

A Retrospective Study of Acute Organophosphorus Poisoning Using A Rapid Blood Concentration Measurement System

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Abstract : Objective : A retrospective evaluation of the clinical course of organophosphorus pesticide (OPP) poisoning cases was done in order to identify optimal treatment modalities by rapidly measuring the blood concentration of OPP. Design : This study was carried out at our emergency center during a 2-year and 11-month period from March 1994 to February 1997. Blood collection was obtained in 7 OPP poisoning cases. The ingested poisons in 6 cases were identified and determined to be OPP by gas chromatography with nitrogen-phosphorus detection (GC-NPD). Results: The present assay can be completed within about 1.5 hours (from solid phase extraction to GC-NPD), although the organophosphorus compound contains DDVP, GC-NPD and GC/MS failed to detect DDVP and disulfoton in our cases. In order to measure the blood concentration in cases of fenitrothion poisoning, DHP was proven to be effective. Consciousness disorders tend to appear when the blood concentration of fenitrothion reached about 0.3–0.4 µg/ml in our cases. No correlation between the plasma cholinesterase activity value and the blood concentration of fenitrothion could be identified from our findings. Conclusion : Using this measurement system the blood concentration of organophosphorus compound type agricultural chemicals in clinical elapse could be measured. This rapid blood concentration measurement system is needed to select the optimal therapy and curative effect by rapidly determining the blood concentration of OPP poisoning. Thus assay can thus be quickly applied to the diagnosis and the treatment of OPP poisoning in clinical situations.

Key words : Organophosphorus pesticide poisoning, Rapid screening, Solid-phase extraction, GC-NPD