

List of contents

	Title	Page No.
1	الغلاف	I
2	Dedication	II
3	Acknowledgment	III
4	List of abbreviations	IV
5	English abstract	V - VI
6	Arabic abstract	VII - VIII
7	List of tables	IX
8	List of figures	X - XI
Chapter One: Introduction		
1.1	Introduction	1 - 3
1.2	General objective	3
1.3	Specific objectives	3
1.4	Problem of the study	4
Chapter Two: Literature review		
2.1	Anatomy of the brain	5
2.1.1	Brainstem	5
2.1.1.1	Midbrain	6
2.1.1.2	Pons	7
2.1.1.3	Medulla Oblongata	7 - 8
2.1.1.4	Reticular Formation	8
2.1.2	Cerebellum	9 - 10
2.1.3	Cerebrum	11 - 13
2.1.3.1	Frontal lobe	13 - 14
2.1.3.2	Parietal lobe	14
2.1.3.3	Temporal lobe	14 - 15
2.1.3.4	Occipital lobe	15

2.1.4	Corpus Callosum	16
2.1.4.1	Relations	16 - 17
2.1.4.2	Fibre tracts	17
2.1.4.3	Development	17
2.1.5	Blood Supply	18
2.1.5.1	Brain	18
2.1.5.2	Corpus Callosum	19
2.1.6	Nerve Supply	19
2.1.6.1	Cranial nerve nuclei	19 – 20
2.1.6.2	Midbrain level	20
2.1.6.3	Pontine level	21
2.1.6.4	Medullary level	21 - 22
2.2	Physiology	23
2.2.1	Brainstem	23
2.2.1.1	Midbrain	23
2.2.1.2	Pons	23
2.2.1.3	Medulla Oblongata	23
2.2.1.4	Reticular Formation	23
2.2.2	Cerebellum	23 – 24
2.2.3	Cerebrum	24
2.2.3.1	Frontal lobe	24
2.2.3.2	Parietal lobe	25
2.2.3.3	Temporal lobe	25
2.2.3.4	Occipital lobe	25
2.2.3.5	Insula	25
2.2.4	Corpus Callosum	25
2.3	Pathology	27
2.3.1	Brainstem	27

2.3.1.1	Inflammatory diseases	27
2.3.1.2	Vascular Brainstem diseases	28
2.3.1.2.1	Brainstem Infarction	28 - 29
2.3.1.2.2	Intraparenchymatous brainstem hemorrhage	30
2.3.1.3	Brainstem tumors	31
2.3.1.3.1	Brainstem Gliomas	31
2.3.1.3.2	Meningiomas	32 – 33
2.3.2	Cerebellum	34
2.3.2.1	Olivopontocerebellar atrophy	34
2.3.2.2	Acute cerebellar ataxia	34 - 35
2.3.2.3	Dandy-Walker Malformation	35 - 36
2.3.3	Cerebrum	36
2.3.3.1	Gliomas	36
2.3.3.2	Cerebritis	37
2.3.3.3	Cerebral Infarction	37 – 38
2.3.3.4	Intracerebral hemorrhage	38 – 39
2.3.4	Corpus Callosum	40
2.3.4.1	Neoplasms	40
2.3.4.2	Vascular Infarcts	41
2.3.4.3	Infections	41- 42
2.3.4.4	Demyelinated Lesions	42
2.4	Magnetic resonance imaging of the brain	42 – 44
2.5	2.5 Previous Studies	44 - 51
Chapter Three		
3.1	Material	52
3.1.1	Study sesign	52
3.1.2	Study population	52
3.1.2.1	Inclusion criteria	52

3.1.2.2	Exclusion criteria	52
3.1..3	Machine used	52
3.2	Methods	54
3.2.1	MRI brain protocol	54
3.2.1.1	Equipment	54
3.2.1.2	Patient positioning	54
3.3	Measurements	54
3.3.1	Linear measurements	54
3.3.1.1	Brainstem	54
3.3.1.2	Corpus callosum index	55
3.3.2	Area measurements	55
3.3.2.1	Brainstem	55
3.3.2.2	Cerebellum	55 - 56
3.3.2.3	Corpus Callosum	56
3.3.2.4	Cerebrum	56
3.4	Data analysis	56
3.5	Ethical Consideration	56
Chapter Four		
4.1	Distribution of study samples according to Participant's gender	57
4.2	Distribution of study samples according to Participant's age	58
4.3	Linear measurements of the brainstem results	59
4.4	Relation between linear measurements of brainstem and the gender	59
4.5	Relation between age groups and linear measurements of brainstem	60 - 62

4.6	Area analyses for the supra and infratentorium anatomical structures	62
4.7	Area analyses for the supra and infratentorium anatomical structure, classified according to gender	63
4.8	Area analyses for the supratentorium anatomical structure, classified according to age groups	64 - 66
4.9	Area analyses for the infratentorium anatomical structure, classified according to age groups	67 - 69
4.10	Correlation analyses between the supra and infratentorium brain anatomical structures	70
Chapter Five		
5.1	Discussion	71
5.1.1	Brainstem	71 - 73
5.1.2	Supra and infratentorial anatomy	73 - 77
5.2	Conclusions	77
5.3	Recommendations	78
	References	79 - 88
	Appendices	89 - 93