International Journal of Psychosocial Rehabilitation, Vol. 26, Issue 01, 2022

ISSN: 1475-7192

CENTRAL NERVOUS SYSTEM NEOPLASMS IDENTIFICATION IN BASRAH

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Abstract

The brain, meninges, and spinal cord compose the central nervous system and are made up of specialized neuron cells. They are sites for the transmission and storage of information. When exposed to any lesions lead to a significant proportion of mortality and morbidity. Those lesions are anatomical lesions and severely affect the inner body systems and their function and most of the patients were unaware until the stages progress, and may become fatal. The present study aimed to determine the central nervous system neoplasms in Basrah. Retrospectively collected data of 92 cases proved to have brain tumors by histopathological examination from private, inpatients, and outpatients clinics during five years. Both sexes enrolled (56 males and 36 females), and their ages are ranging from (5-81 years). The data collected include sex, gender, chief complaint, surgery, histopathology, site of malignancy, and treatment protocols.The results showed that males (60.87%) were more prevalent than females (39.13%). Approximately, group 41-60 years was the common group affected (39, 42.4%). Always, most patients complained of headache in 86(93.48%). The majority of cases underwent incisional biopsies (51, 55.44%). About 13(14.13%) of patients operated on seemly with gross total resection, whereas 28(30.43%) have a subtotal resection. Low-grade gliomas were common pathology in 25%, while high-grade gliomas, i.e. GBM in 13% and anaplastic gliomas in 15.2%. We found meningioma in 15.2%. The parietal lobe was the common site occupied by gliomas in (38%). Surgery was the mainstay in this study, in addition to it, RT performed in 33.69%, CCRT in 26%, and CCRT plus maintenance MTZ in 24%. Otherwise, 15(16.31%) of cases were managed with radical RT. In conclusion, frequently male with middle age is more affected than female.Headache is a common alarm for CNS tumors in our country. High-grade and advanced gliomas are common in our nationality. Surgical resection followed by CCRT or RT is the better way to get a good outcome.

Keywords: Central nervous system, Neuroglial cells, Glial cells,Neurons, Gliomas

Introduction

The nervous system is classified into the central and peripheral nervous systems.The central nervous consists of the brain,spine, and meninges. Two types of specialized cells were working up namely, nervous and glial cells [1 - 3]. The brain tumor is one of the serious health problems and early diagnosis, awareness of clinical presentation, use proper investigation, many modalities available in treatment chose the proper one in proper time is very important to safe the patient and get survival and disease-free time [4, 5]. Central Brain Tumor Registry of the United States (CBTRUS) estimated its occurrence was 28 per 100,000 persons. The radiation, metal industries, and familial history play an important role in causing brain tumors [4, 6-8]. The diagnosis majorly depends on the imaging and is supported by the histological examination of the tissue biopsy [9, 10].CNS tumors constitute 2% of all cancersand are exhibit differentbehaviors according to age, histology, and location [4]. About 60% of brain tumors are glial tumors, and 2/3 of theseare high-grade tumors [5].

Methods

Retrospectively collected data about 92 casesproved to have brain tumors by histopathological examination from private, inpatients, and outpatients clinics during five years.Both sexes enrolled (56 males and 36 females), and their ages are ranging from (5-81 years). Everyone was examined thoroughly and the result was classifiedand interpreted according to clinical features and radiologicalparameters.These data include sex, gender, chief complaint, surgery, histopathology, site of malignancy, and treatment protocols.

Statistical analysis was done by using (IBM SPSS v.20) which is asoftware package used for statistical analysis in addition to the usageof (Microsoft excel 2010) for datasheet collection.

Results

The results showed that males (60.87%)were more prevalent than females (39.13%), (Table 1).

Approximately, group 41-60 years was the common group affected (39, 42.4%), followed by group 21-40 years (31, 33.7%). The mean age was 39.5±12.73 years, (Table 2).

Always, most patients complained of headache in 86(93.48%). Others, unconsciousness (24%), convulsion (17.4%), nausea and vomiting (28.26%), visual disorder (14.13%), tremor (11.95%), mode changes (16.3%), and paresis (40.22%), (Table 3).

The majority of cases underwent incisional biopsies (51, 55.44%). About 13(14.13%) of patients operated on seemly with gross total resection, whereas 28(30.43%) have a subtotal resection, (Table 4).

Low-grade gliomas were common pathology in 25%, while high-grade gliomas, i.e. GBM in 13% and anaplastic gliomas in 15.2%. We found meningioma in 15.2%. Ependymoma and medulloblastoma were reported in 9.8% and 8.7%, respectively, (Table 5).

The parietal lobe was the common site occupied by gliomas in (38%).Frontal and temporal lobes came in second places I 21.74% and 19.56%, respectively, (Table 6). Surgery was the mainstay in this study, in addition to it, RT performed in 33.69%, CCRT in 26%, and CCRT plus maintenance MTZ in 24%. Otherwise, 15(16.31%) of cases were managed with radical RT, (Table 7).

Table 1. Sex distribution.

Sex	No.	%
Male	56	60.87
Female	36	39.13
Total	92	

Table 2. Age distribution.

Age [years]	No.	%
5-20	18	19.57
21-40	31	33.7
41-60	39	42.4
≥61	4	4.33
Total	92	

Table 3. Patients distribution according to the chief complaint.

Chiefcomplaint	No.	%
Alter consciousness	22	24
Headache	86	93.48
Convulsion	16	17.4
Nausea and vomiting	26	28.26
Visual disorder	13	14.13
Tremor	11	11.95
Mode changes	15	16.3
Paresis	37	40.22
Total	92	

Table 4. Patients are distributed according to the types of surgery.

Surgery	No.	%
Gross total resection	13	14.13
Subtotal resection	28	30.43
Biopsy	51	55.44
Total	92	

Table 5. Patients distribution according to the histopathology.

Histopathology	No.	%
Meningioma	14	15.2
GBM	12	13

Astrocytoma I-II	23	25
Ependymoma	9	9.8
Medulloblastoma	8	8.7
Anaplastic tumor	14	15.2
Others	12	13
Total	92	

Table 6. Patients are distributed according to the types of site of malignancy.

Site	No.	%
Frontal	20	21.74
Parietal	35	38
Temporal	18	19.56
Occipital	8	8.7
Brain stem	4	4.4
Others	7	7.6
Total	92	

Table 7. Patients distribution according to treatment protocols.

Protocol	No.	%
Surgery →RT	31	33.69
Surgery →CCRT	24	26
Surgery →CCRT →TMZ	22	24
RT	15	16.31
Total	92	

Discussion

The current study revealed the males to females ratio is 1.5:1, and middle age group peoples are the most affected. These are agreed with a study of Saeed et al., [11] in Baghdad. They attributed that to several Wars that occurred in this country. The multiple wars in the last 35 years in Iraq, andthe exposure to toxic gases, radiations and different chemical materialsfrom bombs, blasts, and missiles starting from Iran's war, 2nd Gulf war,Saddam's fall war, and finally war against terrorist andISIS in 2016, are the reasons for these findings [11].We compare our data to another study like Aroraet al. [4], which reported that the 6th decade is the commonest age group, and males frequently more than females. This may attribute to genetic factors or more accurately in Iraqdue to environmental exposure. Disagreement with anotherstudy by Leeet al, [12], females were involved more thanmales with the female: male ratio 1.43:1.

The results of Saeed et al., shown that neurological deficit is thecommonest chief compliant in 12 (25.5%), followed by convulsions in11 (23.40%), then headache in 8 (17%), which dislike with our findings, in the current study, most of the patients complained of headache in 86(93.48%). Others, presented with different percentages. However, we agree with studies by Hreholz et al. [13]and Louis et al. [14], found that

headache was the most common chiefcomplaint and the explanation for this variation is the ignorance of ourpopulation to daily headache (tension headache) anddelay in seeking for medical advice until other symptoms like disturbconsciousness, convulsions or neurological deficit appears. The samethings for nausea and vomiting and others; there is a variation whichattributed to signs and symptoms of early increase ICP in the early stageof the CNS tumors development, expansion, and because of the delay in diagnosisin our country until late stages when there is a high increase in ICP [11].

This study showed that the parietal lobe is the common site occupied by gliomas in (38%). Frontal and temporal lobes came in second places I 21.74% and 19.56%, respectively.Dislike with a study by Saeed et al., in Baghdad, they found that the frontal lobe was the major site that affected 23.4%, followed by parietal21.3%, temporal 17%, occipital 6.4%, and then brain stem 4.3% [11]. Also, they found 27.65% of cases were shared between two lobes or more sites [11], which is not present in our study. In some publishing books about neuro-oncology, Ito et al., mentioned that frontal lobe consist of 17.2%, parietal 8.6%, temporal26.2%, occipital 3.4%, brain stem 0.8%, and multi-lobes 43.8% [15, 16].

Here, the majority of cases underwent incisional biopsies (51, 55.44%). About 13(14.13%) of patients operated on seemly with gross total resection, whereas 28(30.43%) have a subtotal resection. The reverse was observed in Saeed et al. study [11], the biopsy presented in 6.4%, the subtotal resection 44.7%, andthe total resection 48.9%. The gross total resection is the best way when it ispossible because of a good prognosis and longer survival rates. AmericanBrain Tumor Association stated that the most common surgical optionis biopsy followed by subtotal resection and then total resection whenavailable [17].

Histopathological speaking, low-grade gliomas including astrocytoma I and II were common pathology (25%) recorded, while high-grade gliomas, i.e. GBM in 13% and anaplastic gliomas in 15.2%. We found meningioma in 15.2%. Ependymoma and medulloblastoma were reported in 9.8% and 8.7%, respectively. In Saeed et al., study [11],

meningioma presented in 29.8%, GBM19.2%, astrocytoma 10.6%, nerve sheath tumor 8.5%,and pituitary tumor 6.4%, which supported by Alturki et al. data[18].

Surgery was the mainstay in this study, in addition to it, RT performed in 33.69%, CCRT in 26%, and CCRT plus maintenance MTZ in 24%. Otherwise, 15(16.31%) of cases were managed with radical RT. We followed the international guidelines to manage the CNS tumors like NCCN, ESMO, ASTRO, and ESTRO. The multidisciplinary team of neurosurgeons, oncologists, radiotherapists, radiologists, histopathologists, and anesthesiologists is mandatory for making the decision [19-22].

Conclusions

Frequently male with middle age is more affected than female. Headache is a common alarm for CNS tumors in our country. High-grade and advanced gliomas are common in our nationality. Surgical resection followed by CCRT or RT is the better way to get a good outcome.

Funding statement

None

Competing interest statement

The authors declare no conflict of interest.

Ethical Approval

The study was conducted following the protocol of the EthicalCommitteeand written informed consent was obtained from all the participants

Authors Contribution

All the authors participate in the design, collection, and analysis of the data of the research.

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