Reminder of important clinical lesson

'Forced normalisation' in the neurosurgical era

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Summary

The correlation between epilepsy and behavioural disorders is well known. Forced normalisation is a phenomenon where there is worsening of the patient's behavioural disorder when a better seizure control has been obtained. A complication of anti-epileptic treatment worsening the behavioural disorder is sometimes the proposed mechanism. The author presents the report of a young man with temporal lobe epilepsy and poor seizure control in the past 12 years. The patient had comorbid impulse control disorder previously well controlled with medications. MRI demonstrated left mesial temporal sclerosis and intracranial EEG recording located seizure foci in the left medial temporal lobe. The patient underwent left temporal lobectomy for seizure control with partial success. However, after operation, the patient's impulse control disorder worsened and he was involved in physical altercations leading to incarceration. This illustrates a case where partial seizure control was obtained with a surgical procedure, but resulted in worsening of the patient's behavioural disorder.

BACKGROUND

The correlation between epilepsy and behavioural disorders is well known. Forced normalisation is a phenomenon where there is a worsening of the patient's behavioural disorder when a better seizure control has been obtained. This phenomenon was first described by Landolt in a group of patients with poorly controlled epilepsy who had psychotic episodes associated with remission of their seizures and disappearance of epileptiform activity on their EEGs.¹ The goal of treatment for a patient with epilepsy remains seizure control, but at times seizure control seems to provoke alternative expressions of central nervous system dysfunction and cause behavioural disturbances.

CASE PRESENTATION

A 24-year-old Caucasian man was evaluated in the psychiatry clinic for complaints of impulsivity. He was accompanied to the clinic by his mother who mentioned that the problems of impulsivity started concurrently when the patient was 12 years old and developed a seizure disorder. At that point in time he began exhibiting a number of problematic behaviours, such as stealing cars because he wanted to drive as well as just general rule breaking at home including smoking in the house, which at one point even led to an accidental fire within the home. The patient was at times sexually disinhibited, with reports of him fondling himself or masturbating even in the presence of others. His mom mentioned that 'my son does not have a filter', referring to the fact that he does not think through before doing a task. There were also mentions of lack of remorse after the patient performs such disruptive behaviours. There was no history of other symptoms suggestive of a mood or psychotic disorder.

The patient was diagnosed with impulse control disorder at 13 years of age, soon after the onset of seizure disorder. He had previous good response to valproic acid and atomoxetine for his behavioural disorder. He smoked

cigarettes on a regular basis, but denied any other illicit drug use. No history of any contributing family psychiatric history was reported. The patient had a high-school level of education with his IQ score in the average range for various domains.

INVESTIGATIONS

The patient had complex partial type of seizures that had their origin in the left middle temporal gyrus, as assessed by intensive intracranial video EEG monitoring. A concurrent brain MRI had demonstrated left-sided mesial temporal sclerosis.

TREATMENT

The patient's seizures were intractable to various classes of medications and seizure control was not even obtained after a vagal nerve stimulator placement. Hence, the patient underwent a left temporal lobectomy for seizure control. This procedure was complicated by postoperative infection with *Staphylococcal epidermidis* leading to cranial osteomyelitis subglacial fluid collection. The infection was appropriately treated with intravenous antibiotics.

OUTCOME AND FOLLOW-UP

The temporal lobectomy resulted in some improvement in his seizure control where he was relatively seizure free with felbamate 1800 mg twice a day and pregabalin 750 mg twice a day.

However, following operation, soon after the patient was discharged from the hospital, a worsening in the patient's impulsivity was observed by his mother. There was an instance where he hit someone with a rake leading to severe physical injury. Further, he was involved in a physical altercation with school children for which he was charged legally and ended up being incarcerated. This degree of impulsivity was clearly worse than that in the preoperative period.

DISCUSSION

This case is an example of partial seizure control being obtained with a surgical procedure, but resulting in worsening of the patient's behavioural disorder. Patients with temporal lobe epilepsy have been known to have high rates of psychiatric disorders. Glosser *et al*² found that 65% of patients undergoing surgery for seizure control had a diagnosis of psychiatric disorder before and after surgery. Patients in their study had a transient increase in psychiatric symptoms after surgery, and many patients had new onset of psychiatric disorders in the first few weeks after surgery. Overall, the group was less symptomatic 6 months after surgery. Few other studies have demonstrated improvement in the symptoms of irritability and aggression in patients undergoing anterior temporal lobectomy when followed long term.^{3 4} These findings emphasise that patients need to be followed actively both for existing psychiatric disorders and for new-onset symptoms in the period following neurosurgery for seizure control.

Competing interests None.

Patient consent Obtained.

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Learning points

- Forced normalisation is a phenomenon where there is worsening of the patient's behavioural disorder when a better seizure control has been obtained. Complications of anti-epileptic treatment worsening the behavioural disorder are proposed mechanisms.
- Patients with temporal lobe epilepsy have been known to have high rates of psychiatric disorders.
- Studies have demonstrated a transient increase in psychiatric symptoms after surgery, and many patients had new onset of psychiatric disorders in the first few weeks after surgery.
- Patients need to be followed actively for both existing psychiatric disorders and for new-onset symptoms in the period following neurosurgery for seizure control.

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