Poster

[P27-6] P27-6: Clinical toxicology (2)

Chair: David William Kinniburgh, Canada

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[P27-6-2] Performance of an on-site test for gamma-hydroxybutyric acid (GHB) in patients presented at the emergency department

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Background

Gamma-Hydroxybutyric acid (GHB) is a recreational drug of abuse (DoA) with central depressing effects. An on-site test for GHB in urine can be of great diagnostic value, since the result is known within minutes. A positive test confirms the diagnosis and prevents further diagnostics. The objective of this prospective study is to determine the performance of a new on-site GHB dipstick test in urine.

Methods

Patients presented at the emergency department (ED) of OLVG hospital in Amsterdam with a Glasgow Coma Scale 14 and a potential intoxication with DoA were included. Urine of these patients was tested for the presence of GHB using the DrugCheck® GHB Test from Express Diagnostics, with a cut-off value of 10mg/L GHB. Results were compared for agreement with results generated with a validated gas chromatography method (LLQ=5mg/L). Possible cross-reactivity with ethanol was investigated by analyzing ethanol concentrations in patient’ s urine and serum. False positive samples were also screened for possible interfering substances in serum, using LC-MS^n methods. Moreover, urine samples were also analyzed for GHB using the Syva EMIT II immunoassay (LLQ=8mg/L).

Results

From June 2016 to January 2017, 382 patients were included, resulting in 57 patients who tested positive for GHB using gas chromatography. The sensitivity and specificity of the on-site test were 67% and 89%, respectively. Serum and urine ethanol levels in the false positive group were significantly higher (median 2,3 and 2.7mg/mL, respectively) compared to the true negative group ($p<0.05$).

In GHB negative samples, high ethanol levels in most cases caused slightly elevated GHB levels on the on-site test (10-50mg/L). A cut-off value of 50mg/ml resulted in a sensitivity of 61% and a specificity of 97%. We observed no trend in other possible interfering substances among the false positives. Sensitivity and specificity, using Syva EMIT II immunoassay (cut-off value 10mg/ml), were 81% and 93%, respectively.

Conclusions

Given the amount of false negative results and the false positive results due to ethanol, we concluded that the DrugCheck® GHB Test is not a reliable diagnostic test in the ED setting. An immunoassay test in the laboratory is a better alternative.