A Rare Case of Cerebellar Glioblastoma Multiforme and Supratentorial Oligodendroglioma Presenting as Synchronous Primary Brain Tumors

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INTRODUCTION

Synchronous primary brain tumors have been previously described in literature but their occurrence is extremely rare, particularly in the absence of previous radiotherapy or hereditary syndromes. [1,2,3] The incidence of infratentorial glioblastoma multiforme (iGB) in adults is 1.2% of the total patients with glioblastoma multiforme which makes it an exceedingly rare tumor [4]. Glioblastomas have been reported with an oligodendroglioma component in the primary tumor and this has been found to be prognostically beneficial [5]. We present here the first reported case of a synchronous cerebellar iGB and a temporal oligodendroglioma in the same patient.

CASE REPORT

A 44-year old female presented to the neurosurgical clinic with a 2-month history of projectile vomiting. There was no hematemesis and vomiting was not associated with food intake or seizures. She also had generalized body weakness and one episode of altered mental status where she was described to suddenly fall out of bed and start praying in a loud voice. There was no hematemeses or association with food intake or seizures. She was repeatedly treated with anti-emetics and antibiotics prior to presentation before having an MRI which showed space occupying lesions in two different areas of the brain along with obstructive hydrocephalus. The patient made an uneventful recovery following surgery however she expired one week after discharge while undergoing oncological review.

We report the first known case of synchronous infratentorial glioblastoma multiforme (iGB) associated with a frontotemporal oligodendroglioma. A 44 year old female presented to the Neurosurgical clinic with a 2 month history of vomiting which was projectile in nature. It was associated with generalized body weakness and one episode of altered mental status where she was described to suddenly fall out of bed and start praying in a loud voice. There was no hematemesis or association with food intake or seizures. She was repeatedly treated with anti-emetics and antibiotics prior to presentation before having an MRI which showed space occupying lesions in two different areas of the brain along with obstructive hydrocephalus. The patient made an uneventful recovery following surgery however she expired one week after discharge while undergoing oncological review.

Keywords: Oligodendroglioma, Adult; Glioblastoma Multiforme; Infratentorial Neoplasms, Malignant; Multimodal Treatment
craniotomy with gross total resection of the lesion followed by a left sided ventriculoperitoneal (VP) shunt. After two weeks a frontotemporal craniotomy was done for the supratentorial lesion with near total excision. Her postoperative course was uneventful with a gradual return to function (GCS = 15/15 at discharge) and was discharged after 20 days. Postoperative MRI showed a large slightly lobulated mass measuring approximately 5.6 by 4.3 by 3.3 cm arising from the cerebellar vermis and extending laterally into both cerebellar hemispheres. The lesion was predominantly hypo-intense on T1-weighted images (Figures 2A & 2B) and hyper-intense on T2-weighted images (Figures 2C and 2D). No supratentorial extension was seen. The hydrocephalus seen in earlier scans had resolved, VP shunt was in place, and the midline shift was reversed. Histopathological examination of the posterior fossa specimen demonstrated atypical spindle shaped cells with moderate to marked degree of nuclear atypia. Numerous multinucleated giant cells, microvascular proliferation and typical pseudopalisaded areas of necrosis were seen (Figure 3) consistent with the diagnosis of glioblastoma multiforme (World Health Organization grade IV) of the cerebellum. Histopathological examination of the frontotemporal specimen showed small round cells with hyperchromatic nuclei and perinuclear halo giving a “fried egg appearance” (Figure 4). The diagnosis was oligodendroglioma (World Health Organization grade II). Unfortunately, the patient died one week after discharge while undergoing oncological review.

**DISCUSSION**

This case presented a rare neurosurgical and oncological challenge not only due to its rarity but also because of the location of the lesions requiring two different operative approaches. The initial decision to operate may have been straightforward due to the acute presentation of the patient along with shunt placement to relieve pressure symptoms but subsequent management presented a conundrum. Primary brain tumors of distinctly different grades of histology is a rare condition with few reported cases. [6] To the best of our knowledge, this is the first known occurrence of a supratentorial oligodendroglioma and an infratentorial glioblastoma multiforme. Gliomas can be generally divided into circumscribed, grade I, versus infiltrative, grade II, III and IV varieties. As our case demonstrates, multiple brain masses should not be presumed to be of metastatic origin. [7] The incidence of multicentric gliomas is disputed with figures ranging from 2.9% to 15%. [8] Glioblastoma multiforme are classically defined as supratentorial occurring most often in male patients over the age of 50 without any genetic predisposition [9].

The patient would have received temozolomide for the oligodendroglioma and radiotherapy for the GBM. Studies have reported that this combi-
Figure 3: Glioblastoma multiforme with numerous multinucleated giant cells, microvascular proliferation and typical pseudopallisading areas of necrosis.

Figure 4: Oligodendroglioma showed small round cells having hyperchromatic nuclei and perinuclear halo giving a “fried egg appearance”.

Glioblastoma multiforme with oligodendroglial component (GBMO): favorable outcome after post-operative radiotherapy and chemotherapy with nimustine (ACNU) and teniposide (VM26). BMC Cancer. 2006; 6: 247.


REFERENCES


