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Abstract

Background

Surgical management is an important treatment for epilepsy refractory to anti-epileptic drugs (AEDs). The temporal lobectomy is among the most common operations performed on this patient population. The psychiatric sequelae of this procedure are poorly understood.

Case

A 39yo woman presented with subacute onset of paranoid psychosis in the context of seizure recurrence after eight seizure-free years post-temporal lobectomy. She required involuntary hospitalization and improved on olanzapine but never returned to reported baseline.

Objective

Describe the known associations between psychotic symptoms and seizure control in patients with epilepsy.

Discussion

Psychiatric sequelae are the most common complication after temporal lobectomy, though psychosis is relatively rare. Two theories have been proposed: (1) ictal psychosis in the setting of seizure recurrence and (2) forced normalization, the theory wherein brain wave normalization on EEG induces psychotic symptoms.

Introduction

Epilepsy has long been known to have associations with psychiatric pathology. The temporal lobe is known to be involved in emotion, memory and auditory processing; temporal epilepsy is particularly associated with psychiatric symptoms. Temporal lobectomy is an effective intervention for temporal epilepsy that is refractory to pharmacologic management. However, lobectomy has many risks, including new-onset post-operative psychosis. The mechanism for this remains poorly understood.

Objective

To describe a case of post-operative psychosis after temporal lobectomy and to consider the differential diagnosis in this patient population, including forced normalization.

Case

A 39yo right-handed woman with a history of temporal lobe epilepsy since adolescence presented to the ED with months of increasingly erratic behavior and paranoid delusions. Her only psychiatric history was a voluntary hospitalization in 2008 for depression with psychotic features, after which time she was maintained on sertraline for several years.

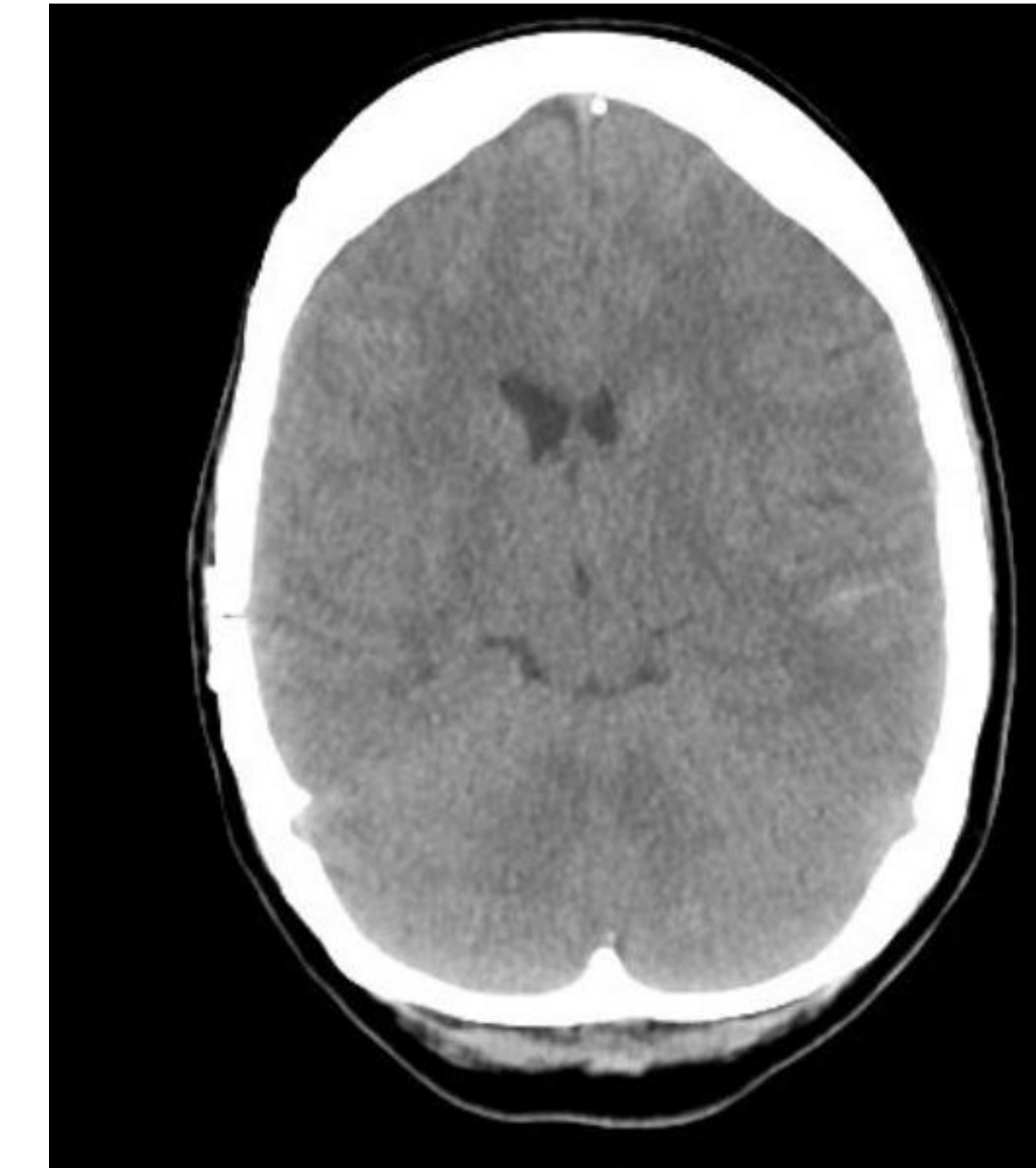
She had been seizure-free after a right temporal lobectomy in 2012 with maintenance levetiracetam. Lamotrigine was added after several breakthrough seizures in 2020.

1 year later, the patient began to experience persecutory delusions, culminating in a car accident when she believed she was being chased on the highway. It is unclear if she was adherent to her AEDs; serum levels were not drawn. The medical workup revealed a small subarachnoid hemorrhage which did not require intervention; there were no other notable organic abnormalities. After stabilization by trauma services, she was referred for involuntary psychiatric hospitalization.

Initial mental status exam revealed an irritable woman with obvious psychomotor agitation, rocking back and forth. Speech was rapid and profane with tangential thought processes evident. She was seen responding to internal stimuli. Cognitive screening revealed no impairment. She showed no signs of seizure activity during her month-long admission but refused EEG testing as well as MRI. Her paranoia improved on olanzapine although she never developed insight and stated she would stop all psychotropics on discharge home.



Head CT without contrast from day of admission
Left: Post-operative changes of the R temporal lobe with residual encephalomalacia
Right: Subarachnoid hemorrhage in the posterior L Sylvian fissure



Discussion

Psychiatric disorders are the most common postoperative complication after temporal lobectomy, noted in 7% of patients in one meta-analysis², including psychosis. Unlike this case, these symptoms typically emerge in the first six months after surgery¹. One explanation for this phenomenon is the theory of forced normalization, wherein acute psychosis presents in epilepsy patients after seizure control is achieved. These symptoms are less likely to completely resolve in patients triggered by surgery versus pharmacologic therapy³. Forced normalization symptoms are also more difficult to manage compared to perictal psychoses, requiring multidisciplinary management, including withdrawal of all AEDs and long-term antipsychotic therapy⁵. Another explanation is seizure recurrence with de novo perictal psychosis. Lobectomy is effective but not curative, with more than half of patients remaining seizure-free after ten years⁴. Perictal psychosis is typically intermittent and brief in nature with complete return to baseline in between episodes, unlike this case⁶. Continuous EEG is the only way to definitively differentiate between these two possibilities.

Summary and Conclusions

- Though a unifying mechanism has not been identified, there is a clear link between temporal lobectomy and psychosis in the epidemiological literature.
- Providers should have a low index of suspicion for psychosis when caring for temporal lobectomy patients with disorganized behavior and/or paranoia.
- EEG studies can differentiate between forced normalization and ictal psychosis.
- Serum AED levels can also guide decision-making, particularly in patients with questionable medication adherence.

Future Directions

- Larger prospective cohort studies are needed to better characterize the predictors associated with psychosis after temporal lobectomy.
- Electroconvulsive therapy (ECT) has been suggested as a diagnostic measure and treatment for this population, though further study is needed.

References

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