

M. LOVRIĆ¹, P. GRANIĆ¹, M. ČUBRILLO-TUREK², Z. LALIĆ¹, J. SERTIĆ¹

¹ Clinical Institute of Laboratory Diagnosis, Zagreb University Hospital Center, Zagreb, Croatia

² Department of Internal Medicine, "Sveti Duh" General Hospital; Zagreb, Croatia

A 40-year-old man was admitted to the emergency department after a suicide attempt. The patient was found at home unconscious, with an open bottle of antifreeze near him. The main component of antifreeze is ethylene glycol that is not toxic but produces toxic metabolites that cause organ failure and death.

The patient was in coma on admission, but was neurologically intact. Results of initial urine and serum toxicological screening tests were negative. Laboratory values indicated metabolic acidosis (pH 7.123; pCO₂ 2.03 kPa) with leukocytosis (L 32.0 10⁹/l). Urinalysis revealed hematuria and amorphous crystals. Osmolality and osmol gap were not determined at patient admission. Treatment with ethanol as an antidote and hemodialysis were started because of metabolic acidosis, anamnestic data and clinical status of the patient, and subsequently led to improvement of his condition.

Further toxicologic analyses of glycolic and oxalic acids in serum and urine samples were performed by ion-chromatography HPLC method. Results of glycolic and oxalic acid tests in spot urine were 28171.2 and 370.5 mmol/mol creatinine, and 3.01 and 80.5 at admission and post-hemodialysis, respectively. The values of glycolic and oxalic acids in serum ultrafiltrate were 17661.0 and 353.5 μmol/l and 35.2 and 19.5 at admission and post-hemodialysis.

Intoxication by ethylene glycol causes severe metabolic acidosis which may lead to death if diagnosis is delayed and specific treatment is not initiated promptly. Laboratory tests for ethylene glycol poisoning include determination of blood gases with anion gap, elevated osmolality with osmol gap, calcium oxalate in urine, and serum ethylene glycol if possible. According to a NACB guideline, clinical laboratory should provide direct measurements of ethylene glycol in serum or plasma and the GC assay should target glycolic acid in addition to parent intoxicant, ethylene glycol.

KEYWORDS: *Poisoning, Ethylene glycol*

Corresponding author: lovricm@kbc-zagreb.hr