Sir/Madam,

Electroconvulsive therapy (ECT) is an important nonpharmacological intervention effective as treatment for patients suffering from certain severe neuropsychiatric disorders. Various cardiological side effects such as conduction abnormalities, especially asystole have been reported during or after ECT.\[1\] Ventricular tachycardia arising as a side effect of ECT has been seldom reported in the literature. Here we report such a case after obtaining consent from the relative.

A 28-year-old male with no known medical co-morbidity presented with psychosis on treatment with risperidone 6 mg and clonazepam (0.5 mg) with minimal response leading to him being posted for ECT. Complete hemogram, liver function tests, renal function tests, serum sodium, and serum potassium was obtained. Direct ophthalmoscopy ruled out any evidence of papilledema. The first two sittings for ECT were uneventful. The ECT of interest was the third sitting. The patient was premedicated with intravenous Glycopyrrolate 0.2 mg. The patient was preoxygenated by Bain’s circuit for 5 min after attaching the basic monitors such as pulse oximeter, electrocardiograph (ECG), and noninvasive blood pressure followed by induction with intravenous thiopentone 200 mg and succinylcholine 75 mg (after inflating blood pressure cuff in the other limb). Mouth gag was applied and shock was delivered after 60 s. Immediately after shock we noticed ECG pattern resembling ventricular tachycardia (VT) [Figure 1]. Immediate attention was given to the position of chest leads considering it to be due to motion artifact during convulsion. But the ECG pattern remained similar even after 20 s of motor seizure induced by ECT The ECG electrodes were rechecked revealing proper attachments of leads. Anesthetic face mask was replaced and ventilation was restarted. As the VT persisted for more than 60 s we started chest compression. Help was sought and defibrillator was arranged. Chest compression with breathing through mask and Bain’s circuit was continued in 30:2 ratio for 2 min. DC shock with 200J (biphasic) energy was applied and chest compression was restarted and continued for 2 min.

The ECG of the patient still showed persisting VT after 2 min. Immediate arterial blood gas analysis showed hypokalemia (serum potassium-2.3 Meq/L). The patient was treated with IV diluted magnesium sulfate bolus followed by saline flush empirically followed by start of potassium correction. DC shock (200 J) after magnesium therapy was delivered with minimum interruption of chest compression. The ECG after 2 min revealed reversion to sinus rhythm with well palpable pulse in peripheral arteries. The patient meanwhile also started moaning and groaning. Mask ventilation was continued for few minutes. The patient became conscious and was shifted to monitored area and was administered oxygen through venturi mask.

The positive symptoms in psychosis (delusion, hallucinations) often contribute to the patient maintaining poor nutritional status which is associated with electrolytes imbalance. In our case investigations had suggested evidences of hypokalemia. The response to intravenous magnesium also points to probable hypomagnesemia. Both these conditions are often associated. Both pharmacokinetic and pharmacodynamic interaction has been seen between the psychotropics and serum magnesium level. Some authors have shown decrease in the erythrocyte magnesium in patients with psychosis on treatment with risperidone for 21 days.\[2\] Similar results were
also found in patients on other antipsychotics like haloperidol or antidepressants such as sertraline and amitryptiline. Various studies have also shown the high prevalence of hypokalemia in psychiatric inpatient settings. Some studies have even shown the prevalence of hypokalemia in psychiatric inpatients to be comparable to medical inpatient settings. The mechanism that was implicated was the antipsychotic usage and the presence of agitation in psychiatric patients. It was postulated that antipsychotics were found to block the potassium efflux channel and prohibit intracellular potassium from shifting into the extracellular compartment leading to hypokalemia, a phenomena that is rarely seen with clinical use of the drugs without any overdose. Agitation can stimulate an adrenergic surge, causing influx of serum potassium into cells, via the overstimulation of beta adrenergic receptors, leading to hypokalemia. Studies have also recognized decreased dietary intake of potassium to be a relatively infrequent cause of hypokalemia significant only when the daily potassium intake is less than one gram (25 mmol) which usually is associated with other features of malnutrition like decreased skin fold thickness, BMI, and serum albumin levels.

In our patient the exact mechanism behind the electrolyte abnormality cannot be concluded, but all of the above-mentioned mechanisms could have been contributory. The subsequent sittings of ECT were preceded by evaluating serum electrolytes of the patient, a practice that should be routine in all the cases.

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Impact Factor: The Holy Grail of Research

Sir,

Evaluating the quality of scientific research is a tricky question, which probably does not have a single solution. Impact factor was conceptualized by Garfield as a step toward the same though he himself acknowledged that the impact factor by itself might not be the panacea for evaluation of scientific research. A recent consensus statement, Declaration on Research Assessment, 2012 proposes to reduce the over-reliance on impact factor to judge a scientific contribution and also evaluation of the scientist himself. The multiple limitations of impact factor as a bibliometric index include uneven contribution of individual articles to a journal's impact factor, technical bias including selective journal self-citation, not correcting for self-citation rates, inclusion of the specific type of articles and use of a short period like 2 years for computation of the index while a longer period might provide a better picture, limitation of the database used, preference for publications in English language, nature of specialty in which the research is conducted (younger sciences vs. established sciences, broader vs. narrower specialty, basic science vs. clinical science, etc.) and over-reliance on citation rate, which is an imperfect indicator by itself (for example, review articles would typically be more cited than original research articles and longer articles tend to be cited more commonly than shorter articles). Greater dependence on impact factor has resulted in