

**Successful electroconvulsive therapy in a patient with confirmed,
symptomatic covid-19.**

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Conflict of Interest:

The authors (RB, HLM, VJL and OC) have no conflicts of interest to declare.

ACCEPTED

Dear Sir,

The covid-19 pandemic caused by SARS-CoV-2 has resulted in reduction in electroconvulsive therapy (ECT) services internationally, partly due to the potential for virus transmission between patients and staff.⁽¹⁾ Given its use of bag-mask ventilation, standard ECT is an aerosol-generating procedure,⁽²⁾ such that infected patients may pose risks to professionals even with use of full personal protective equipment (PPE) and environmental precautions such as airflow control and surface decontamination.⁽¹⁾ Published guidance specifically mandates against the use of ECT in proven covid-19 patients yet, recognizing that any patient might be a SARS-CoV-2 carrier, it also recommends full PPE for all ECT, with adaptations to anesthetic technique to minimize or avoid bag-mask ventilation.^(2,3)

CASE REPORT

We present a 67-year-old bachelor admitted under internal medicine with lithium toxicity and nephrogenic diabetes insipidus, resulting in hypernatremia and delirium. These conditions were successfully treated, with marked improvement in cognition yet, remaining bedbound, his oral intake worsened and he exhibited persecutory ideation.

At psychiatric assessment, he was a poor historian, but stated he had felt terrible for some time. His sister gave a gradual-onset, six-week history of social withdrawal with deteriorating motivation, self-confidence, verbal interaction, appetite and fluid intake. He had expressed a desire to die. A heavy smoker, he had mild chronic obstructive pulmonary disease and a history of severe depressive episodes twelve and sixteen

years earlier. Regular prescription comprised lithium carbonate, risperidone and venlafaxine. Out of work for many years, he had walked his dog daily and been fully self-caring until recent weeks.

On examination, he displayed severe psychomotor retardation, fixed eye contact, poverty of speech with extremely low volume, rate and tone, blunted affect, persecutory delusions and a lack of insight into his condition. He was well oriented but exhibited poor attention and recall. Body mass index was 16 kg/m² and brain computed tomography showed no significant abnormalities. Severe major depressive episode with catatonic features was diagnosed, venlafaxine changed to doxepin and emergency legal authorization for ECT gained.

He then developed pyrexia, cough and dyspnea, with a respiratory rate of 30 breaths per minute and transcutaneous oxygen saturations 90% on air. Chest radiography revealed hazy right lower-zone consolidation and a nasopharyngeal swab tested positive for SARS-CoV-2. Continuous oxygen was administered and intravenous antibiotics initiated. After four days, following improvement in respiratory rate, but whilst still exhibiting a cough, raised inflammatory markers and a requirement for oxygen therapy, ECT was commenced, in view of his deteriorating mental state: he was by now almost completely mute, intermittently agitated, taking nothing by mouth and repeatedly removing nasogastric feeding tubes. He had the appearance of someone about to die.

Six twice-weekly treatments were given, using the Thymatron System IV (Somatics, Illinois, USA), brief pulse stimulus and bitemporal electrode placement, according to a stimulus dosing protocol. Seizures of adequate quality and duration were achieved at each session. Treatments were in a positive-pressure emergency operating theatre with all four professionals (anesthesiologist, anesthesiology assistant, psychiatrist and psychiatric nurse) wearing an N99 respirator, cap, visor, fluid-resistant gown, plastic apron, shoe covers and three pairs of gloves. The theatre and all equipment were thoroughly disinfected before the next surgical case.

Anesthetic technique varied, according to the clinical picture and preference of individual anesthesiologists. On all occasions, anesthesia was induced with propofol (1 – 2 mg/kg) and muscle relaxation achieved with suxamethonium (0.5 – 1 mg/kg). Glycopyrrolate (0.1 – 0.4 mg) was given prior to three treatments to inhibit respiratory secretions.

During four of the six treatments, the electrical stimulus followed induction and muscle relaxation, with bag-mask ventilation avoided by use of oxygen via a mask alone. For the third and fifth treatments, induction and muscle relaxation was followed by intubation using videolaryngoscopy, in accordance with guidance on intubation of covid-19 patients.⁽²⁾ Anesthesia was then maintained for 20 minutes with inhaled sevoflurane and mechanical ventilation, allowing aerosols generated during intubation to be eliminated. Only after this period did the psychiatrist and psychiatric nurse enter, following which more suxamethonium was given and ECT delivered, the psychiatrist leaving prior to extubation.

Following the second ECT, the patient began talking, eating and drinking, obviating the need for further attempts at nasogastric feeding. After the third treatment, agitation subsided, he began to mobilize and intravenous fluids were stopped. After the sixth, all catatonic and practically all depressive symptoms had gone.

DISCUSSION

This is the first report of a SARS-CoV-2 positive patient commencing ECT; indeed our patient had active symptoms and radiological evidence of pneumonitis. A published Flemish protocol proposes covid-19 cases be placed at the end of the ECT list,(4) but so far none have had ECT (personal communication, May 3, 2020). Clinicians routinely using full PPE and other precautions in Singapore(1) do not intend to treat patients confirmed positive for covid-19 (personal communication, April 22, 2020).

Guidance that promotes denial of ECT to all patients with covid-19(2,3) fails to take into account individual patient circumstances. Like many urgent surgical procedures, ECT is a potentially lifesaving intervention, for which the acceptable threshold for anesthetic fitness is lowered in the context of poor prognosis if treatment is withheld. Given that guidance exists for the safe management of SARS-CoV-2 positive patients who require emergency surgery for life-threatening physical conditions,(5) we consider it unscientific and illogical to specifically deny this entire patient group ECT when life is endangered by psychiatric disorder.

In our case, the patient was considered likely to die unless his mental disorder was rapidly treated. Bag-mask ventilation was successfully avoided, but it is difficult to predict the need for urgent airway management in a paralyzed patient so, in the interests of staff safety, we recommend intubation and maintenance of anesthesia using volatile agents prior to delivery of the electrical stimulus.

In summary, ECT can be safely administered in patients with active covid-19, using appropriate PPE, environmental precautions and adaptation of anesthetic technique. It need not be systematically denied to this patient group by indiscriminate protocols. Rather, decisions on treatment should be made after weighing the risks and benefits of ECT and its alternatives on an individual patient basis.

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