

Introduction

Leptomeningeal carcinomatosis (LC) is characterized by metastasis to the meninges and is often secondary to a hematologic malignancy [1]. The incidence of LC is 5-8% in solid tumor primaries and 15% in hematologic primaries [2]. Cases of prostate malignancy spread to the leptomeninges are exceedingly rare and are often indicative of late-stage metastasis. LC often presents with headache, focal neurologic deficits, SIADH, seizures, nuchal rigidity and altered mental status and can be a diagnostic challenge before clinical deterioration and mortality [2]. Meningeal enhancement on MRI is highly suggestive of an LC diagnosis, but CSF cytology or meningeal biopsy are generally required for confirmation [1]. Treatment consists of systemic chemotherapy targeting the primary malignancy, as well as intrathecal chemotherapy regimens, but many patients with LC are deceased before confirmatory testing can be obtained.

Case Presentation

A 61-year-old male with chronic back pain presented to the emergency department with a 1-week history of slurred speech, difficulty swallowing, and expressive aphasia. He had a single episode of hematuria the previous night. Due to a lack of health insurance, he not only delayed his hospital visit, but also had no consistent primary care. He underwent a CT scan of the abdomen and pelvis on admission for evaluation of hematuria and back pain. This revealed prostatomegaly as well as lytic and sclerotic lesions in the lumbar spine, raising suspicion for leptomeningeal carcinomatosis early in hospitalization. Brain MRI showed pachymeningeal enhancement. A lumbar puncture was performed which showed negative cytology, a common finding in LC which has a 50% false negative rate on initial LP [2]. His CSF was significant for an elevated protein level of 152.7 mg/dl. Given his indeterminate MRI with high clinical suspicion, a second LP was considered but was ultimately not pursued and the patient was discharged from the hospital after 4 days to undergo prostate biopsies and to initiate chemotherapy.

Figure

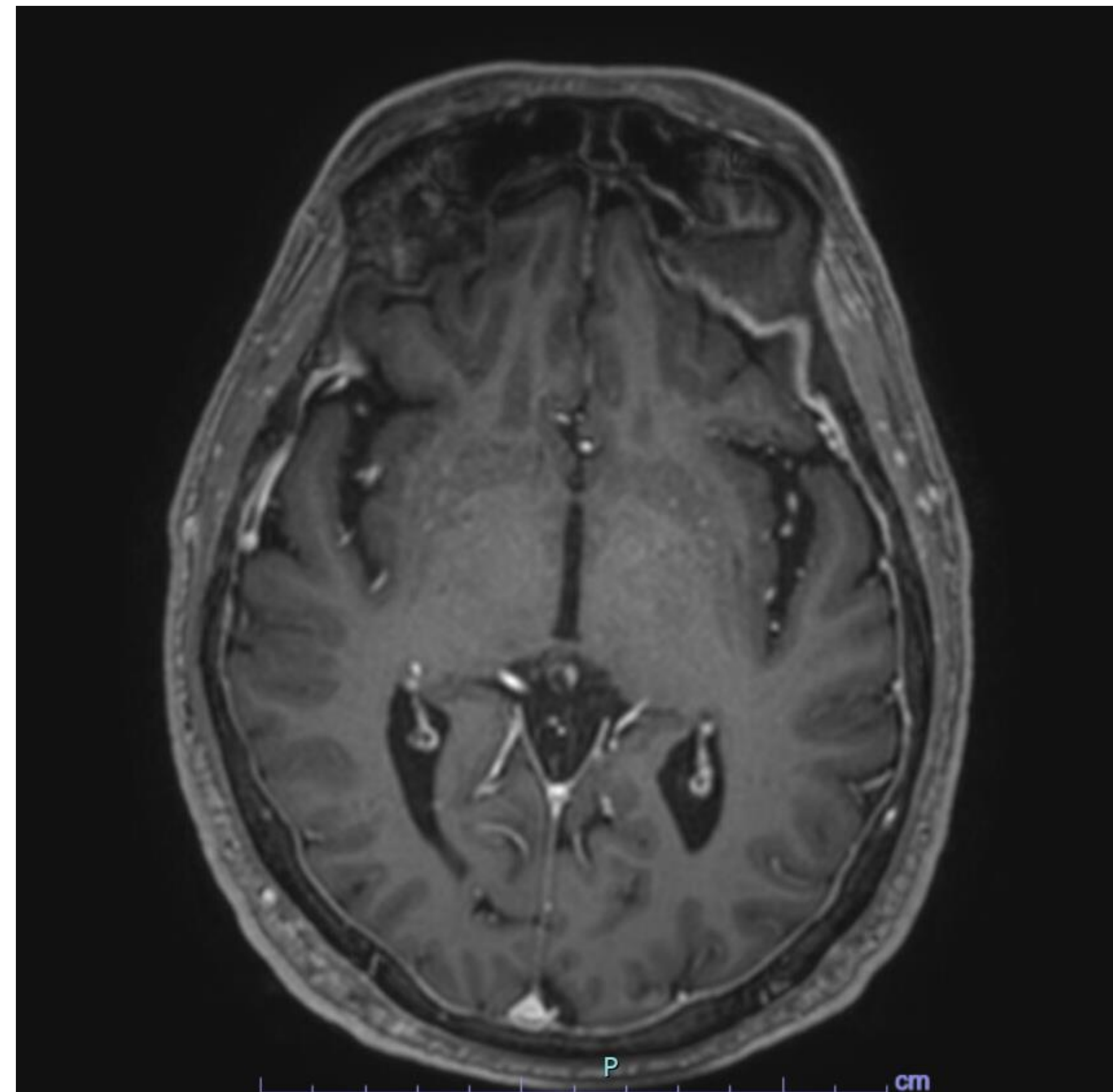


Figure 1: MRI Brain with mild pachymeningeal enhancement.

Discussion

Leptomeningeal carcinomatosis is rarely secondary to prostate malignancy but should be included in the differential of any patient presenting with altered mental status and stroke-like symptoms without a clear source. In our case, the patient's lack of health insurance caused a delay in his prostate cancer diagnosis, so he presented with late-stage metastasis without a known cancer history. As a condition that frequently mimics cerebral infarction, seizure or meningitis, it is important to obtain a thorough history and provide widespread investigations that may reveal this rapidly fatal disease.

Discussion (continued)

Survival of patients with LC remains 3-4 months from diagnosis, but there exist rare cases of patients with long-lasting remission for whom early, aggressive treatment may provide more time [4].

An MRI should be obtained in advance of a lumbar puncture which may cause transient meningeal enhancement secondary to inflammation [2]. Increased intracranial pressure and hydrocephalus are also commonly associated with LC [2]. CSF cytology false negatives can be decreased if the lumbar puncture is of a sufficient volume (>10ml), processed within 48 hours of draw and is drawn from a site associated with patient signs and symptoms (ie. ventricular fluid with cranial signs versus lumbar fluid with spinal signs) [2,3].

Conclusion

With such rapid disease progression, leptomeningeal carcinomatosis treatment continues to be palliative in nature, but can improve the quality of life of patients by reversing their focal deficits and seizure risk. Given lumbar puncture's high false negative rate, it is important to obtain a sufficient volume of CSF (>10ml) and if clinical suspicion remains high, a second LP may be performed. Thorough and efficient investigations remain crucial in providing these patients with an increased survival time.

References

- Carroll, R. D., Leigh, E. C., Curtis, Z., Thorpe, A., Ballengee, J., Pacioles, T.; A Case of Leptomeningeal Carcinomatosis from Aggressive Metastatic Prostate Cancer. *Case Rep Oncol* 6 May 2019; 12 (1): 311–316. <https://doi.org/10.1159/000499761>
- Wang, N., Bertalan, M.S. and Brastianos, P.K. (2018), Leptomeningeal metastasis from systemic cancer: Review and update on management. *Cancer*, 124: 21-35. <https://doi.org/10.1002/cncr.30911>
- Glantz MJ, Cole BF, Glantz LK, Cobb J, Mills P, Lekos A, et al Cerebrospinal fluid cytology in patients with cancer: minimizing false-negative results. *Cancer*. 1998 Feb;82(4):733–9. [https://doi.org/10.1002/\(SICI\)1097-0142\(19980215\)82:4<733::AID-CNCR17>3.0.CO;2-Z](https://doi.org/10.1002/(SICI)1097-0142(19980215)82:4<733::AID-CNCR17>3.0.CO;2-Z)
- Beauchesne P. Intrathecal chemotherapy for treatment of leptomeningeal dissemination of metastatic tumours. *Lancet Oncol*. 2010;11:871-879. [https://doi.org/10.1016/S1470-2045\(10\)70034-6](https://doi.org/10.1016/S1470-2045(10)70034-6)