SURGICAL OUTCOME OF INTRA-CRANIAL MENINGIOMAs

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ABSTRACT

Background: Meningiomas are an extra-axial central nervous system tumors most often discovered in middle to late adult life, and are more often seen in women. Ninety percent of meningiomas are benign. Meningiomas usually grow slowly, with a long initial asymptomatic phase. Complete resection is often curative. For the majority of incompletely resected or recurrent tumors not previously irradiated, radiotherapy is administered.

Objective: To know the early post-operative complications of intracranial meningiomas.

Material and Methods: This cross sectional descriptive study was done in neurosurgery department of Hayatabad Medical Complex, Peshawar, from 1st January 2016 to 1st October 2017. After taken an informed consent a total of 57 patients with intracranial meningiomas, irrespective of gender discrimination and Glasgow coma scale score of 10 and above were included in this study. Meningioma was diagnosed on CT-scan brain and MRI Brain. All the patients were followed up till 72 hours post-operatively for the determination of any complications. All the above mentioned information including name, age, gender and address were recorded in a predesigned proforma. The data was analysed using SPSS-17. Frequency and percentage was calculated for categorical variables. Mean ± SD was calculated for age. Results were presented as tables and graphs.

Results: A total of 57 patients having meningioma were operated. Age ranged from 20 years to 70 years with mean age 41 ± 2.1 SD years. There were 35(63.41%) female and 22(36.58 %) male. Convexity meningioma was the commonest location in 26(45.6%) patients, parasagittal 16(28.07%), sphenoid wing meningioma 11(19.29%), olfactory groove meningioma 3(5.26%) and tuberculum sella meningioma in 1(1.75%) patient. The common clinical presentation was headach 54(94.73%) and seizures 47(82.45%). Post-operative complications were infection 9(15.78%), CSF leak 6(10.52%), brain edema 3(5.26%), neurological deficit 1(1.75%), hematoma 1(1.75%), and all these complications were treated conservatively. In this study 1(1.75%) patient had died.

Conclusion: Meningioma is a lovely tumor if it is totally removed, it will not only give completely cure to the patients but also give good satisfaction to the operative surgeon.

INTRODUCTION

Harvey Cushing first used the term "meningioma" in a 1922. Meningioma accounted for more than a third of all primary central nervous system tumors reported in the US between 2006 and 2010, where the highest incidence rate (7.44 per 100,000) of the disease has been recorded.[1,2] Meningiomas are extra-axial central nervous system tumors most often discovered in middle to late adult life, and are more often seen in women. Ninety percent of meningiomas are benign, 6% are atypical, and 2% are malignant.[2,3,4]

Meningiomas usually grow slowly, with a long initial asymptomatic phase, and may remain silent until the patient's sudden death. Only 3%-6% of clinically detected asymptomatic meningiomas later become symptomatic.[1,3,5] When symptomatic, intracranial meningiomas present a wide variety of symptoms arising from the compression of adjacent structures, direct invasion of or reactive changes in the adjacent brain tissue, and obstruction of cerebrospinal fluid pathways, cortical veins, or major venous sinuses.[4,6] Symptoms and signs may include seizure disorders, raised intracranial pressure sign, classic early morning headaches, focal neurological deficits, such as motor and sensory disorders, ataxia, language dysfunction, cranial neuropathies, psychomotor symptoms, and behavioral disturbances.[5,7]

Most patients in whom a meningioma is diagnosed undergo resection to relieve neurological symptoms. Complete resection is often curative. For the majority of incompletely resected or recurrent tumors not previously irradiated, radiotherapy is administered. Radiotherapy may be administered as either conventional external-beam radiation therapy or stereotactically by linear accelerator, Leksell Gamma Knife or Cyberknife radiosurgery.[2,4,7] Advocates of stereo-tactic radiotherapy have suggested this therapy in lieu of surgery particularly in high-risk patients, those with meningiomas in eloquent or surgically inaccessible locations, and elderly patients. When the meningioma is unresectable or all other treatments have failed, hormonal therapy or chemotherapy may be considered.[3,5,6,8] The aim of our study to know the early complications of craniotomy for intra-cranial meningioma.

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MATERIAL AND METHODS

This cross sectional descriptive study was done in Neurosurgery Department of Hayatabad Medical Complex, Peshawar, from 1st January 2016 to 1st October 2017. A total of 57 patients with intracranial supra-tentorial meningioma, irrespective of age and gender discrimination were included in this study. We have excluded those patients having GCS <13/15.

The preoperative diagnosis of the meningioma was done on history, examination, and contrast-enhancement magnetic resonance imaging (MRI) of the brain. After taking an informed consent all patients having intra-cranial meningioma were admitted through our out-patient department. They were prepared for general anesthesia and surgery, and were put on operation list. All these patients were loaded with antiepiletics (Inj Epival 1 gm) at the night of operation and at induction of general anesthesia and continue it postoperative to fits free.

A standard protocols of craniotomy were followed for different sites of intracranial meningioma. All specimens were sanded for histopathological diagnosis and grading. Postoperatively patients were shifted to intensive care unit for better care and after 24 hours these patients were shifted to our unit ward and then were discharged to home.

Clinical Outcome of craniotomy for these patients were evaluated by the time of discharge and on subsequent follow up visits. The information regarding patient demographical details, clinical features, complications of procedure and histopathological findings of the sanded specimens were documented in patient's Performa. The data was analyzed by SPSS version 17. Frequency and percentage was calculated for categorical variables. Mean ± SD was calculated for age. Results were presented as tables and graphs.

RESULTS

A total of 57 patients having meningioma were operated. Age ranged from 20 years to 70 years with mean age 41 years. There were 35(63.41%) female and 22(36.58 %) male. Convexity meningioma was the commonest location. The other meningiomas location discussed in Table1. The most common clinical presentation was headach and seizures. The details are given in Table 2. In Postoperative complications, CSF leak was the common complication and one patient was expired, details are given in Table 3. According to the WHO histological grading system, grade I was the common presentation in our study, the details is given in Table 4.

Table1: Location of intra-cranial meningiomas

Meningioma location	No. of patients	Percentages
Convexity meningioma	26	45.61%
Parasagittal meningioma	16	28.06%
Sphenoid ridge meningioma	11	19.29%
Olfactory groove meningioma	3	5.26%
Tuberculum sella meningioma	1	1.75%

Table 2: Clinical features of intra-cranial meningiomas

Clinical feature	No. of patients	Percentages
Headach	54	94.73%
Seizures	47	82.45%
Personality changes	18	31.57%
Paresis	7	12.28%
Smell changes	3	5.26%
Visual impairement	2	3.5%
Decreased level of conciousness	2	3.5%

Table 3: Post-operative complications

Complications	No. of patients	Percentages
Wound Infection	9	15.78%
CSF leak	6	10.52%
Brain swelling	3	5.26%
Neurological deficit	1	1.75%
Hematoma	1	1.75%
Death	1	1.75%
Decreased level of conciousness	2	3.5%

Table 4: Histopathological pattern of intra-cranial meningiomas

WHO Grade	No. of patients	Percentages
I	43	75.43%
II	12	21.05%
III	2	3.50%

DISCUSSION

Hospital-based brain tumor series indicate that the incidence of meningiomas is approximately 20% of all intracranial tumors (the most common nonglial primary intracranial tumor), whereas autopsy-based studies indicate an overall incidence of 30%. Furthermore, 2% of autopsies reveal incidental meningiomas. Ninety percent of all meningiomas occur in the supra-tentorial compartment.[5,6,7,9]

Meningiomas are more common in African-Americans and in females. There is a 2:1 female to male ratio in intracranial meningiomas.[7,8] In our study 35(63.41%) female and 22(36.58%) male. The same findings was observed by Han MS[10] and Guduk M[11]. A female preponderance for meningioma correlates with an endogenous hormone level. Increased growth of meningiomas during pregnancy as well as post-partum

clinical regression has been reported but remains poorly understood.[3,5,8]

Intra-cranial meningiomas are most common in adults in their fourth through sixth decades of life and are rare in children. In our study most of the patients were in the age group of 40 to 60 years. Sajjad JI has reported common age group was 50 decade.[12] Han MS reported the common age group was 50 to 60 years.[10]

The clinical presentation of meningiomas is dependent on tumor location. Meningiomas are most often slow growing tumors, and symptoms at presentation are rarely precipitous, but more often insidious in nature. New-onset and slowly evolving headache is common and usually unassociated with other symptoms suggestive of raised intracranial pressure, reflecting the slow growth of these tumors.[1,3,6,7] In our study the headach and seizures were the common clinical presentation, followed by personality changes, paresis, and vision deterioration. Guduk M reported the same sequence of clinical presentation as observed in our study.[11] Han MS documented paresis, seizures and decrease conscious level were the common clinical presentation in his study.[10]

In our study the convexity and parasagittal were the common location of intracranial meningioma. Han MS documented parasagittal meningioma was the common location in his study.[10] Barzaghi LR also reported the same sequences of meningioma location in his study.[13]

Surgery is the preferred treatment for meningiomas, especially for tumors that are large, growing quickly, or causing symptoms. The goal of surgery is to remove as much of the tumor as possible. After surgery, it is possible that the tumor will come back. This risk depends upon how much tumor was removed and whether it was benign, atypical, or malignant.[14] Possible complications of surgery include damage to nearby normal brain tissue, bleeding, infection, CSF leak, cerebral edema and sagittal sinus thrombosis.[3,5,9,14] In our study most common postoperative complication was wound infection 9(15.78%), followed by CSF leak 6(10.52), brain edema 3(5.26%), hematoma (1.75%), neurological deficit (1.75%) and one patient (1.75%) had died. Han MS reported brain edema 10%, seizure 3.7%, hematoma 1.9% and infarction in 0.9% of patients.[10] Sajjad JI showed postoperative complication in his study as follows 8 (6.6%) infection, 1 (0.83%) hematoma and 7 (5.8%) had neurologic deterioration.[12] Kim JH documented cranial nerve injury 6 (10.2%), followed by postoperative hemorrhage/infarction, hydrocephalus and infection.[15] Barzaghi LR reported CSF leak is the most common postoperative complication.[13]

CONCLUSION

Meningioma is a lovely tumor if it is totally removed, it will not only give completely cure to the patients but also give good satisfaction to the operative surgeon.

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