Immunochromatographic tests: false-positive results for methadone and phencyclidine after acute poisoning with tramadol and dextropropoxyphene

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Résumé en anglais	**Background:** Immunochromatographic drug tests are more and more involved in the initial biological survey of acute poisoning, even with “on site” use at the emergency unit. Specificity of the drug-antibody interaction is both an advantage (rapid, easy-to-perform tests, no apparatus) and a limitation (cross-reactivity, interferences). **Patient cases:** A 13-year-old girl was admitted at an emergency unit for somnolence and respiratory acidosis. A multi8 rapid drug test was positive for benzodiazepines, methadone (MTD) and phencyclidine (PCP). To avoid false diagnosis, fluorescence polarization immunoassay, liquid- and gas-chromatography were also performed on both plasma and urine. Rapid tests (different batches) from the same and other manufacturers were involved for this patient and other therapeutic, acute or forensic cases. **Results:** Bromazepam was identified in plasma (0.4 mg/L) and urine but also tramadol (respectively 0.5 and 25 mg/L), its metabolites and, in urine only, norpropoxyphene (NPPX). No methadone was detected. Among 7 other cases with tramadol detected in urine, 5 were positive with PCP test and 5 with MTD. Drug-added urines confirmed false-positive results for PCP with tramadol but for MTD with NPPX. While tramadol cross-reactivity is very low (0.05%), positive tests, even in a therapeutic context, were observed because phencyclidine cut-off is only 25µg/L. Tramadol can also positive MTD test at very high urine level. The NPPX cross-reactivity, initially 100%, was theoretically reduced to less than 0.025% after a modification of antibody by the manufacturer. Structurally-related formulas could explain such positive results but tests from other manufacturers were negative except in one case with tramadol. **Conclusion:** The analytical performances (sensitivity, specificity) of such rapid tests must be known by clinicians to avoid false-positive diagnosis. The “on site” use at the emergency unit must be considered as a preliminary test that should be confirmed by alternative methods in a laboratory area. Data exchange between biologists, clinicians and manufacturers is needed to improve the quality of results.
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