

A meta-analysis of clinical trials on the effectiveness of oximes in the management of human poisoning by organophosphate compounds.

Shekoufeh Nikfar¹, Roja Rahimi² and Mohammad Abdollahi²

¹*Drug Selecting Committee, Food and Drug Department, Ministry of Health & Medical Education, Tehran;* ²*Pharmaceutical Sciences Research Center, Tehran University of Medical Sciences, Iran*

Abstract: Organophosphates are one of the most common causes of poisoning especially in the third world with high morbidity and mortality. The treatment of this type of poisoning involves the use of atropine and oximes. Atropine has been used successfully in large doses to counteract the muscarinic effects of organophosphate poisoning but the efficacy of oximes in the management of this poisoning is still under question. In this study we undertook a meta-analysis with reviewing all clinical trials to evaluate the efficacy of oximes in the management of organophosphate poisoning. The databases of Pubmed, Embase, Cochrane, Scopus, and the search engine of Google were searched for all clinical trials on the use of oximes in organophosphate poisoning. The inclusion criteria were death, development of intermediate syndrome, and the need for ventilation. Six clinical trials met the inclusion criteria and were included in the meta-analysis. The chi-square tests for heterogeneity ($P=0.25$, 0.16 , and 0.33 respectively) indicated that the included studies were not significantly heterogeneous and could be combined. A significant relative risk ($P=0.0017$) for death among oxime exposure was 2.17 (95% CI $1.34-3.51$). The “need for ventilation” in patients who received oxime was higher ($P=0.03$) than those who not received oxime with a relative risk of 1.53 ($1.16-2.02$). The incidence of “intermediate syndrome” for oxime exposure patients was significantly ($P=0.01$) higher than oxime non-exposure patients with a relative risk of 1.57 (95% CI $1.11-2.11$). It can be concluded that oximes are not effective in the management of organophosphate-poisoned patients and surprisingly they can be dangerous and worsen patient's clinical situation.