

PROBLEMS INVOLVED IN THE ADMINISTRATION OF TRACE ELEMENT AND VITAMIN SUPPLEMENTS TO HOSPITAL PATIENTS RECEIVING TOTAL PARENTERAL NUTRITION.

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In long term parenteral nutrition studies the gradual development of trace element and vitamin deficiencies have been well documented. Our own studies have elucidated the probable importance of the vitamin B<sub>6</sub> status of severely ill patients when given xylitol during parenteral nutrition (Hannett et al. 1977). It is apparent therefore, that more attention must be given to providing adequate trace substances during prolonged periods of parenteral nutrition.

Intravenous administration of trace nutrients is complicated not only by special pharmacological and technical conditions but also by a lack of knowledge on the true requirements of these substances. Empirical formulations of the intravenous requirements of these substances have been devised by Wretlind (1972), and Shils (1972) and Hull (1974) have described the use of trace element solutions which are compatible with his proposals. During our clinical investigations of the safety of Aminofusin-L-10% (a synthetic L-amino acid mixture) we paid particular attention to the concentrations of Na, K, Mg, phosphate, Zn, folate and vitamin B<sub>12</sub> in blood samples obtained from a series of 49 patients.

Our routine protocol for vitamin, macro and trace element supplementation of parenteral nutrition patients involves the administration of 2 ml of Intravite (B group vitamins), 200 mg ascorbic acid and 10 mg of vitamin K<sub>1</sub> on alternate days; 15 mg of folic acid and 100 µg of vitamin B<sub>12</sub> weekly; and K, Mg and Zn supplements daily according to the patient's serum biochemistry, and the types of solutions being infused. We observed that this regime provided on average 6.6 mmol Na, 5.8 mmol K, 1.0 mmol Mg, 0.8 mmol phosphate and 2.0 µmol Zn per gram of amino acid nitrogen infused. Persistent abnormalities in the patient's biochemistry were observed with the following prevalences, hyponatraemia 44%, hypochloraemia 33%, hyperkalaemia 8%, hypermagnesaemia 19%, low serum Zn 29%, elevated serum vitamin B<sub>12</sub> 19%, and low serum folate 29%.

Since completing the study we have devised an alternative scheme of supplementation which includes the daily addition of Cu, Zn, Cr, Mn and iodide to the parenteral amino acid solution and the use of a multi-vitamin preparation M.V.I. Concentrate (which contains fat soluble vitamins). Details of this scheme and its evaluation in patients receiving long term parenteral nutrition will be included in the presentation.

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