Evaluating and Reducing Risk of Electroconvulsive Therapy in the Presence of Obstructive Hydrocephalus: A Case Report

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INTRODUCTION

Per the American Psychiatric Association, there are no absolute contraindications to electroconvulsive therapy (ECT). Elevated intracranial pressure (ICP) is considered a relative contraindication (Weiner et al., 2001).

We present a case of a patient suffering from catatonia with comorbid obstructive hydrocephalus. We explore the risks of ECT in the context of obstructive hydrocephalus and propose a novel neurosurgical strategy to reduce the risk of elevated ICP.

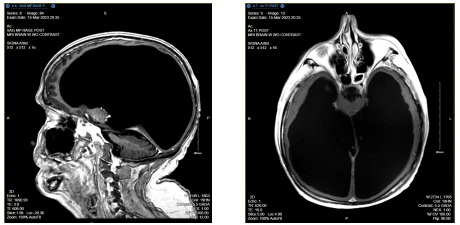

Figure 1. MRI brain demonstrating severity of patient's hydrocephalus.

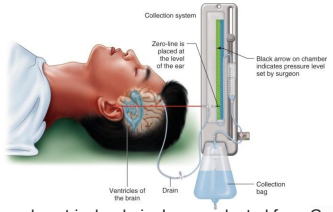

Figure 2. External ventricular drain. Image adapted from Ganti, L. (2022).

CASE

A 65-year-old male with intellectual disability, major depressive disorder, panhypopituitarism, and severe congenital hydrocephalus secondary to aqueductal stenosis was admitted to a tertiary center for catatonia (Bush Francis Catatonia Rating Scale = 18). There was minimal improvement with the addition of IV lorazepam and alternative treatments such as memantine, topiramate, and levetiracetam.

The option of ECT was explored with multiple consulting teams, including psychiatry, medicine, neurology, neurosurgery, and ophthalmology. The patient's MRI brain (Figure 1) and ophthalmologic exam indicated chronically elevated ICP. Lumbar puncture and ventriculoperitoneal shunt, aimed at relieving intracranial pressure (ICP), were considered too risky due to the risk of brain herniation and iatrogenic subdural hemorrhage.

A plan was proposed to place an external ventricular drain (EVD) to monitor ICP during ECT (Figure 2). If ICP did not increase during the first ECT session, the EVD would be removed, and ECT could be continued safely without further monitoring. If ICP were to increase during ECT, the EVD would remain in place for the entire duration of ECT to facilitate the drainage of cerebrospinal fluid and mitigate the risk of neurologic complications.

A family meeting was held to propose the above ECT plan. The patient's surrogate decision maker ultimately decided against pursuing ECT. The patient was treated with venlafaxine for a presumed major depressive episode preceding the development of catatonia. Methylphenidate was added for off-label treatment of catatonia with little improvement (Prowler et al., 2010). The patient was ultimately discharged to a long-term care facility.

DISCUSSION

Here, we explored the use of ECT in a patient with obstructive hydrocephalus. ECT has successfully and safely been performed in patients with normal pressure hydrocephalus (Hermida et al., 2014). However, its use in patients with obstructive hydrocephalus without a drain or shunt has been limited due to the heightened risk associated with elevated ICP.

ECT has conventionally been thought to elevate ICP, although a study using transcranial Doppler pulsatility index as a marker found no evidence of ICP elevation during ECT (Derikx et al. 2012). Nevertheless, strategies to closely monitor and relieve ICP are likely necessary to prevent neurologic complications. ECT has previously been administered in the setting of a brain tumor and elevated ICP, utilizing dexamethasone to decrease brain edema and reduce ICP (Patkar et al., 2000).

We propose a strategy of using an EVD to monitor and relieve ICP during ECT for patients with obstructive hydrocephalus. Of note, this patient's surrogate declined ECT with EVD monitoring after carefully weighing the options and predicting what the patient would have wanted. Further research is needed to explore safety and risk-mitigating strategies for ECT in this setting.

CONCLUSIONS

With risk mitigating strategies and a multidisciplinary approach, ECT may be considered a treatment option in the presence of obstructive hydrocephalus and elevated ICP.

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