

## LETTER TO THE EDITOR

Sir:

Having read the recent article, "Prevention of Succinylcholine-Induced Hyperkalaemia by Magnesium Sulfate," by Drs. Aldrete, Zahler and Aikawa (*Canad. Anaesth. Soc. J.* 17: 477, 1970), we offer the following comments to help dispel misconceptions considered inevitable from it.

In Tables I-V the authors provide data for serum levels of calcium, magnesium and potassium. Values are stated to represent milli-equivalents per liter. The data were obtained on an atomic absorption spectrophotometer and therefore represent total contents of these elements in serum. In Tables I-V the mean control levels of calcium are listed as 9.22, 9.06, 9.04, 8.61, and 9.58 respectively. Interpretation of these figures as milli-equivalents per liter of serum leads to the conclusion that the patients were grossly hypercalcemic. We presume that the indicated levels for calcium should represent milligrams per 100 ml. instead of milli-equivalents per liter. Data for magnesium and potassium are consistent with normal levels in terms of milli-equivalents.

In textual references to the tabular data, the chemical symbols for the ionized forms of the metals, i.e.,  $Mg^{++}$ ,  $K^+$  and  $Ca^{++}$  are employed. Such usage is confusing since the ionized fractions of these elements are less than the total concentrations determined by atomic absorption spectroscopy. The error inherent in the use of symbols for ionized fractions of elements when total concentrations are meant would have had less serious implications prior to the recent advent of ion-specific electrodes. In the case of calcium, determinations of both ionized and total values are now clinically practical. Application of strict interpretation of ionized calcium symbolization in the text to Table III would mean that following the sodium thiopental and succinylcholine inductions, ionized calcium decreased from 9.04 to 8.26 milli-equivalents per liter. Aside from the error in representing concentrations, the authors did not determine levels of ionized calcium in serum. In study reported earlier this year by Drs. Eryasa, Chang and Pittinger (*Fed. Proc.*, 29: 548, 1970) ionized calcium was found to increase slightly but definitely following sodium thiopental-succinylcholine inductions. We did not study changes in total calcium concentrations in serum following inductions. I trust our comments may help to resolve some confusion.

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