

“This study aimed to determine the effect of a parenteral magnesium shortage, and an institutional decision to omit magnesium from adult PN, on magnesium and potassium doses and serum concentrations”

Reference:

Scherkenbach, L.A., Kraft, M.D., Stout, S.M., Dorsch, M.P., Chen, X., Tran, H-D. and Pleva, M.R. (2015) Impact of an Intravenous Magnesium Shortage on Potassium Doses in Adult Surgical Patients Receiving Parenteral Nutrition. Journal of Parenteral & Enteral Nutrition. February 5th .

Abstract:

Background: Shortages of parenteral nutrition (PN) components have been common in recent years. Effects on patient management and outcomes have not been well documented. This study aimed to determine the effect of a parenteral magnesium shortage, and an institutional decision to omit magnesium from adult PN, on magnesium and potassium doses and serum concentrations.

Materials and Methods: This was a retrospective cohort study of adult surgical patients during two 6-month periods: prior to the magnesium shortage (2011) and during the shortage (2012). The relation between study period and electrolyte doses was evaluated by unadjusted and adjusted mixed models, while the relation between study period and hypokalemia and hypomagnesemia exposure was evaluated by Student's t tests and multiple linear regression.

Results: During the shortage, patients received more supplemental magnesium (0.11-0.12 mEq/kg/d, $P < .0001$) but received less total daily magnesium (0.08-0.09 mEq/kg/d, $P < .0001$) and had greater exposure to hypomagnesemia (9.6-14.2 h·mcg/dL/h, $P < .05$ for all comparisons except multivariate analysis in a matched subpopulation). Patients received similar amounts of potassium in PN (0.06-0.08 mEq/kg/d less, $P < .05$ for full cohort but $P > .05$ for matched cohort), in supplemental doses (0.01-0.05 mEq/kg/d less, $P > .05$), and in total (0.07-0.14 mEq/kg/d less, $P > .05$), and they had similar exposure to hypokalemia.

Conclusion: Daily magnesium doses were lower and hypomagnesemia exposure was greater during the shortage, but the differences were numerically small and their clinical significance was questionable. Potassium doses and hypokalemia exposure were not higher during the shortage. This supports the strategy of omitting magnesium from PN of select



patients and supplementing as clinically necessary.

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