IMMUNOHISTOCHEMICAL EXPRESSION OF PROGESTERONE RECEPTORS (PR) AND MIB-1 IN MENINGIOMA

Thesis
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التعبير المناعي الهيستوكيميائى لمستقبلات البروجستيرون (**PR**) وميب -١ (**MIB-1**) في الأورام السحائية

رسالة

توطئة للحصول على درجة الماجستير

في الباثولوجي

مقدمة من

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SUMMARY

Meningiomas are among the most common tumors that affect the central nervous system, representing 13-25% of all primary intracranial tumors and 25-45% of intraspinal tumors. They arise from arachnoidal cap cells of the meninges. Although more than 90% are slowly growing and histologically benign (WHO grade I), the rest of meningiomas are approximately divided as 6% atypical (WHO grade II) and 2% malignant meningiomas (WHO grade III).

The most common locations for development of meningiomas are parasagittal-falcine followed by convexity and sphenoid wing. The clinical symptoms and signs are similar to other space occupying lesions in addition to other features of clinical presentation related specifically to tumor location.

Meningiomas have a female predominance, with a female to male ratio 2:1, this fact among others supported the role of sex steroid hormones, mainly progesterone, in development and growth of meningiomas.

Several factors are incriminated in recurrence of meningiomas, including aggressive histopathologic features, male gender, tumor location, completeness of surgical removal, brain-tumor interface and peritumoral

Finally, I wish to express my scincere gratitude for all my professors and colleagues for their endless support and advice.

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List of Abbreviations

AgNORs	*Argyrophilic nucleolar-organizer regions*
BBB	*Blood brain barrier*
BUdR	*Bromodeoxyuridine*
CEA	*Carcinoembryonic antigen*
Ck	*Cytokeratin*
CSF	*Cerebrospinal fluid*
CT	*Computerized Tomography*
CYP450	*Cytochrome P450*
EM	*Electron microscope*
EMA	*Epithelial membrane antigen*
ER	*Estrogen receptors*
FCR	*Finnish Cancer Registry*
F-FDG	*Flurodoxyglucose*
FISH	*Fluorescent in situ hybridization*
GFAP	*Glial fibrillary acid protein*
GST	*Glutathione S-transferase*
HRT	*Hormonal replacement therapy*
IRS	*Immunoreactive score*
LI	*Labeling index*
LOH	*Loss of heterozigosity*
MI	*Mitotic index*
MRI	*Magnetic resonance imaging*
NF	*Neurofibromatosis*
PCNA	*Proliferative cell nuclear antigen*

PET	*Positron Emission Tomography*
PR	*Progesterone receptors*
PTEN	*Phosphatase and tensin homolog*
VEGF	*Vascular endothelial growth factor*
WHO	*World Health Organization*

INTRODUCTION

Meningiomas are well-recognized tumors of the central nervous system that typically arise in proximity to the meninges. These neoplasms account for 24– 30 % of primary intracranial tumors ***(Louis et al., 2007).*** They arise mainly from the meninges of the brain in about 90 % of cases and the remainder are from the spinal cord ***(Berger and Prados, 2004).***

They are classified into three WHO grades according to histopathological criteria, approximately 90 % of these tumors are WHO grade I (benign), while the remaining are either WHO grade II (atypical) or grade III (anaplastic) tumors ***(Kleihues et al., 2002)***.

While benign meningiomas can often be cured by surgical resection, atypical and malignant meningiomas have worse clinical outcomes ***(Modha and Gutin, 2005).*** While local recurrence rates are 15% for benign meningiomas, they are about 40% for totally resected atypical meningiomas. Malignant meningiomas have high local recurrence rates with overall survival of less than 2 years ***(Perry et al., 1999).***

Clinical factors that have been found associated with tumour recurrence include: patient age less than 40 years, male gender, unfavorable tumor location (eg, skull base) and incomplete surgical resection ***(Perry et al., 1997).***