LETTERS TO THE EDITOR

CYANIDE ANTAGONIST

SIR:

With reference to the paper of Kaplan, Finlayson and Woodward (1980)¹ we would like to draw attention to an error that could prove fatal in extreme circumstances. These authors suggest that cyanocobalamin (CNB₁₂) is a cyanide antagonist. CNB₁₂ has *no* antidotal action since it will take up no further cyanide. If B₁₂ is to be used as a cyanide antagonist hydroxocobalamin (OHB₁₂) is the form that *must* be used. In addition we would add that because of its high molecular weight relatively large amounts of OHB₁₂ are required (in order to neutralise all of the cyanide from 100 mg of sodium nitroprusside (SNP) 2.4 g of OHB₁₂ would be needed, i.e. 2,400 1 mg ampoules). As a result of recent work (to be published), we favour the use of the more soluble and equally non-toxic sodium thiosulphate as an antidote to the cyanide arising from large amounts of S.N.P.

C.J. Vesey,
P.V. Cole,
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London EC1A 7BE.

REFERENCE

1. KAPLAN, J.A., FINLAYSON, D.C. & WOODWARD, S. Vasodilator therapy after cardiac surgery: a review of the efficacy and toxicity of nitroglycerin and nitro-prusside. *Canad. Anaesth. Soc. J.*, 27: 254–259 (1980).

DEAR SIR:

Below is my reply to the letter from Drs. Vesey and Cole of St. Bartholomew's Hospital in London. I would appreciate your publishing my reply in context with their letter.

In reply – We would like to thank Drs. Vesey and Cole for pointing out the typographical error in our article in which the word, cyanocobalamin, was transposed for hydroxocobalamin. We certainly agree that cyanocobalamin is not an antidote for cyanide toxicity. Hydroxocobalamin has been used as a specific antidote in man for the treatment of cyanide toxicity and to reduce elevated cyanide levels during administration of sodium nitroprusside.¹ Hydroxocobalamin has one cyanide radical less than cyanocobalamin, thereby allowing cyanide to combine and form cyanocobalamin, which is excreted unchanged in the urine.

We would refer Drs. Vesey and Cole to the article by Dr. Cottrell in regards to their comment about the dose of hydroxocobalamin necessary to neutralize the cyanide from sodium nitroprusside.¹ Cottrell demonstrated in a group of 14 patients who received a mean dose of nitroprusside of 44.09 mg, that less than 100 mg of hydroxocobalamin was adequate to significantly reduce both their red-cell cyanide and plasma cyanide levels. In the past, various treatments for cyanide toxicity have been used but all have had side effects that could be quite harmful. Methylene blue and the nitrites increased methemoglobin, which binds cyanide to form cyanomethemoglobin. Large amounts of methemoglobin decrease the amount of oxygen available for tissue. Nitrites may also produce cardiovascular instability. Thus, the ideal treatment for cyanide toxicity or prophylaxis of cyanide toxicity is still not available and hydroxocobalamin with its low toxicity may be one of the better alternatives available.

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REFERENCE

1. COTTRELL, J.E., CASTHELY, P., BRODIE, J.D., *et al.* Prevention of nitroprusside-induced toxicity with hydroxocobalamin. *N. Engl. J. Med.*, 298: 809, 1978.

IMPEDANCE CARIOGRAPHY: CORRECTION

TO THE EDITOR:

A clerical error which was not noticed during review of the proofs, has appeared in our paper entitled: "Considerations on impedance cardiography," (Casthely P., Ramanathan S., and Chalon J.: *Canad. Anaesth. Soc. J.* 27: 481–484, 1980). The third formula on page 482 should read:

$$\int = 56.8 \times e^{0.025H}$$

and not $\int = 56 \times 8e^{0.025H}$ as quoted in the paper. We would appreciate your publishing this correction to avoid confusing readers in the future.

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