

## LETTERS TO EDITOR

### CARDIOVASCULAR EFFECTS OF ECT

Sir,

Effects of ECT on the pulse rate, blood pressure (BP), and electrocardiogram (ECG) were studied in fifty six consecutive physically healthy psychiatric inpatients undergoing ECT for their psychiatric disability. The patients were included in the study with their consent. Patients with systemic or neurological illnesses, substance dependence, concurrent anticonvulsant drugs or ECT in the past six months were excluded. All patients underwent a thorough physical examination and routine hematological and biochemical investigations. VDRL, ECG, skull radiograph and fundus copy. Pre-anaesthetic check up was carried out by the anesthesiologist.

All patients were given ECT in overnight fasting condition, modified with inj. atropine 1.2 mg IV, inj. thiopentone 5 mg/kg body weight IV and inj. succinylcholine 0.75 mg/kg body weight IV. Vigorous mask ventilation with oxygen was begun during induction of anesthesia and continued until the patient could resume effective ventilation. The ECT device was an electronic sinewave model manufactured by Associate Electronic Engineers, Bangalore. ECT was administered using standard bitemporal electrode placement. The initial stimulus was 110 V for 0.6 seconds. During each ECT voltage and duration parameters were noted. Seizure duration was measured by the cuff method. Occurrence of seizure i.e. presence of convulsions in the cuffed arm for at least 30 seconds was required for an adequate seizure. Pulse rate, BP and ECG was

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recorded before ECT, immediately after the cessation of convulsions and 30 minutes after ECT. Standard 12 lead ECG with rhythm strips was recorded on each occasion. ECGs were analyzed by a physician who was blind to patient details including the time of recording.

The mean age of the patients undergoing ECT was 27.4 years (range 17-47 years). Maximum number of patients (n=29, 51.8%) were in the age group of 21-30 years, 21.4% were in the age group of 31-40 years, while 10.7% and 16.1% were in the age group of 41-50 years and 17-20 years respectively. The psychiatric diagnosis of the patients undergoing ECT was Schizophrenia (n=33, 58.9%), Other non-organic psychotic disorder (n=5), Manic episode (n=1), depressive episode (n=12) and recurrent depressive disorder (n=5). The psychotropic medications of the patients (only antipsychotics=35; only antidepressants=16, antipsychotics and antidepressants=5) were continued during the course of ECT but in reduced dosages.

Before the application of ECT all patients were normotensive. ECG abnormalities recorded were sinus tachycardia (n=4), ventricular premature beats (n=1), minor ST-T wave changes (n=3) and prolonged QTc (n=21). Immediately after ECT tachycardia (n=49, range 104-148/minute) and elevated blood pressure (n=56, rise of systolic BP ranging from 20-80 mm of Hg and diastolic BP ranging from 0-50 mm of Hg) occurred frequently. Sinus arrhythmias (n=6), atrial premature beats (n=7), ventricular premature beats (n=2), minor ST-T wave changes (n=6), increased amplitude of P wave (n=4) and QTc prolongation (n=39) were also observed. Apart from tachycardia in 15 patients and QTc prolongation in 13 patients, the ECG of all patients had reverted to pre ECT status within thirty minutes. ECT was not discontinued in any patient due to the occurrence of transient arrhythmias. There was no relationship between the type of drug therapy and the occurrence of arrhythmias ( $X^2=3.40$ , d.f.=2,  $p>0.10$ ). Serial ECGs and serial determination of SGOT did not show any evidence

of myocardial injury after ECT.

The findings of the present study are broadly in agreement with earlier studies (Abrams, 1997; Choudhary et al., 2000; Jain et al., 1976; Shah et al., 1977; Zielensky et al., 1993). However the high incidence of prolonged QTc which persisted for more than 30 minutes was not reported earlier and requires further study.

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