MANAGEMENT OF SELLAR REGION TUMORS

Thesis

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Radiation Oncology & Nuclear Medicine

By

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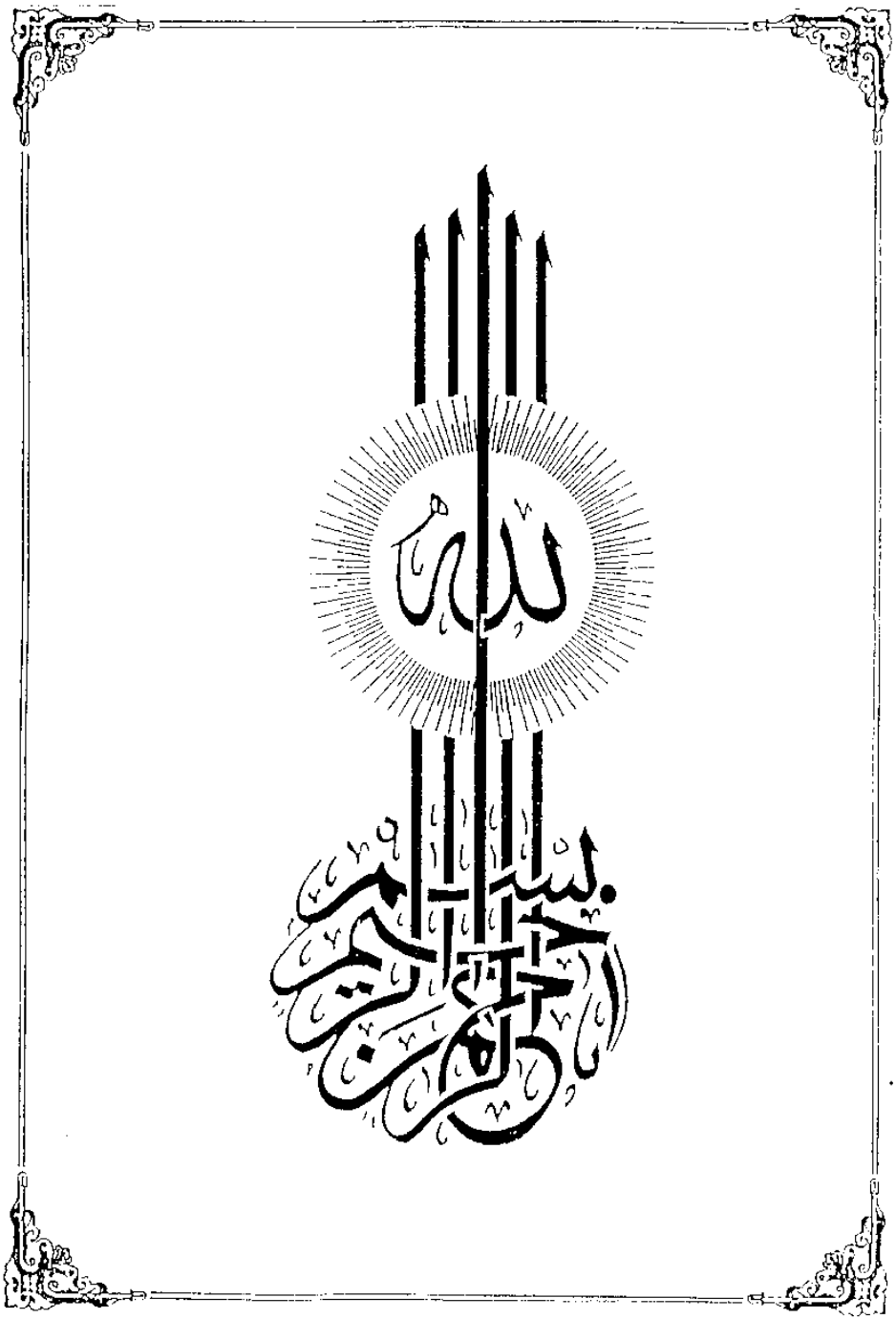

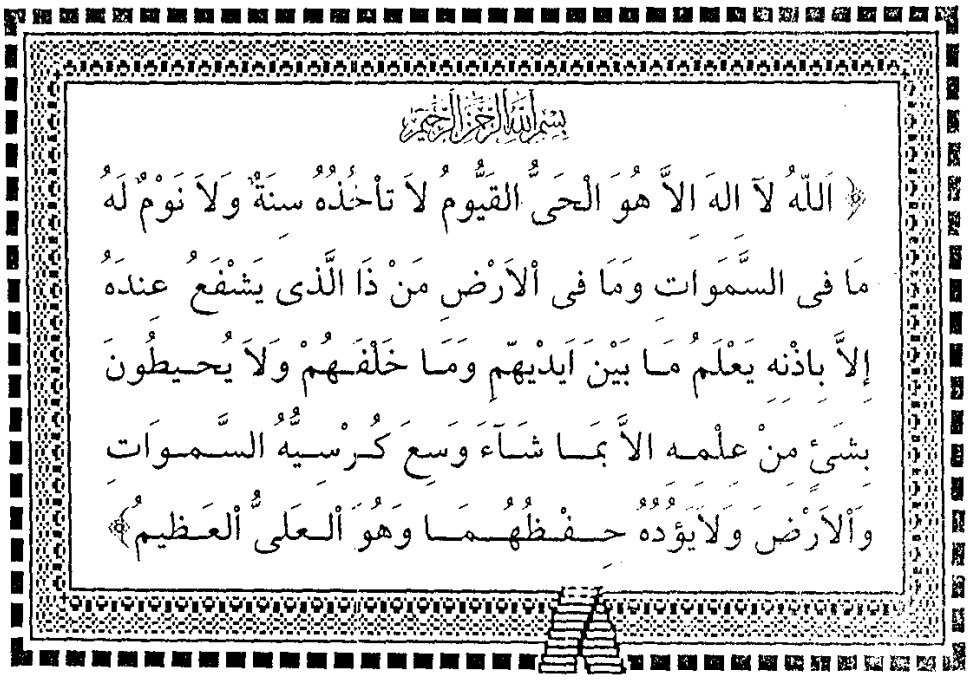

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I dedicate this thesis to

My parents for all they did for me.

To them I owe everything.

My husband and our children for making my life simply wonderful.

CONTENTS

LIST OF ABBREVIATIONS

[^{99m}Tc] (V) DMSA: Technetium-99m pentavalent dimercapto-succinic acid.

111In-DTPA : 111-Indium diethylene triamine penta acetic acid.

ABC : Avidin-Biotin peroxidase complex.

ACTH : Adrenocorticotropic hormone.

CRH : Corticotropin releasing hormone.

CSF : Cerebrospinal fluid.

CT : Computed tomography.

FDA : Food and drug administration.

FDG : ^{18}F-flurodeoxyglucose.

FSH : Follicle stimulating hormone.

GH : Growth hormone.

GHRH : Growth hormone releasing hormone.

GnRH : Gonadotropin releasing hormone.

IBZM : 123-iodine methoxybenzamide.

IGF-1 : Insuline growth factor-1.

ITT : Insulin tolerance test.

LH : Luteinizing hormone.

Linac : Linear accelerator.

MRI : Magnetic resonance imaging.

MSH : Melanocyte stimulating hormone.

PAS : Periodic acid-schiff.

PRL : Prolactin.

RTOG : Radiation therapy oncology group.

SBS : Somatostatin binding sites.

SOM	: Somatostatin.
SPECT	:Single photon emission computerized tomography
SR	: Somatostatin receptor.
SRS	: Somatostatin receptor scintigraphy.
T_3	: Triiodothyronine.
T_4	: Thyroxine.
Tc-99m HMPAO	: Technatium-99m hexamethyl propylene amineoxime.
TRH	: Thyrotropin-releasing hormone.
TSH	: Thyroid stimulating hormone.

INTRODUCTION AND AIM OF THE WORK

Introduction:

The region of pituitary gland and sella turcica include a variety of tissue types in close proximity. The intimate relationship of neural, endocrine, vascular, meningeal, and skeletal structures provides a myriad of pathologic possibilities in a small anatomic area. One of four of all intracranial tumors is said to arise in the region of the sella. Many lesions might be considered under this topic, but the three most common tumors are, pituitary adenomas, craniopharyngioma, and meningioma *(Tindall and Barrow, 1990).*

Sellar tumors produce two major types of clinical findings:

Mass effects, resulting from compression of neighborhood structures by gradual increase in the size of the adenoma, and endocrinopathy, resulting from excessive hormone secreation by the tumor. Specific diagnosis, however, especially with hyperfunctional tumors, depends on a complete endocrine evaluation *(Hunt and Miller, 1978).*

Radiography and imaging of the sellar region has progressed rapidly in recent years. High-resolution CT scanning and magnetic resonance have replaced invasive neuroradiological studies *(Tindall and Barrow, 1990).*

Treatment of sellar region tumors presents an interesting challenge to endocrinologists, radiation therapists, and neurosurgeons. The goal of therapy is to destroy or remove the tumor, to relieve the compression of the pituiary gland and extrapituitary structures, and to control excessive hormone production. Ideally, the therapy should have no associated mortality, nor should it cause hypopituitarism or result in injury to adjacent structures such as the optic chiasm *(Sheline and Wara, 1990)*.

Avariety of factors must be considered when formulating a treatment plan for the patient with a sellar or parasellar tumors.

Variables involved in determining the most appropriate technique include the characteristics of the tumor (e.g., size, configuration, extrasellar extensions, histological type) and those of the patient (e.g., age, state of health, extent of visual and endocrine impairment, and anatomy of the sella turcica and sphenoid sinus) *(Tindall and Barrow, 1990)*.

Although medical suppression is used, definitive therapy usually requires operative removal or radiation therapy, or both.

No single operation is ideal for all sellar region tumors. Many tumors can be operated effectively by either a trans-sphenoidal approach or a transcranial operation *(Honegger and fahlbusch, 1993)*.