Brain and Spinal Tumors Incidence Annual Audit 2017 of Dept of Neurosurgery Khoula Hospital Muscat Oman: A Review

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Abstract

Brain and spinal tumors contribute to the main bulk of neurosurgery work in any Neurosurgical center. Effective audit of the work of a neurosurgical center amounts to earmarking the areas needing improvement and hence an enhanced patient care. Our department also performed an annual audit of the cranial and spinal tumors dealt in one year and analyzed the results. Benign to malignant all varieties of cranial tumors were seen in a small population of a country like Oman, however state of art diagnostic facilities were used to diagnose, treat and follow up the patients. Careful eye was kept on the pseudoprogression of the tumours as reported in the radiological reports. Results revealed a standard distribution of the tumours seen in other centers reported in the literature. Extent of tumour excision was done in standard guidelines keeping patient useful outcome in mind. Resurgery in malignant tumours were offered in young patients if comes back with recurrence.

Keywords: Brain and spinal tumors, incidence, pseudoprogession of tumours


1. Introduction

Neurosurgery work in any center revolves mainly around the neoplasms benign or malignant excised with type of outcome seen. A scientific analysis of the same over a period gives the ways to improve upon the shortcomings encountered. An analysis of a period of 1 yr was done in Dept. of Neurosurgery Khoula Hospital Muscat Oman. Tumours ranged from astrocytomas to medulloblastomas and from pituitary adenomas to schwannomas. Outcome was carefully studied and rectification measures taken to improve upon the service.

2. Materials and Methods

All patient who were admitted in our department were carefully questioned for a detailed history, examined minutely, substantiated by the imaging and other studies to diagnose and then carefully after a detailed discussions with family regarding all possible risks and benefits surgical excision was planned and accomplished. Initial ICU care for 1 day post operatively, patients were transferred to the ward for continuation of nursing care and physiotherapy and 3 rd day discharged home if no unforeseen event occurred.

Careful follow up was done. Special emphasis was laid upon pseudoprogession identification by combining special arterial spin labeling to dynamic susceptibility contrast perfusion MR imaging.

3. Results

A total number of 1419 patients were admitted to the department in 2017. Out of that 136 patients were of cranial and spinal tumors. Out of that Omani patients were 127. Non-Omani patients were 9, Yemeni 3, Bangladeshi 2, Indian 2, Filipino 1, Tanzanian 1. Brain cases were 125. Spinal cases were 6. Scalp lesions were 5. Sex differentiation wise males were 67 (53.6%) and female were 58 (46.4%). New cases were 104. Recurrent or old cases were 21. Out of brain cases operated cases were 88. Non-operated cases were 37.

Meningioma formed the main bulk making 21 cases of total. 11 cases of pituitary adenomas were seen. Metastasis were seen in 11 patients. 6 cases of schwannoma were seen. 6 cases of ependymomas were seen. Glioblastoma multiforme was seen in another 5 patients. 5 cases were astrocytomas were seen. Medulloblastomas cases were 4. Oligoastrocytomas made 3 of the bulk. Oligodendroglia cases were 2. 2 cases of lymphoma were seen. 2 cases of ganglioglioma were seen. Craniopharyngioma cases also were 2. Chordoma also were 2. 1 case of oligoglioma, 1 case of neurofibroma, 1 case of atypical glioma, 1 case of epidermoidtumour, 1 case of gangliocyntoma and one of other group territory were seen.
Figure 1. Overview of tumors seen.

Figure 2. The monthly tumor pattern.

Figure 3. The non-operated category.
Figure 4. Master chart of the study

In non operated category 13 patients refused surgery here and travelled to other centers abroad. 11 cases were sent for radio/chemo without surgical intervention. 5 cases were not operated in view of poor general condition. 1 case was referred abroad in view of lack of technical expertise here. 5 cases went out on pass for social reasons but did not return back. 2 cases were in miscellaneous category.

We had 6 mortalities in the group. 2 patients were of HIV and they finally succumbed. 1 patient of anaplastic ependymoma expired in postoperative period. 1 case of craniopharyngioma was lost due to uncontrolled metabolic anomalies. One case expired which was not operated in view of poor general condition.
Pseudoprogression of tumours in follow up studies is an important factor to be kept in mind and studies like arterial spin labeling to dynamic susceptibility contrast perfusion MR imaging to be made use of.

Patients were subjected to standard management by investigating modalities of CT and MRI and followed by craniotomies or laminectomies with excision or decompression of the tumour wherever needed. Outcome is of international standard. As per histopathology radiation or chemotherapy was given as per the case.

4. Discussion

In review of literature as per Chang-Hyun Lee in 2010 in Korea the incidence of meningioma amounted to 31.2% of all brain tumors. Glioblastoma amounted to be 30.7% of all gliomas. In children under 19 years germ cell tumors and medulloblastomas were the common tumor seen. [1]

Vastrad B in 2017 studied the underlying genetic mechanism of the pathogenesis of gliomas and glioblastomas and found the DEGs, such as MYC, FGFR1, CDKN2A, HOXA10 and MET, may be used for targeted diagnosis and treatment of gliomas and glioblastoma. [2]

Lijuan Bo in 2017 further studied the genetic mechanism of glioblastoma. [3]

Sandberg CJ in 2013 studied comparison of glioma stem cells to neural stem cells from the adult human brain identifies dysregulated Wnt- signaling and a fingerprint associated with clinical outcome. [4]

Aghayanglkashani in 2015 studied tumors of the central nervous system over a 18-year retrospective review in a Tertiary Pediatric Referral Center in Iran and concluded 53 % of brain tumours to be supratentorial. [5]

Chu TPC in 2018 studied how Do Biological Characteristics of Primary Intracranial Tumors Affect Their Clinical Presentation in Children and Young Adults. [6]

Chu TP in 2016 also studies where are the opportunities for an earlier diagnosis of primary intracranial tumours in children and young adults? [7]

ThustSc in 2018 studied the pseudoprogression of brain tumors, as shown in radiological investigations. [8]

Liu ZC in 2017 further studied combination of IVIM-DWI and 3D-ASL for differentiating true progression from pseudoprogression of Glioblastomamultiforme after concurrent chemoradiotherapy: study protocol of a prospective diagnostic trial. [9]

Choi YJ in 2013 further emphasized on pseudoprogression in patients with glioblastoma: added value of arterial spin labeling to dynamic susceptibility contrast perfusion MR imaging [10]

5. Conclusion

Our study further emphasises the incidence of brain tumours in a sector of population comparable to the data revealed by the other studies. Meningiomas making the bulk of it and medulloblastomas remaining the common paediatric tumour. Pseudoprogression of tumours also an important factor to be considered and to be avoided by making use of studies like arterial spin labeling to dynamic susceptibility contrast perfusion MR imaging [10].

References


