



Retrospective Analysis of Epidemiology and Clinical Outcome of Adult Glial Tumor Patients Treated in Clinical Oncology Department in Ain Shams University Hospitals in Egypt

Thesis

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بِسْمِ اللَّهِ الرَّحْمَنِ الرَّحِيمِ

قَالَ

لَسْبَدَانِكَ لَا عِلْمَ لَنَا
إِلَّا مَا عَلَّمْتَنَا إِنَّكَ أَنْتَ
الْعَلِيمُ الْعَظِيمُ

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List of Abbreviations

Abb.	Full term
3D.....	Three-Dimensional
3DRT.....	Three-Dimensional Radiation Therapy
AA	Anaplastic astrocytoma
AI	Apoptotic Index
BBB.....	Blood-Brain Barrier
BFGF	Basic Fibroblast Growth Factor
CAM.....	Cell adhesion molecule
CCDC26.....	Coiled coil domain containing 26
CDKN2B.....	Cyclin-dependent kinase inhibitor 2B
CNS.....	Central nervous system
CSF	Cerebrospinal fluid
CT	Computed Tomography
CTV.....	Clinical Target Volume
CTV.....	Clinical Tumor Volume
DFS.....	Disease-Free Survival
ECOG.....	Eastern Cooperative Oncology Group
EGFR	Epidermal Growth Factor Receptor
EGFRvIII.....	EGFR Deletion Mutant Variant III
EORTC	The European Organization for Research and Treatment of Cancer
ERBT	External Beam Radiation Therapy
FDA.....	Food and Drug Administration
FISH	Fluorescence in Situ Hybridization
FLAIR.....	Fluid-Attenuation Image Recovery
GB	Glioblastoma
GBM.....	Glioblastoma Multiforme
Gd.....	Gadolinium
GLUT.....	Distinct Facultative Glucose Transporter
H&E	Heamatoxylin and Eosin
HGG.....	High grade glioma

List of Abbreviations Cont...

Abb.	Full term
HIF.....	Hypoxia-Inducible Factor
ICP.....	Increased Intracranial Pressure
IDH.....	Isocitrate dehydrogenase
IGRT.....	Image Guided Radiation Therapy
IMRT.....	Intensity-Modulated Radiation Therapy
IR.....	Incidence rate
KPS.....	Karnofsky Performance Score
LGA.....	Low Grade Astrocytomas
LGG.....	Low grade glioma
LI.....	Labeling Index
LTSS.....	Long-Term Survivors
MET.....	Methionine
MLC.....	Multileaf Collimator
MMSE.....	Mini-mental state examination
MRI.....	Magnetic Resonance Imaging
MRS.....	Magnetic Resonant Spectroscopy
NCIC.....	National Cancer Institute of Canada
NCRPE.....	National Cancer Registry Program of Egypt
NOS.....	Not otherwise specified
OAR.....	Organs at Risk
OS.....	Overall Survival
PCNA.....	Proliferating Cell Nuclear Antigen
PDGF.....	Platelet-Derived Growth Factor
PET.....	Positron Emission Tomography
PFS.....	Progression-Free Survival
PHLDB1.....	Pleckstrin homology-like domain family B member 1
PS.....	Performance status
RT.....	Radiotherapy

List of Abbreviations Cont...

Abb.	Full term
RTEL1	Regulator of telomere elongation
RTPCR.....	Reverse Transcriptase Polymerase Chain Reaction
SEER.....	Surveillance, Epidemiology, and End Results Program
SRS	Stereotactic Radiosurgery
SSTR2.....	Somatostatin Receptor Subtype 2
SUV.....	Standard Uptake Values
TERT	Telomerase reverse transcriptase
TGF.....	Transforming Growth Factor
TMZ	Temozolamide
TP53.....	Tumor protein p53
VEGF	Vascular Endothelial Growth Factor
WHO	World Health Organization
WM	White Matter

INTRODUCTION

Glial cells are the supportive elements of the central nervous system (CNS). They include astrocytes, oligodendrocytes, and ependymal cells, and the corresponding tumors originating from these cells astrocytoma, oligodendroglioma, and ependymoma all of which are loosely called “glioma” (*Estlin and Lowis, 2005*).

The annual incidence of glioma in the United States is 5.4 cases per 100,000 population. Incidence differences are not significant between the United States and other countries. Astrocytomas, including glioblastoma (GBM), account for approximately 75% of all gliomas (*Ostrom et al., 2013*).

The therapeutic strategies and prognosis in patients with astrocytomas depend on the precise distinction between high-grade astrocytomas (HGAs; WHO grades III and IV) and low-grade astrocytomas (LGAs; WHO grades I and II). Low- and high-grade astrocytoma differs significantly in terms of their histological grading, site of origin, treatment, and prognosis (*Singh et al., 2004*).

Astrocytoma causes regional effects such as compression, invasion, and destruction of brain parenchyma. Secondary clinical sequelae may be caused by elevated intracranial pressure (ICP) attributable to direct mass effect, increased blood volume, or increased cerebrospinal fluid (CSF) volume.

According to the American Brain Tumor Association (ABTA), for low grade astrocytomas, removal of the tumor will generally allow functional survival for many years. Today, complete resection of high grade astrocytomas is impossible because of the diffuse infiltration of tumor cells into normal parenchyma, necessitating radio and chemotherapy (*American Brain Tumor Association, 2014*).

Survival -starting from the time of diagnosis- ranges from more than ten years for Pilocytic astrocytomas and down to approximately one year to Glioblastoma.

AIM OF THE WORK

To analyze retrospectively the clinico-pathological features and outcome of glial tumor patients treated in clinical oncology department in Ain Shams University Hospitals in Egypt.