

# Lipomatous Cystic Meningioma Mimicking High Grade Glioma: A Rare Case Report with Brief Review of Literature



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## Abstract

Lipomatous meningioma is rare variant of meningioma. A 34 years old male was presented with intermittent headache, dizziness, slurring of speech and right hand numbness and weakness since 15 days. Patient came at OPD with Computed Tomography (CT) scan and it reported that a well defined thick walled heterogeneous mass. Brain magnetic resonance imaging (MRI) was done where it reported that large (6.3 x 6.5 x 4.7 cm) T1 hypo-intense and T2 hyper-intense enhancing mass with non-enhancing cystic lesion and surrounding edema in left parietal lobe suggesting high grade glioma. Left parietal craniotomy and total excision of mass was performed. Histopathology diagnosis was a rare Lipomatous Meningioma.

**Key words:** Meningioma, Lipomatous, Histopathological diagnosis, Excision

## Introduction

Meningioma is a tumor of meningotheial cell which is attached at the inner surface of dura matter and it accounts for up to 30% of all tumors.<sup>1</sup> According to world health organization (WHO), following are the subtype of meningioma such as: Meningothelial, fibrous, transitional, Psamomatous, Angiomatous, Microcystic, Secretory, Lymphoplasmocyte-rich and metaplastic meningioma. Metaplastic type are rare sub type of benign meningioma among others type, characterized by presence of mesenchymal componenets such as cartilaginous, osseous, lipomatous, and myxoid or xanthomatous tissue,

singly or in combination.<sup>2,3</sup> The term metplastic is used because they demonstrate as well as mimic full histological characteristics of transformed neoplastic cells.<sup>4</sup>

Baily and Bucy first invented the term lipomatous meningioma in 1931.<sup>2</sup> Lipomatous meningioma is rare subtype of meningioma with the presence of fat cell,<sup>5,6</sup> which are best understood on computed tomography (CT) as hypodense and T-1-weighted magnetic resonance imaging (MRI) as hyperintense lesion.<sup>7</sup> Conclusive diagnosis cannot be based on imaging finding alone where histopathological evaluation should be completed.<sup>8</sup>

In this report, we present a 34 year-old male operated on for a left parietal mass and diagnosed with lipomatous meningioma. Simpson grade I resection was performed. Distinctive characteristics of this rare type of meningioma were discussed along with detailed review of literature and we discuss relevant clinical consideration on diagnosis and managing lipomatous meningioma.

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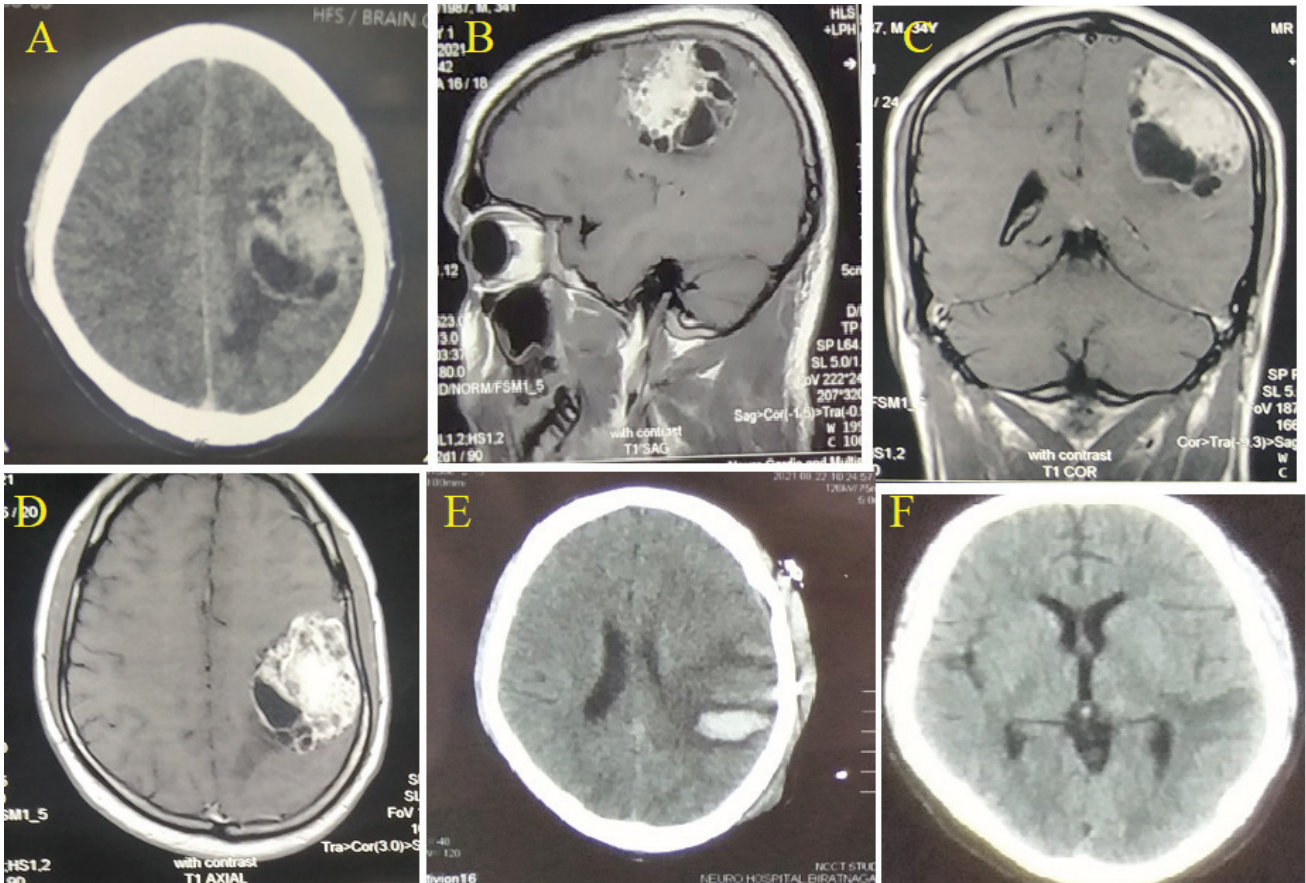
## Case Report

A 34 year –old male was admitted to neurosurgery department with the complaint of headache, dizziness, slurring of speech and right upper limb weakness and numbness since 15 days. Brain CT showed large heterogeneously isodense lesion showing homogenous enhancement with non enhancing hypodense lesion in left parietal lobe (Figure 1A). Contrast enhanced magnetic resonance (MRI) scan showed large (6.3 x6.5 x 4.7cm) T1 hyperintense enhancing mass with non enhancing cystic component and surrounding edema in the left parietal lobe causing mass effect (S/O high grade glioma) (Figure 1B,C,D). Left parietal craniotomy with total excision

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of mass was achieved. Postoperative brain computed tomography scan revealed tumor removal with persisting preexisting perilesional edema and mild blood in tumor cavity (Figure 1E). Histopathological examination revealed highly vascularized tumor consisting of large cell seeming fat-like proliferation with classical meningothelial

neoplastic cell. Histopathological diagnosis was benign lipomatous meningioma (Figure 2, A, B). Postoperative period was uneventful and patient was discharge from hospital on the 10<sup>th</sup> day of operation. Patient was followed up on the 30 days from date of discharge without any neurological deficit and repeat brain CT scan was performed (Figure 1 F).



*Figure 1: Brain CT showed large heterogeneously isodense lesion showing homogenous enhancement with non enhancing hypodense lesion in left parietal lobe (Figure 1A). Contrast enhanced magnetic resonance (MRI) scan showed large (6.3 x6.5 x 4.7cm) T1 hyperintense enhancing mass with non enhancing cystic component and surrounding edema in the left parietal lobe causing mass effect (S/O high grade glioma) (Figure 1B,C,D). Postoperative brain computed tomography scan revealed tumor removal with persisting preexisting perilesional edema and mild blood in tumor cavity (Figure 1E). CT scan after 30 days (Figure 1 F).*

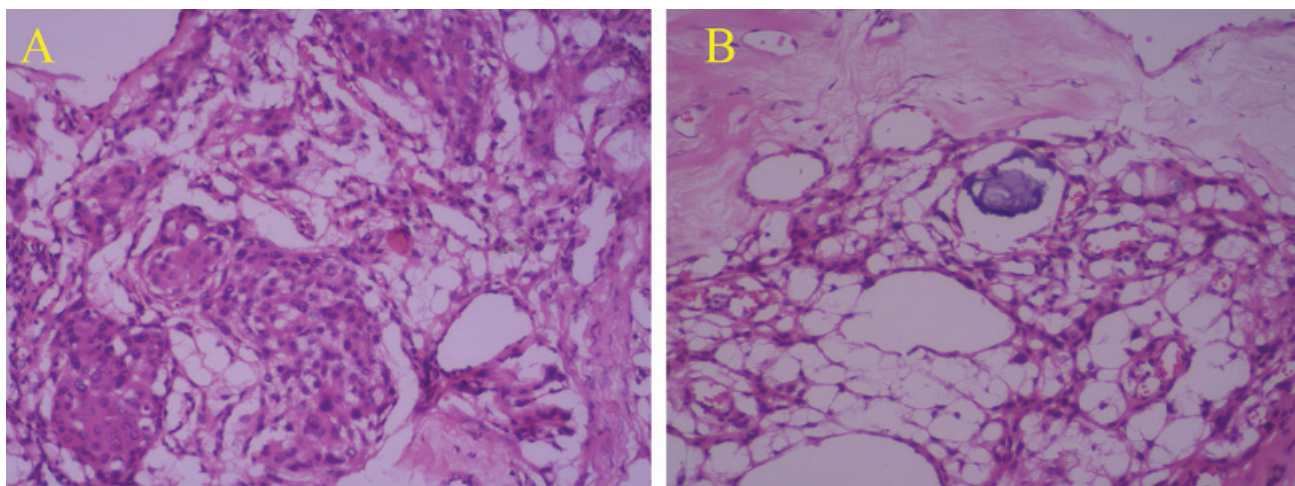


Figure 2: Histopathological diagnosis was benign lipomatous meningioma (Figure 2, A, B).

## Discussion

Meningiomas are slow growing benign tumor; and usually present in the middle to adulthood.<sup>9</sup> Meningiomas are categorized into three groups according to WHO grading system: benign meningioma (Grade I), atypical meningioma (Grade II) and malignant meningioma (Grade III).<sup>1,10</sup> The two epidemiological studies described reported 89.2% and 91.9% WHO grade I, 9.3% and 5.2% WHO grade II, and 1.5% and 2.9% WHO grade III, respectively.<sup>11</sup> Metaplastic meningioma is a rare subtype of WHO grade I meningioma, histologically characterized by the presence of so-called metaplastic changes involving mesenchymal components, such as osseous, cartilaginous, lipomatous, and myxoid tissue.<sup>6</sup>

Lipomatous meningioma is one of rare subtype of meningioma first reported by Bailey and Bucy in 1931.<sup>2</sup> The term lipomatous depict the cell being like adipocyte. Several studies have described the disordered metabolism within meningeothelial cell that leads to deposition of fat.<sup>4, 6</sup> Colnat –Coulbois et al reported only two case of lipomatous meningioma among the 1,642 meningioma operated from 1989 to 2005, representing 0.001% of the cohort.<sup>12</sup> In our study patient was male and age was 34 year old. Most of the operated cases were female<sup>6</sup> and mean age for lipomatous meningioma presentation in 50 years of age with a range from 22 to 74 year reported in the literature.<sup>4</sup>

Symptoms for lipomatous meningioma are changeable depending on size and location of the tumor and majority of lipomatous meningioma described in the previous literature have been frontal or fronto-temporal in the origin with only a few being parietal.<sup>13</sup> Similarly, headache are most common for parietal tumors, while seizure is most common manifestation for frontal and front

temporal tumors.<sup>14,15</sup> Our patient had history of headache and right hand numbness and weakness. A complete Immunohistochemical investigation should be carried to differentiate it from other fat –containing tumors such as liposarcoma, lipoma, epidermoid and dermoids tumor, choroid, and metaplastic mucinous carcinoma because each has different management protocol and prognosis.<sup>4,5</sup>

## Conclusion

Lipomatous meningiomas are an exceedingly rare variety of meningioma with good prognosis after resection. It is associated with accumulation of fat inside meningeothelial cell rather than neoplastic cell which can be appropriately diagnosed by immunohistochemical investigation.

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