SURGICAL MANAGEMENT OF PROLACTINOMAS

Thesis

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NEUROSURGERY

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ABSTRACT

Medical therapy is the treatment of choice for prolactinomas, with surgery reserved for certain patients. Current surgical indications for prolactinomas were studied. Indications of surgery, clinical outcome, biochemical cure, and extent of resection were assessed in 30 patients. Main indications included failed medical treatment and marked diminution of vision. Biochemical cure was obtained in half of patients particularly those with smaller tumors. Surgery in indicated patients achieves visual improvement and good remission rates particularly in patients with micro-adenomas or intrasellar macroadenomas, with low rate of complications.

KEYWORDS:

Surgical Management
Prolactinomas
Microadenomas
Macroadenomas

CONTENTS

LIST OF ABBREVIATIONS

µgm	Microgram per litre
µIu	Micro international unit.
ACTH	Adreno-corticotropic hormone.
ADC	Apparent diffusion coefficient
ADH	Antidiuretic hormone.
CCF	Carotid cavernous fistula
cm	Centimeter
CSF	Cerebrospinal fluid.
CT	Computerized tomography.
D1	Type 1 Dopamine receptors.
D2	Type 2 Dopamine receptors.
DA	Dopamine Agonist.
DI	Diabetes insipidus
DNA	Deoxy nucleic acid.
EM	Electron Microscope.
ER	Estrogen Receptor.
FSH	Follicle stimulating hormone.
GABA	Gamma amino butyric acid.
GAP	Gonadotrophin associated peptide
GH	Growth hormone.
GK	Gamma Knife.
GnRH	Gonadotropin releasing hormone.
GY	Gray(joule per kilogram)
ICA	Internal Carotid Artery
IGF-1	Insulin like growth factor number 1.
IgG	Immunologblin G
LH	Luteinizing hormone.
LINAC	Linear accelerator.
MEN-1	Multiple endocrinal neoplasia type 1.
mg	Milligram
mIU/ml	Milli international unit per millilitre.

ml	Millilitre
MRA	Magnetic resonance angiography.
MRI	Magnetic Resonance Imaging.
mRNA	Messenger Ribonucleic Acid
MV	Megavolt
ng/ml	Nanogram per millilitre.
No.	Number.
NSGs	Non secretory granules
PIF	Prolactin inhibitory factor.
Pit	pituitary-specific transcription factor.
PL	Perception of light
PRL	Prolactin.
Pt	Patient.
PTTG	Pituitary tumor transforming gene.
SIADH	Syndrome of Inappropriate Antidiuretic Hormone secretion
SRS	stereotactic radio surgery.
T1WI	Weighted images.
T2WI	Weighted images.
TRH	Thyrotropin releasing hormone.
TSH	Thyroid stimulating hormone.
VIP	Vasoactive intestinal peptide.

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INTRODUCTION

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Prolactinomas are the most common hormone-secreting pituitary adenomas, representing approximately 30% of all pituitary tumors, and 50-60% of functioning adenomas[(1)].

Prolactinomas usually present with clinical manifestations of hyperprolactinoma as menstrual disturbances and/or galactorrhea in females, and loss of libido or impotence in males. Symptoms due to mass effect arise from tumor compression on adjacent structures causing diminution of vision or visual field defect, panhypopituitarism, and cranial nerves palsy[(2)]. Pituitary apoplexy can cause rapid enlargement of the tumor mass, leading to hypopituitarism and acute compression of sellar and parasellar structures[(3)].

Diagnosis of prolactinoma requires, in addition to the clinical diagnosis, laboratory documentation of the presence of sustained hyperprolactinaemia and radiological evaluation by magnetic resonance imaging (MRI) or computed tomography (CT) showing the tumor and its relation to surrounding structures[(4)].

The aim of treatment is to decrease the high level of prolactin with its consequent clinical symptoms, reduce the size of tumor and its mass effect, and to preserve the residual pituitary function. Treatment options include medical treatment with dopamine agonists, surgical excision, and radiation treatment[(5)].

Medical treatment is considered the first line of therapy being effective in normalizing serum prolactin levels, shrinking the tumor mass, and restoring gonadal function[(6)]. Surgery is considered the second line of treatment being indicated in patients with failed medical treatment, patients not tolerating or refusing medical treatment by dopamine agonist, patients with marked diminution of vision, and some patients with apoplexy who need urgent decompression[(7,8)]. Radiation therapy including radiosurgery is

rarely required to treat prolactinomas, and is associated with a significant incidence of major side-effects, particularly hypopituitarism and damage to the optic apparatus[4].

AIM OF THE WORK