Oral Presentation - 08

Reactivation of Plasma Butyrylcholinesterase by Pralidoxime Chloride in Patients Poisoned by WHO Class II Toxicity Organophosphorus Insecticides

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Abstract

Objectives: Some clinicians assess the efficacy of pralidoxime in organophosphorus (OP) poisoned patients by measuring reactivation of butyrylcholinesterase (BuChE). However, the degree of BuChE inhibition varies by OP insecticide and it is unclear how well oximes reactivate BuChE *in vivo*.

Methods: We aimed to assess the usefulness of BuChE activity to monitor pralidoxime treatment by studying its reactivation after pralidoxime administration to patients with laboratory-proven World Health Organization (WHO) Class II OP insecticide poisoning. Patient data were derived from two studies, a cohort study (using a bolus treatment of 1 g pralidoxime chloride) and a randomized controlled trial (RCT) (comparing 2 g pralidoxime over 20 min, followed by an infusion of 0.5 g/h, with placebo).

Results: Two grams of pralidoxime variably reactivated BuChE in patients poisoned by two diethyl-OP insecticides, chlorpyrifos and quinalphos; however, unlike AChE reactivation, this reactivation was not sustained. It did not reactivate BuChE inhibited by the dimethyl OPs dimethoate or fenthion. The 1 g dose produced no reactivation. Pralidoxime produced variable reactivation of BuChE in WHO Class II OP poisoned patients according to the pralidoxime dose administered, OP ingested, and individual patient.

Conclusions: The use of BuChE assays for monitoring the effect of pralidoxime treatment is unlikely to be clinically useful.