



Review Article

Volume 7 Issue 2 - January 2024
DOI: 10.19080/APBJ.2024.07.555708

Anatomy Physiol Biochem Int J

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Brainstem Gliomas: A Review on Surgical Approaches and some Relevant Treatment Notes based on a Surgical Anatomy Perspective



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Submission: November 12, 2023; **Published:** January 25, 2024

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Abstract

Brainstem gliomas are cancerous glioma tumors which are in the brainstem. This is a review on the surgical approaches and relevant treatment notes which may be employed in the treatment of such glioma tumors specifically from a surgical anatomy perspective. Paying enough attention to details is of importance to get the best surgical results with the lowest possible complications [1].

Keywords: Gliomas; Brainstem; Surgical Approaches; Relevant Treatment Notes; Anatomical

Body

Brainstem gliomas are cancerous glioma tumors which are in the brainstem. Treatable lesions with performing surgery and growth patterns of the tumors can be predicted and identified by classifying the tumors. Such glioma tumors can be classified into focal intrinsic, dorsal exophytic and cervicomedullary junction ones. Computed tomography and magnetic resonance imaging should be done to identify the lesions characteristics, based on imaging findings. Based on such imaging studies, the tumors may be focal or diffuse and with exophytic or cystic components. The position of the tumor, the presence of hemorrhage or calcium in the tumor, the pattern of enhancement and the amounts of edema should be identified. Alternative diagnostic modalities like perfusion magnetic resonance imaging, magnetic resonance spectroscopy and positron emission tomography should be considered for certain tumors. Brainstem auditory evoked response or BAER, somatosensory evoked potential or SSEP and neurophysiologic testing of the cranial nerves equipments, should be prepared for performing the surgery. Tectal plate tumors with pineal region extension may be reached by using the supracerebellar infratentorial approach. Another approach to reach such tumors may be the occipital transtentorial approach with lateral and along the straight sinus tentorial division. Tumors located in the lateral pontine peduncle may be reached by using the retrosigmoid or far lateral approach. Also, the medulla oblongata and focal midline pontine tumors may be reached by using the far lateral approach. Ventral midbrain tumors may be

reached by using the pterional approach. Focal ventrolateral pons tumors may also be reached by using the subtemporal transtentorial approach [2].

Intraoperative tumors frozen section studying confirms the diagnosis. Resection of the tumors with exophytic components should be started with this part. Bipolar cauterization, avitene, gelfoam or surgical would be used for resection cavity hemostasis. After the surgery, for the period of forty-eight hours, a magnetic resonance imaging should be done. Tumor resection confirmation and future adjuvant therapy response evaluation can be done by performing a postoperative magnetic resonance imaging. Such imaging should be done with and without contrast enhancement. Administration of the antibiotics should be continued for twenty-four hours after surgery. Tapering off the steroids should be done at a slower rate in recurrent and high-grade tumors in comparison with the low-grade ones. Patients should be closely observed after surgery for developing any hydrocephalus. Also, the patients' abilities for swallowing and speech should be evaluated before starting the oral feeding. The patients may also develop hemiparesis, dysfunction in the cranial nerves, gaze palsies, infection and respiratory drive loss after surgery. Considering these, close monitoring of the patients is of great importance after surgery. Paying enough attention to details and important notes is necessary to better management of patients with brainstem gliomas [3-5].

Conclusion

It is important for the surgeons to have enough knowledge about the surgery and management of patients with brainstem gliomas. Paying enough attention to details including surgical anatomy notes and relevant ones in the management of the affected patients, is of great importance to get the best surgical results with lowest possible complications. The author recommends studying more in depth about the surgical and relevant treatment of patients with brainstem gliomas, so that the surgeons can gain the ability to manage the affected patients with more precision.

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DOI: [10.19080/APBIJ.2024.07.555708](https://doi.org/10.19080/APBIJ.2024.07.555708)

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