

Clinical Case Reports

Electroconvulsive therapy in a patient with glaucoma

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ABSTRACT

There is little information on the use of electroconvulsive therapy (ECT) in the presence of glaucoma. An elderly man with known severe depression underwent surgery for cataract and glaucoma in the left eye. His depression worsened in the postoperative period and he required two sessions of ECT within 2 months of the surgery. There were no ophthalmic complications or adverse events associated with ECT and he responded well to treatment.

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INTRODUCTION

There is little information on the safety of electroconvulsive therapy (ECT) following any ophthalmic surgical procedure.¹ Modern modified ECT requires the use of muscle relaxant succinylcholine, which is known to cause a transient rise in the intraocular pressure (IOP) by 4–7 mmHg.² There is a theoretical possibility of such a rise causing expulsion of the vitreous in people with glaucoma, penetrating injuries of the eye or even in those who have undergone recent surgical procedures on the eye.³ There are few reports of ECT being given to patients with controlled IOP, either medically or surgically, with some reports suggesting better control of fluctuation in IOP in patients who have had a surgical intervention for glaucoma.⁴ Most studies on IOP during ECT have reported a transient rise which, however, is clinically manageable and within permissible physiological limits without any adverse ophthalmic events being reported post-ECT.^{5,6} We managed an elderly man who was known to have depression; he underwent surgery for cataract and glaucoma, and had recurrence of severe depression and required two sessions of ECT within 2 months of the surgical procedure.

THE CASE

A 64-year-old man, who had a major depressive disorder for 33 years, presented to our outpatient. He had had three episodes of exacerbation of his depression in the past. These were treated most effectively with a course of 8–10 ECTs each time due to the presence of suicidal tendencies.

The patient was diagnosed to have bilateral primary angle

closure glaucoma with immature cataracts since 6 years. He was on a combination of medicines for his glaucoma. When medications failed to maintain the IOP and a persistent rise in the range of 28–32 mmHg was documented, a surgical procedure was planned. He also had bilateral mature cataracts that required surgical treatment.

He had previously undergone two sessions of ECT when his IOP was maintained medically with no special anaesthetic considerations. Two months before presentation, the patient was considered for a combined surgical procedure in both eyes in the form of trabeculectomy and peripheral button-hole iridectomy with small incision cataract extraction. While the left eye was considered for implantation of an IOL, the right eye was left aphakic in the absence of any useful vision. The procedure was done without any complications and postoperatively there was good vision in the left eye.

He had an exacerbation of his depression within a month of the procedure due to poor compliance with his medications. He again started voicing suicidal tendencies and death wishes, and hence ECT was considered for his management. The relatives and the patient did not mention anything about his recent ophthalmic surgical procedure. An ophthalmology opinion was sought to rule out papilloedema. At the time of this evaluation too no information was provided regarding the previous ophthalmic intervention. The patient was considered fit to receive ECT and received five sittings of ECT over 3 weeks, and showed considerable behavioural improvement with no adverse events.

A month later, he again had an exacerbation of symptoms. This time again, ECT was planned. At this visit the patient's relative informed us of the previous ophthalmic intervention. Hence, opinions were obtained from the ophthalmology and anaesthesia departments. Anaesthetic modification by using d-tubocurarine or gallamine in sub-paralytic doses along with succinylcholine to prevent a rise in IOP, as described in the literature, was not considered due to his age (concern of cardiac safety after 60 years of age). Vecuronium, atracurium and rocuronium were acceptable and available alternatives. All these are intermediate-acting drugs needing intubation as their muscle relaxant action extends over a period of 30–45 minutes; however, in older people, as this patient, the action may last longer. The need for intubation when using these drugs increases the chances of a rise in IOP due to sympathetic activation during the procedure. After detailed counselling, the option of not using a muscle relaxant but a diazepam-modified ECT was not acceptable to the relatives of the patient. We decided to infuse 200 mg of mannitol about 45–60 minutes prior to the procedure to lower the baseline IOP so as to avoid any clinically dangerous rise in IOP. The patient was also continued on increased topical medications to control IOP. It was decided to use succinylcholine in as low a dose as possible.

With the above preparation, the patient was given ECT with IOP monitoring in the first two sessions; first before infusing mannitol, and the second time 5 minutes before the procedure, the third just after the convulsions were over and the fourth time 5 minutes after the procedure. The rest of the procedure, range of stimulation and seizure outcome was similar to the earlier description. With the IOP remaining within normal limits in the first two sittings with only a momentary rise to about 30 mmHg (Table I), a further eight sittings were done with similar precautionary measures.

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TABLE I. Changes in intraocular pressure (IOP) in the first two sittings of electroconvulsive therapy (ECT)

Time of measuring IOP (Shiotz tonometer with 10 g weight)	Sitting 1 (mmHg)		Sitting 2 (mmHg)	
	Right eye	Left eye	Right eye	Left eye
Before infusing mannitol	16.5	16.5	16.0	16.5
5 minutes before the actual ECT	15.5	16.0	15.5	15.5
Just after convulsions were over	30.0	31.5	30.5	31.0
5 minutes post-completion of ECT	17.0	17.5	16.5	17.0

At the end of 10 sessions no ophthalmic adverse effects were observed on detailed ophthalmic examination. No ECT-related side-effects were noted in the patient. The patient showed clinical improvement and he was maintained post-ECT on antidepressant therapy.

DISCUSSION

Anecdotal case reports are available of the use of ECT in patients with glaucoma who have undergone surgery such as bilateral iridectomy, cataract surgery and glaucoma tube implants.⁷⁻⁹ The American Psychiatric Association (APA) guidelines recommend consultation liaison with an ophthalmologist, prophylactic use of medication to keep the IOP low, avoiding anticholinesterases as these prolong succinylcholine-induced apnoea, reducing movements of the head to the minimum during ECT and reducing the hypertensive surge.¹⁰

As far as ECT and ophthalmology evaluation is concerned, the standard procedure at our institution is to refer the patient for fundoscopy to rule out papilloedema. We do not send the patient for an ophthalmological opinion unless there is an underlying disorder. However, this patient highlights the need for a routine glaucoma and IOP assessment in patients being taken up for ECT.

An IOP >21 mmHg is referred to as high¹¹ and transient sharp increases in IOP have been noted post-convulsions in patients receiving ECT.¹² A high IOP may interfere with healing in the postoperative period and may also cause vitreous expulsion. However, a transient sharp rise for 1–2 minutes post-convulsions has been noted and is safe provided the IOP comes down soon.

Our experience adds to the existing literature on the safety of ECT in patients with glaucoma and also posits for the safety of ECT in the immediate postoperative period, if needed, for such patients. This case may help clinical decision-making for psychiatrists and ophthalmologists when confronted with a similar situation in routine clinical practice.

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