Paralysis caused by hyperkalaemia

Sir,—We read with great interest the article by Freeman and Fale [1] on muscular paralysis and ventilatory failure caused by hyperkalaemia. What struck us most was their patient’s “dramatic response to calcium gluconate, an insulin and glucose infusion and sodium bicarbonate”. We suspect that hypocalcaemia is an additional factor which, together with hyperkalaemia, was the cause of their patient’s muscular weakness.

The muscular fasciculations observed in the patient are a sign of hypocalcaemia [2] and not hyperkalaemia. Hypocalcaemia had not been excluded by the initial laboratory investigations, although serum calcium concentration was normal when the patient was discharged.

Calcium gluconate and sodium bicarbonate are effective for treating the cardiac effects of hyperkalaemia but not for antagonizing muscular paralysis. However, calcium gluconate would have improved muscle weakness caused by unsuspected hypocalcaemia. The onset of action of glucose–insulin takes 30 min and it could not have significantly reduced serum potassium concentration from 10.2 mmol litre\(^{-1}\) within 20 min [3, 4].

Excitability of the cell is determined by the level of threshold potential, which is primarily governed by calcium concentration. It is for this reason that concomitant hypocalcaemia worsens the symptoms of hyperkalaemia [2].

S. CHAUHAN
P. TEWARI
Sanjay Gandhi Post Graduate Institute of Medical Sciences
Lucknow, India


Recovery from vecuronium after different anaesthetics

Sir,—We were interested in the study by Saitoh, Toyooka and Amahia [1] on the recovery of train-of-four (TOF) response after administration of vecuronium during various inhalation anaesthesia. They measured the time from injection of vecuronium to the first appearances of T1, T2, T3 and T4 of TOF stimulation during 1 MAC of halothane (0.76%), isoflurane (1.15%), enflurane (1.68%) and sevoflurane (1.71%) anaesthesia in humans. Fastest recovery was observed with halothane, then isoflurane, then enflurane and the slowest with sevoflurane.

Nilsson and colleagues [2, 3] showed that T1 and TR in myasthenic patients are more depressed by isoflurane than halothane at the same MAC. However, if we compare our sevoflurane data [4] with Nilsson’s studies and if the comparison

![Fig. 1](https://via.placeholder.com/150)

**Fig. 1.** First appearance time of T1 (■), T2 (●), T3 (▲) and T4 (◆) after vecuronium during anaesthesia with halothane (H), enflurane (E), isoflurane (I) and sevoflurane (S).