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Case Study

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RECCURENT ANAPLASTIC ASTROCYTOMA IN A PAEDIATRIC PATIENT: A CASE REPORT

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ABSTRACT

Anaplastic Astrocytoma is an uncommon form of malignant brain tumour of star shaped astrocytes.[1] Astrocytes comes in 4 stages out of which Anaplastic Astrocytoma is 3rd grade. The actual cause of AA is not known. Males are more vulnerable to the disease than females. AA are estimated to affect 5 – 8 out of 100,000 in general population. Surgery, radiation, and chemotherapy which are used alone or in combination with others are the treatment options for the disease. We herein report a rare presentation of anaplastic astrocytoma in a 14-year-old male paediatric patient.

KEYWORDS: Anaplastic Astrocytoma, Temozolomide, Resistance.

INTRODUCTION

As per WHO standards, AA are grade III lesions characterised by headache, drowsiness, vomiting, lethargy and changes in personality or mental status. Anaplastic astrocytoma is common in adults (30 – 50 years of age) than in children.[1] The histopathological key features present in AA include increased cellularity, nuclear atypia and increased mitosis activity. However, they may not demonstrate either necrosis or vascular proliferation.[2] The risk causing elements are exposure to ionizing radiation, tuberous sclerosis, rare genetic syndromes like neurofibromatosis type 1 and 2 and Li-Fraumeni syndrome.[2] A thorough medical evaluation, an in-depth patient history, CT scanning and MRI scanning can diagnose the condition and tissue biopsy from a tumour can confirm the diagnosis.

CASE REPORT

A 14-year-old paediatric male patient came with the complaint of easy fatigability and photopsia since 2 days. The child presented decreased activity compared to earlier, and also complains of seeing blackish dots followed by blurring of vision for 30 – 80 seconds which subsides on its own. No history of fever, vomiting, altered sensorium or convulsions were seen. The child was diagnosed based on the past medical history which included difficulty in coordination, vision problem and drowsiness. The disease conformation was done with the help of biopsy. Presenting symptoms like easy fatigability with decreased activity compared to earlier and vision problem like seeing blackish dots while seeing objects for a long time, followed by blurring of vision were also considered for the current diagnosis. The patient presented the following signs as well - Uvula deviates to right, gag reflex impaired on left, SCM and trapezius weakness (+) and tongue deviated to Right with atrophy. Since the patient was a child and the tumour was mild, he was treated with chemotherapeutic agent, Temozolomide once daily for 5 days at the hospital, following which the symptom of photopsia improved. 1 pint of Sodium chloride infusion was administered for the initial 3 days of his hospital stay, as a supportive therapy to deal with fatigability.

DISCUSSION

The initial treatment option includes the tumour removal surgery, simultaneously protecting the critical brain function, also called as 'maximal safe resection'. Radiation therapy like Gamma Knife and IMRT will destroy the residual tumorous cells. Chemotherapy is continued after the surgery, which may help in prolongation of life and reduction in recurrence of disease.[3] Temozolomide has proved to treat malignant gliomas and other tough tumours.[4] This drug is a second-generation alkylating agent that do not require hepatic metabolism for activation and can enter the cerebrospinal fluid. [4] But inherent and acquired resistance to TMZ may produce an unsuccessful treatment.[5]

Anaplastic astrocytoma usually progresses slowly, but chances of rapid progression cannot be avoided. This condition can be misinterpreted with brain tumours like metastatic tumours, lymphomas, craniopharyngiomas,

teratomas, ependymomas and medulloblastomas, which may lead to wrong diagnosis. Hence comparisons should be used for differential diagnosis. A variety of new treatment methods are under investigation as potential therapy for anaplastic astrocytoma, which include several classes of drugs including protein kinase inhibitors, biological response modifiers, and angiogenesis inhibitors. High dose chemotherapy with auto-bone marrow transplantation is also being investigated for anaplastic astrocytoma.

CONCLUSION

AA is a relatively rare condition, but is more prevalent in adults aged between 30-50 years of age and in men with symptoms of headache, drowsiness, vomiting, lethargy and changes in personality or mental status. Inherited or acquired resistance to chemotherapeutic agents used in the treatment of Anaplastic Astrocytoma can lead to an unsuccessful treatment and undesired results which makes physicians choose surgery as a preferred and primary method for tumour removal to control the disease rather than the chemotherapy.

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ABBREVIATIONS USED

AA: Anaplastic Astrocytoma; **SCM:** sternocleidomastoid **CT:** Computed Tomography **MRI:** Magnetic Resonance Imaging.

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