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Palliative Care in Anaplastic Oligodendroglioma-A Case Report and Review of Literature

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ABSTRACT

Anaplastic Oligodendroglioma (AOD) is a rare type of Oligodendroglioma, which presents most commonly with the symptom of headache. Radiological investigations such as MRI (Magnetic Resonance Imaging), Histological and Genetic analysis are necessary to diagnose this condition. As per the WHO 2016 guidelines, 1q19p co-deletion on genetic analysis is required for a diagnosis of anaplastic Oligodendroglioma (Grade III Oligodendroglioma). A multidisciplinary team is necessary to manage patients with this condition, with special emphasis on palliative care (end of life care) as they usually have a poor prognosis. Here we report a case of a 30-year-old male patient who presented with an episode of seizure and on further investigating was diagnosed with this rare condition. Anaplastic Oligodendroglioma is managed with surgical resection, chemotherapy, radiation therapy and palliative care.

Keywords: Anaplastic Oligodendroglioma, Grade III Oligodendroglioma, Palliative care, Seizure

INTRODUCTION

Anaplastic Oligodendroglioma is a rare malignant tumour of the brain (only 3%-5% of brain tumours) belonging to the grade III (high grade) group of brain tumours (gliomas) developing from oligodendrocytes which are fast-growing and malignant types occurring mostly in the frontal brain lobe in adults. The patients present with non-specific symptoms, the most common one being a headache. Other symptoms include seizures, visual loss, altered sensations, muscular weakness and loss of control over body movements.

CASE REPORT

A 30 years old male patient presented to the hospital ER with an episode of seizure. The seizure was of a generalised type, lasting for 2 minutes. He had a history of weakness of the left upper and lower limbs, associated with a mild headache for 9 months following which the patient was diagnosed to have a rare type of cancer called Anaplastic Oligodendroglioma at NIMHANS. He was operated on for the same and a right frontotemporal decompressive craniotomy was conducted 8.5 months back. He is a known case of seizure disorder, on treatment for 8 years. The patient also has a history of bilateral lower limb fracture sustained due to an RTA 8 years back.

Investigations

The patient was subjected to an MRI scan which showed a single tumour with well-defined borders. Histologically, the tumour showed a fried egg appearance of neoplastic cells with clear cytoplasm and round nuclei. Genetic analysis using FISH (Fluorescence *In Situ* Hybridization) revealed a 1p/19q co-deletion which is a valuable diagnostic, prognostic and biomarker for anaplastic Oligodendroglioma.

Diagnosis

This patient with a history of prior seizure disorder and left-sided hemiplegia after being subjected to clinical examination and radiological investigations was newly diagnosed to have anaplastic Oligodendroglioma 8.5 months back.

Treatment and Outcome

The patient underwent a right frontotemporal decompressive craniotomy 8.5 months back. Anti-convulsants such as Clobazam 10 mg BD, Levetiracetam 500 mg BD and Phenobarbitone 60 mg OD were given to treat the seizures. Anticoagulants such as Acenocoumarol 4 mg OD was given for the left-sided hemiplegia. Other medications like Naproxen 500 mg, Baclofen 10 mg and vitamin supplements were prescribed. Along with 3 cycles of radiotherapy, chest and limb physiotherapy was done for the patient.

On current presentation, the patient was admitted and was managed medically with anti-epileptic drugs. After 3 weeks in the hospital, the patient did not show much improvement and owing to the symptom recurrence and bad prognosis of this grade III tumour, the family was referred to a community-based nursing centre for receiving palliative care.

Differential Diagnosis and Complications

The differential diagnoses for this condition include Astrocytomas, Glioblastomas and Dysembryoplastic Neuroepithelial Tumours (DNET). This condition can cause complications such as seizures, Postoperative complications such as thromboembolic, myelosuppression due to chemotherapy and residual gait abnormalities.

DISCUSSION

Anaplastic Oligodendroglioma (AOD) is a Grade III Oligodendroglioma that is malignant, diffusely infiltrating, fast-growing tumours [1]. The tumours arise from neuro-progenitor cells with glial precursor cells [2,3]. The most common presenting symptom is headache, but over 90% of cases can present with seizures [4]. Radiological evaluation of the condition can be done using NECT (Non-Enhanced Computed Tomography), MRI, and Spectroscopy [1]. The diagnosis is confirmed by molecular marker presence in tumours. The tumours should possess both IDH1 and IDH2 mutation and 1p/19q codeletion on genetic analysis to confirm the diagnosis of Oligodendroglioma. High-grade gliomas tend to microvascular proliferation and increase the density of vessels due to increased cell proliferation [1]. This condition has multimodal management strategies consisting of surgical, radiation and chemotherapy treatment methods [1]. Complete surgical resection or debulking of the tumour if complete resection is not possible is considered the first step to managing a patient with this condition. Although managed multimodally, patients with this condition can suffer from postoperative seizures in 15%-40% cases. Radiotherapy of 60Gy over 30 fractions is recommended, but the efficacy for different grades of the tumour remains to be explored. Chemotherapy with drugs such as Vincristine and Temozolomide has shown promise when used concurrently with radiotherapy [5]. The Prognosis of Grade III Oligodendroglioma is very poor compared to Grade II tumours (Table 1).

Table 1 WHO (2016) grading of gliomas [6]

Type	Who grade I	Who grade II (low-grade)	Who grade III (high grade)	Who grade IV (high grade)
Astrocytoma	Pilocytic astrocytoma	Low-grade astrocytoma	Anaplastic astrocytoma	Glioblastoma
	Subependymal giant cells astrocytoma			
Oligodendroglioma		Low grade oligodendro-glioma	Anaplastic oligodendro-glioma	

Palliative care is considered in patients with high-grade gliomas. When the patient's condition starts deteriorating/ symptom recurrence after following multimodal treatment strategies, physicians consider palliative care to improve the quality of life of the patient.

Palliative care can be divided into Primary Palliative care and High-Grade Palliative care. Primary palliative care

can be provided by any healthcare worker and deals with the management of a patient's physical symptoms and discussion about treatment timelines and prognosis. Speciality palliative care is provided by a team of Doctors, nurses, physiotherapists, social workers and many more and its focus is on the management of refractory physical symptoms and transition to the end of life care. Hospice focuses on improving the quality of life of the patient and relieves them of suffering, but is reserved for patients with ≤ 6 months of life expectancy (Table 2) [7].

Table 2 Differences between primary palliative care, specialty palliative care and hospice

Type	Primary Palliative Care	Specialty Palliative care	Hospice
Key domains	Assessment and management of physical symptoms, Depression and Anxiety Discussion on preliminary goals of care like expectations of treatment and prognosis Recognising indications for Specialty palliative care	Interdisciplinary care coordination Management of refractory physical symptoms Spiritual, Religious and existential assessment and support End of life Ethical and legal aspects like conflicts between family members/Healthcare professionals care	Palliative care targeted at final 6 months of life for a patient who refrains from taking decisions aimed at prolonging life
Who can provide it?	Any healthcare provider	Interdisciplinary teams with advanced training	Interdisciplinary teams with an accredited hospice organization
Timing	Any time during course of disease	Any time during course of disease	≤ 6 months of life expectancy
Where can it be provided?	Inpatient, Outpatient	Inpatient, Outpatient, Nursing homes	Inpatient, Nursing homes, Hospice facilities

Disease-specific symptoms need to be managed individually at the end of life care for patients with Gliomas. The main symptoms which need management in this condition can be classified into the following:

Increased Intracranial Pressure

Headache, nausea, vomiting, drowsiness, reduced consciousness and visual deficits are noted due to the increase in intracranial pressure [8-10]. Patients have generally been prescribed steroids such as Dexamethasone to counter these effects. In severe cases, shunt surgeries may be performed to relieve the high intracranial pressure.

Epileptic Seizures

These are a commonly observed recurrence in patients on end of life care and can be managed adequately with antiepileptic drugs such as carbamazepine, valproic acid and Phenobarbital in the rectal route as the oral route is avoided due to reduced consciousness [8,11]. Intranasal Midazolam sprays and buccal fluid form of Clonazepam can also be used.

Cognitive Deficits, Personality Changes

Cognitive deficits are a sign of progressive disease with a poor prognosis [8,12]. Although the symptoms of cognitive deficits are difficult to manage, corticosteroid use can reduce these symptoms. Sedative drugs can be used to manage the personality changes, agitation and restlessness observed in these patients.

Immobility and Incontinence

Adequate physiotherapy for immobility can be advised along with regularly timed replacement of urinary catheters for such patients.

Pain management is an important aspect of palliative care for patients who are facing a terminal illness. If considered to have <2 weeks of survival time, patients can be continuously sedated using benzodiazepines [8,13]. Although Physician-assisted suicide or Euthanasia is one of palliative care management, it is a controversial method and is yet to be completely legalised and streamlined in many countries.

Advance Care Planning (ACP) should be followed in making further end of life care decisions for the patients. ACP requires discussion and decisions by the patient along with their family members to take further steps of action in the palliative care process. But cognitive dysfunction in most patients makes it a difficult process. The goal of palliative care is to ensure that rehospitalisation rates are decreased and quality of life is improved for patients with a bad prognosis.

CONCLUSION

Anaplastic Oligodendroglioma is a rapidly spreading tumour with a low median 5 year survival period of 3.5 years. Early diagnosis, complete surgical resection and multidisciplinary treatment methods including chemotherapy and radiotherapy in the management of this condition can improve the prognosis of patients with Grade III Oligodendroglioma. Palliative care for high-grade gliomas focuses on improving the quality of life for the patient and involves managing recurring symptoms. Our patient is newly diagnosed with rare cancer like Anaplastic Oligodendroglioma, with a history of prior seizure disorder and neurologic deficit of left-sided hemiplegia, required an interprofessional team working together to manage the multitude of problems faced by this patient to improve his end of life care along with the support of his family members.

DECLARATIONS

Conflict of Interest

The author(s) declared no potential conflicts of interest with respect to the research, authorship, and/or publication of this article

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