

Contents

7. Telencephalon	47
7.1 External features	47
7.2 Inner structure	50
7.2.1 Isocortex (neocortex)	50
7.2.2 Basal ganglia	54
7.2.2.1 Connections of the corpus striatum	56
7.2.2.2 Function of the basal ganglia	56
7.2.2.3 Disorders of the basal ganglia function	57
7.2.3 Allocortex and limbic system	58
7.2.3.1 Olfactory brain (rhinencephalon)	58
7.2.3.2 Hippocampal formation	59
7.2.3.3 Limbic system	60
7.2.3.3.1 Functions of the limbic system	63
7.2.4 Cerebral white matter, internal capsule	63
8. Tracts and pathways of the CNS	65
8.1 Ascending projection tracts (sensory, afferent)	65
8.1.1 Direct ascending tracts	66
8.1.1.1 Dorsal columns (spinobulbar tracts)	66
8.1.1.2 Spinothalamic tract	66
8.1.1.3 Trigeminothalamic tract	69
8.1.2 Indirect ascending tracts	69
8.1.2.1 Spinoreticular tract (spinoreticulothalamic system)	69
8.1.2.2 Spinotectal tract	70
8.1.2.3 Spinocerebellar tract – anterior (Gowers), posterior (Flechsig)	70
8.1.2.4 Bulbo cerebellar tract	71
8.1.2.5 Nucleocerebellar tracts	71
8.2 Descending projection tracts (motor, efferent)	71
8.2.1 Direct descending tracts	72
8.2.1.1 Corticospinal (pyramidal) tract	72
8.2.1.2 Corticonuclear (corticobulbar) tract	73
8.2.2 Indirect (extrapyramidal) tracts	73
8.2.3 Cerebellar tracts	76
8.2.3.1 Afferent cerebellar tracts	76
8.2.3.2 Efferent cerebellar tracts	77
8.3 Association tracts	77
8.3.1 Spinal association tracts	77
8.3.2 Brain stem association tracts	77
8.3.3 Diencephalon association tracts	78
8.3.4 Telencephalon association tracts	78
8.4 Commissural tracts	79
8.4.1 Spinal commissural tracts	79
8.4.2 Brain stem commissural tracts	79
8.4.3 Commissural tracts in the diencephalon and telencephalon	79
8.5 Special sensory pathways and systems	80
8.5.1 Olfactory system	80
8.5.2 Visual system	81
8.5.2.1 Pupillary light reflex – miosis	83
8.5.2.2 Pupillary reflex – mydriasis	83
8.5.2.3 Accommodation-convergence reaction	84
8.5.2.4 Accommodation, miosis	84
8.5.2.5 Convergence	85
8.5.2.6 Saccadic eye movements	85
8.5.2.7 Corneal reflex	85
8.5.3 Auditory system	86
8.5.4 Vestibular system	87
8.5.5 Taste pathway	88
8.6 Lesions of the CNS tracts	89

9. Ventricular system and cerebrospinal fluid -----	91
9.1 Ventricle and channels of the CNS -----	91
9.1.1 Lateral ventricle -----	93
9.1.2 Third ventricle -----	93
9.1.3 Mesencephalic aqueduct -----	94
9.1.4 Fourth ventricle -----	94
9.1.5 Central canal of the spinal cord -----	94
9.2 Circumventricular organs -----	94
9.3 Cerebrospinal fluid -----	96
10. Coverings of the CNS -----	97
10.1 Dura mater -----	97
10.1.1 Cranial dura mater -----	97
10.1.2 Spinal dura mater -----	99
10.2 Arachnoid mater -----	99
10.3 Pia mater -----	100
11. Blood supply of the CNS -----	101
11.1 Blood supply of the brain -----	101
11.1.1 Arteries of the brain -----	101
11.1.1.1 Arterial supply of the hemispheres and the midbrain -----	101
11.1.1.2 Arterial supply of the medulla oblongata, pons and cerebellum -----	103
11.1.2 Veins of the brain -----	104
11.1.3 Interconnections of the intracranial and extracranial veins -----	107
11.1.2 Blood supply of the spinal cord -----	107
11.2.1 Arteries of the spinal cord -----	107
11.2.2 Veins of the spinal cord -----	108
References -----	109