A Modified Paracetamol Measurement Method and Measuring Plasma Paracetamol Concentrations in Patients With Drug Overdose

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Introduction: Paracetamol in an overdose is hepatotoxic particularly when concentration in serum exceeds 200 mg/l 4 h after ingestion. Only the concentration in plasma or serum can be used as a guide to treatment. The objective is to provide a paracetamol test which may allow early treatment with *N* -Acetylcysteine in patients where it is indicated, to test the ffectiveness of a new test that quantitatively detects paracetamol in blood and to examine the potential time saved by its use with the laboratory friendly method. **Method:** Preliminary validation studies (stability and lower-limit of detection) were performed using spiked samples with known concentrations of paracetamol and assayed. The results from the method for 114 stored samples were compared with those from an HPLC method. A prospective survey was performed of all patients attending the Peradeniya General Hospital, Sri Lanka over a seven month period who had plasma paracetamol concentrations measured. The new test was compared with laboratory analysis in a routine blood sample taken from patients presenting to ward with suspected overdose. **Results:** The standard curve was linear (r^2 >0.999) for paracetamol concentration between 50 - 450 mg/l. The final yellow colour was stable for at least 1 h at room temperature. The accuracy of the procedure was assessed by comparing the analysis of 114 serum samples known to contain paracetamol by the procedure and an HPLC procedure (r^2 =.9758). A total of 59 patients were identified who had plasma paracetamol concentrations measured, of which 46 were assessed for paracetamol concentration. 56 presented within 24 hours and 28 cases above the treatment line, 3 presented more than 24 hours after ingestion. No patient died as a result of paracetamol overdose. **Conclusions:** The proposed method is reliable accurate and specific and can be performed rapidly, easily and economically. Taking blood samples for plasma paracetamol estimation in patients who deny taking paracetamol is of little clinical value. For patients who are admitted to emergency unit with collapse and no information on poisoning paracetamol assays may be informative.