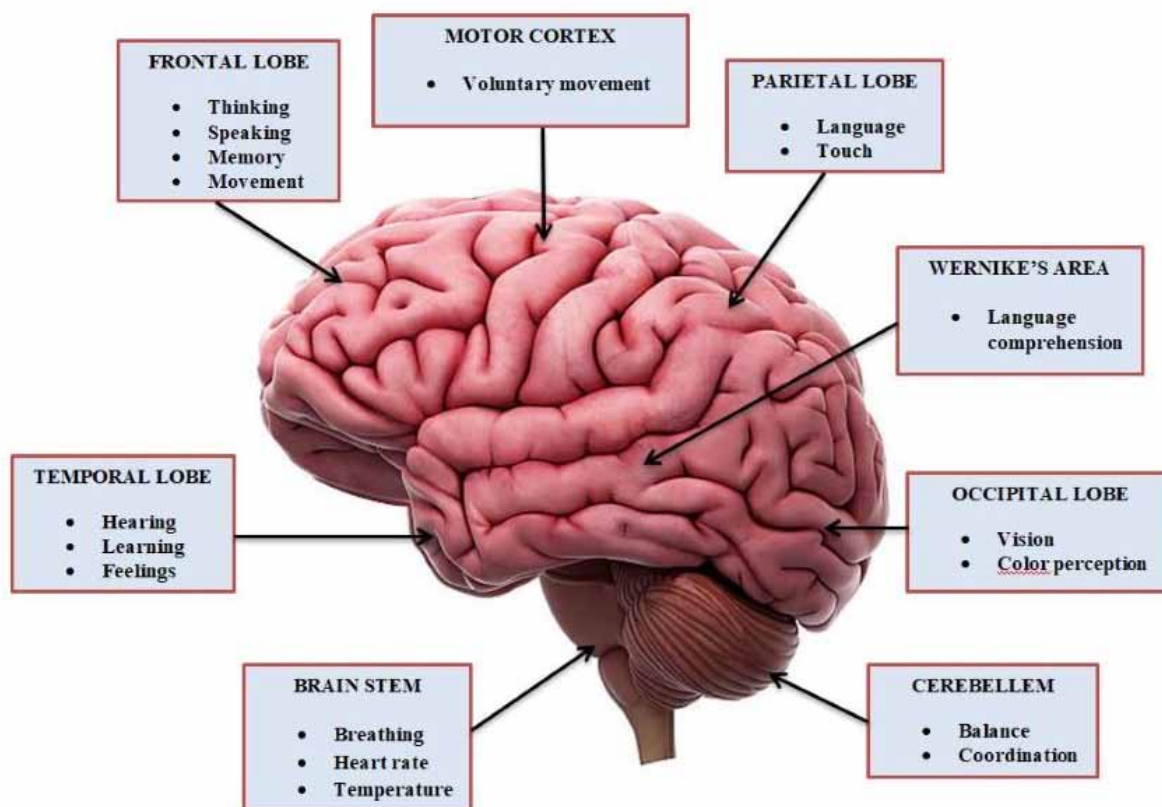
The complexity of the accessibility between these cells is stunning. Each neuron can associate with thousands or even colossal quantity of others, through little developments called synapses. Model and strength of the affiliations is consistently changing and no two brain organs are comparable. It is in these changing affiliations that memories are taken care of, inclinations learned and characters shaped, by developing explicit instances of brain activity, and bringing up the rear others.

The brain consists of three main structures called cerebrum, cerebellum and brain stem. (Fig.1: Different parts of brain and their function) The brain is divided in to two parts left and right hemisphere

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which is connected by a group of neural fibres called the corpus callosum. The corpus callosum allows the communication between two hemispheres thereby coordination between the two sides of the body. The word split brain syndrome indicates the neurological condition caused by severing or lesioning of corpus callosum. It causes the disruption in the white matter connection between two parts of the brain. The condition may lead to the incoordination between the both sides of the body. Among the major three parts the cerebrum occupies the greatest surface area of the human brain which has grooves and folds, Known as sulci and gyri respectively. The second largest area of the brain cerebellum is situated at the back of the head. it is responsible for the constant streams of information between brain and body. Third part of the brain named brain stem or hind brain is situated in the bottom of the brain and is the top part of the spinal cord. It controls the autonomic functions which are not under conscious control. Based on the position the brain can be divided as frontal, temporal, parietal and occipital lobes. As the name suggest the frontal lobe (left and right) is situated in the front part of the brain. The temporal lobes are located ventral to the Sylvian fissure and the parietal lobes. The smallest region called occipital lobes is located back of the brain.

Figure 1. Different parts of brain and their function



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