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CASE STUDIES

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A Solitary/Multiple Brain Lesions with an Unanticipated Diagnosis and a Therapeutic Challenges

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ABSTRACT

Brain metastases are an increasing challenge in modern oncology. Despite recent advances in the management of cancer patients, Brain Metastases are still a disastrous complication with an immense impact on overall survival and also on the quality of life of patients.

Although not seen commonly, sometimes primary brain tumours present similar to those of brain metastasis both clinically as well as radiologically. Glioblastoma multiforme, one of the common tumours seen as a primary brain tumour, has a very less survival period. Treatment is usually multimodality. A single, large, or multiple cerebral tuberculoma is a lesion that is frequently misdiagnosed with brain metastases.

Here, we present a few cases of lesions in the brain radiologically not compatible with brain metastasis. In all cases neurosurgical intervention was sought for diagnostic as well as therapeutic purposes and was confirmed as metastatic disease by histopathology with no primary. These cases revealed the importance of differentiation between primary brain tumours and brain metastases to ensure that the appropriate management strategy is implemented.

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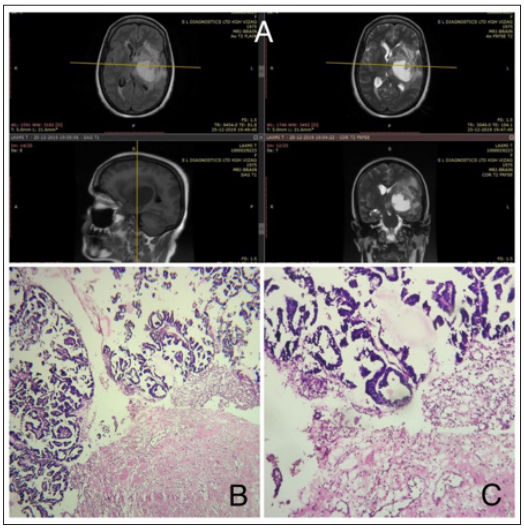
Case Presentation

Case 1

34-year-old woman attended our outpatient department with weakness of one side of the body. She reported several episodes of headache and seizures occurring before this visit, with no history of vomiting. MRI brain showed lesion in left temporal lobe with perilesional oedema and mass effect over left lateral and third ventricles [A]. The single lesion was reported to likely of Pilocytic astrocytoma.



The patient was admitted and started on brain tumour management protocol. Patient was relieved of her symptoms partially. Primary cancer diagnosis investigations were not done. The patient was planned for surgical management in view of pressure effect due to tumour. She underwent a left temporal craniotomy for excision of the tumour. Biopsy of the lesion showed features in favour of Papillary adenocarcinoma Metastatic deposits [B].

Following the excisional biopsy, the patient began an extensive investigation for the primary cancer site. Investigation failed to reveal a primary cancer site. Patient was referred to radiation oncologist and medical oncologist to start concurrent chemotherapy and radical radiation to the brain. Unfortunately, she passed away shortly thereafter: 3 months after initial presentation, and 2 months after tumor resection.

Case 2

A 53-year-old man attended our outpatient department with complaints of altered sensorium. He reported several episodes of headache and vomiting occurring before this visit, with no history of seizures. MRI brain with spectroscopy shows intra-axial lesion in the periventricular white matter of right parietal lobe with perilesional oedema is noted [A]. The lesions with these features are suggestive of SOL Glioma/ choroid carcinoma.

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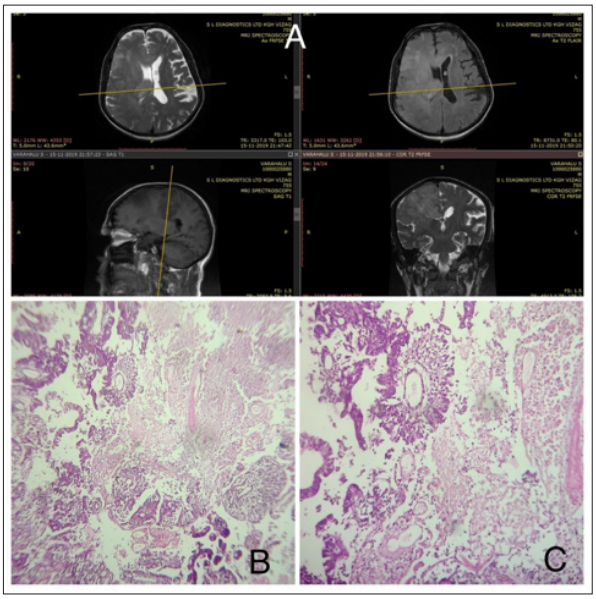
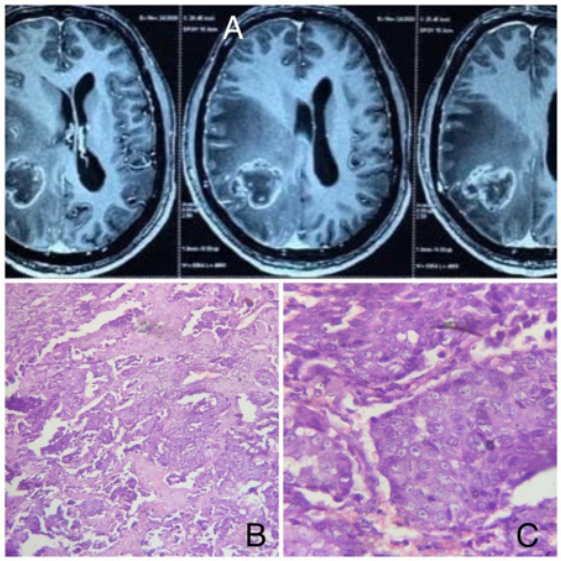


The patient was admitted and started on brain tumour management protocol. Patient was symptomatically feeling better after starting steroids. There was no suspicious of brain metastases in this patient. The patient was planned for surgical management in view of confirming diagnosis with tissue biopsy and for further management. He underwent a right parietal craniotomy for excision of the tumour. Histopathology of the lesion shows features of metastatic carcinoma. After recovering from surgery, patient was subjected to metastatic work up. Pt was referred to radiation oncology and medical oncology department to start on whole brain radiation and concurrent chemotherapy. Further follow up for one year patient didn't show any recurrence of symptoms.

Case 3

A 46-year-old man attended our outpatient department with weakness of one side of the body and deviation of mouth towards to right side. He reported to have vomiting and headache occurring before this visit, with no history of seizures. Imaging by MRI showed intra axial irregular thick-walled rim ring enhancing lesion with central necrosis involving right parietal region with significant perilesional oedema [A]. Features suggestive of glioblastoma multiforme.

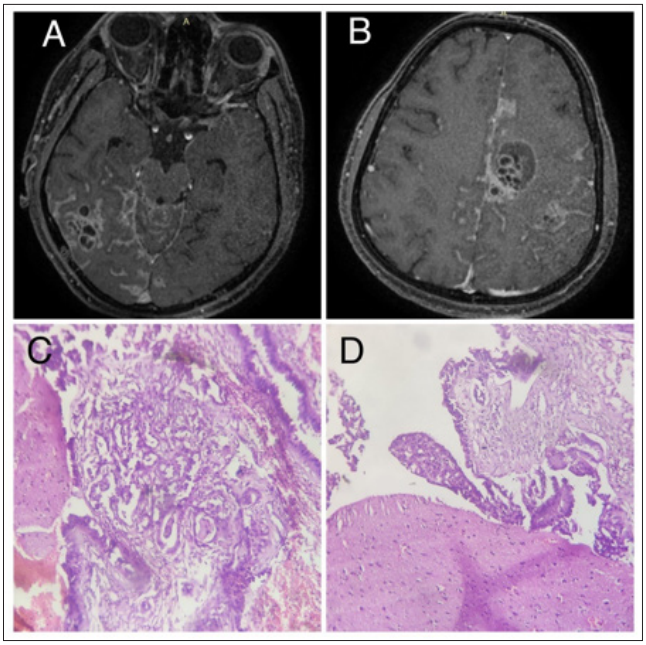


The patient was admitted and started on brain tumour management protocol. Patient was partially relieved of symptoms after starting steroids. There was no suspicious of brain metastases in this patient. The patient was planned for surgical management in view of confirming diagnosis with tissue biopsy and for further management. He underwent a right parietal craniotomy and excision of the tumour. Histopathology of the lesion shows features of suggestive of metastatic papillary adenocarcinoma.

Once patient recovered from surgery, he was subjected to extensive metastatic work up but couldn't find any primary. Patient was referred to radiation oncology and medical oncology department to start on whole brain radiation and concurrent chemotherapy. Post chemo-RT patient is doing well without any recurrence of symptoms.

Case 4

A 27-year-old male presented to our emergency department with a complaint of abrupt onset paralysis of his right upper and lower limbs, as well as altered sensation. The MRI scan shows numerous cystic lesions with conglomerate ring-enhancing lesions, which reflect Koch's aetiology. The patient was taken in for a craniotomy and tumor resection. Histopathology of the lesion reveals metastatic papillary adenocarcinoma. A metastatic workup was performed, but there was no primary lesion. For further treatment, the patient was referred to radiation oncology and medical oncology departments.



Discussion

Glioblastoma and other gliomas are the most common type of primary brain tumour. Patients with primary brain tumours commonly present with one or more symptoms that can include seizures (either partial or general in nature), increased intracranial pressure, or localized neurologic deficits such as weakness, motor problems, and aphasia.

Although the predominant presenting symptom in brain metastasis is headache, many patients have been reported to experience symptoms very similar to those seen with primary brain tumours. About 60%-75% of individuals present with

neurologic symptoms, and the disease spread is identified through routine imaging. Brain metastases affect somewhere between 10% and 26% of cancer patients who die [1,2]. Up to 40% of cancer patients develop cerebral metastases and overall, metastasis is more common than primary brain tumour [3,4].

The preferred modality for detecting brain lesions, whether they originate from primary brain cancer such as glioblastoma or whether they are metastatic lesions originating from other primary sites, is mri with contrast administration.

Despite the advanced sensitivity of mri, 11% of patients with a brain lesion are given a false-positive diagnosis, based solely on mri, of either metastatic or primary cancer [5,6]. More recently, techniques such as perfusion mri have been used to differentiate primary gliomas and brain metastasis. Often, diagnosis of brain lesions must be confirmed by pathology and histology examination, using excisional biopsy of the tumour.

One more feature aid in diagnosis is the number of lesions present on imaging. Around 20%–40% of patients diagnosed with brain metastasis will develop multiple brain metastases, in comparison with the 30%–40% that will have a single brain metastasis [7,8]. Only 15% of patients with an unknown primary will have solitary brain lesions [9]. A recent study shows the prevalence of multiple lesions in brain metastasis (55%) and in glioma (23%) have a significant difference on imaging [10].

There are Two Possibilities to Discover the Location of Primary Cancer:

- Neurosurgical intervention and sampling of tumoral tissue in order to determine the histopathological features of tumoral architecture and tumoral cells.
- General clinical examination and laboratory tests for discovery of primary neoplasm.

Neurosurgical intervention may be classical ablation of the tumor or stereotactic biopsy. Total ablation intervention addresses to patients who have a good general state, single metastases, which is located in a non-eloquent area [9]. In cases with multiple metastases total removal will address to the voluminous formation with herniation tendency. Indications for stereotactic biopsy refer to patients with deterioration of the general state, and with multiple metastases located in eloquent areas (Rolando area, central gray nuclei, corpus callosum, and brain stem) [11].

Cerebral tuberculomas can be solitary or multiple, with the basal parts of the brain being the most frequently affected. A chest x-ray will reveal findings in about 30% of cases of cerebral tuberculoma, and CSF analysis won't be very helpful [12-14]. A histological study is necessary for the confirmation of the diagnosis in any of the cineraries. Surgical intervention is necessary whenever there is acute complication such mass effect, and to confirm diagnosis.

Conclusion

Each form of brain lesion has a different therapeutic strategy. Diagnoses are frequently interchanged since the symptoms and appearance of malignant brain lesions are so similar. Identifying and confirming the diagnosis is critical in managing a brain tumour patient. Clinical and radiological diagnosis will not confirm, but histological testing will. Failure to receive correct treatment will have an impact on survival and quality of life. Quality of life takes precedence over quantity of life.

References

[1] Cagney DN, Martin AM, Catalano PJ, Paul D Brown, Brian M Alexander, et al. Implications of screening for brain metastases in patients with breast cancer and non-small cell lung cancer. JAMA Oncol 2018; 4: 1001-1003

[2] Nayak L, Lee EQ, Wen PY. Epidemiology of brain metastases. Curr Oncol Rep 2012; 14:48-54.

[3] Sheehan J, Niranjan A, Flickinger JC, Kondziolka D, Lunsford LD. The expanding role of neurosurgeons in the management of brain metastases. Surg Neuro 2004; 62: 32-40.

[4] Vecht CJ. Clinical management of brain metastasis. J Neurol 1998; 245: 127-131.

[5] Posner JB. Management of brain metastases. Rev Neurol 1992; 148: 477-487.

[6] Patchell RA, Tibbs PA, Walsh JW, R J Dempsey, Y Maruyama, et al. A randomized trial of surgery in the treatment of single metastases to the brain. N Engl J Med 1990; 322: 494-500.

[7] Loeffler JS, Patchell RA, Sawaya R. Treatment of metastatic cancer. In: DeVita. Cancer: Principles and Practice of Oncology. 5th ed. Philadelphia: Lippincott-Raven 1997.

[8] Lohr F, Pirzkall A, Hof H, Fleckenstein K, Debus J. Adjuvant treatment of brain metastases. Semin Surg Oncol 2001; 20:50-56.

[9] Voorhies RM, Sundaresan N, Thaler HT. The single supratentorial lesion. An evaluation of preoperative diagnostic tests. J Neurosurg 1980; 53:364-368.

[10] Jeong HJ, Chung JK, Kim YK, Chae Yong Kim, Dong Gyu Kim, et al. Usefulness of whole-body 18F-fdg pet in patients with suspected metastatic brain tumors. J Nucl Med 2002; 43:1432-1437.

[11] Tsao MN, Lloyd NS, Wong RK, on behalf of the Supportive Care Guidelines Group of Cancer Care Ontario's Program in Evidence-Based Care. Clinical practice guideline on the optimal radiotherapeutic management of brain metastases. BMC Cancer 2005; 5: 34.

[12] Tengku-Fatishah A, Besari A, Tharakan J, Ismail Shatriah. Intraventricular Tuberculoma with Profound Visual Loss: A Case Report and Literature Review. Cureus 2018; 10:e2807.

[13] Jinkins JR. Computed tomography of intracranial tuberculosis. Neuroradiology 1991; 33:126-135.

[14] Yanardağ H, Uygun S, Yumuk VD, Caner M, Canbaz, B. Cerebral tuberculosis mimicking intracranial tumour. Singapore medical journal 2005; 46:731-733.