111 Eddleston, M; Eyer, P; Worek, F; **Sheriff, MHR**; Buckley, NA

Predicting outcome using butyrylcholinesterase activity in organophosphorus pesticide self-poisoning; JArticle; Quarterly Journal of Medicine ; Vol: 101; 2008_.467-474pp

Abstract :Background: The usefulness of a low butyrylcholinesterase (BuChE) activity on admission for predicting severity in acute organophosphorus (OP) insecticide poisoning has long been debated. Previous studies have been confounded by the inclusion of multiple insecticides with differing inhibitory kinetics. Aim: We aimed to assess the usefulness of admission BuChE activity, together with plasma OP concentration, for predicting death with two specific organophosphorus insecticides. Design: A prospective cohort of self-poisoned patients. Methods: We prospectively studied 91 and 208 patients with proven dimethoate or chlorpyrifos self-poisoning treated using a standard protocol. Plasma butyrylcholinesterase activity and OP concentration were measured on admission and clinical outcomes recorded. Results: The usefulness of a plasma BuChE activity <600 mU/ml on admission varied markedly-while highly sensitive in chlorpyrifos poisoning (sensitivity 11/11 deaths; 100%, 95% CI 71.5-100), its specificity was only 17.7% (12.6-23.7). In contrast, while poorly sensitive for deaths in dimethoate poisoning [12/25 patients; 48%, (27.9-68.7)] it was reasonably specific [86.4% (75.7-93.6)]. A high OP concentration on admission was associated with worse outcome; however, a clear threshold concentration was only present for dimethoate poisoning. Conclusions: Plasma BuChE activity on admission can provide useful information; however, it must be interpreted carefully. It can only be used to predict death when the insecticide ingested is known and its sensitivity and specificity for that insecticide has been studied. Plasma concentration of some OP insecticides predicts outcome. The development of rapid bedside tests for OP detection may aid early assessment of severity.