Lactic acidosis is a recognized complication of the inhalant abuse such as toluene, especially in patients with renal insufficiency. We report a case of severe metabolic acidosis and hyperlactemia due to toluene sniffing. The favorable outcome, despite extremely poor clinical symptoms, signs, laboratory and radiological findings, was unexpected. Specific aspects of the clinical course are addressed. Toluene sniffing should be considered in evaluating severe metabolic acidosis. Favorable outcome could be achieved with early diagnosis and proper interventions.

Key words: Lactic acidosis, toluene, hyperlactemia
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alkaline phosphatase 530 unit/L, GGT 402 unit/L, AST (SGOT) 68 unit/L, ALT (SGPT) 47 (unit/L), while his CK normalized. Patient was extubated on the ninth. His urine output and renal functions continuously improved and serum creatinine decreased to 163 mmol/l. He was discharged from the ICU on the tenth day and from the hospital after 15 days in a stable condition.

DISCUSSION

Hypoxia in patients who abuse inhalants may result from suffocation, particularly from the use of plastic bags, or asphyxia by displacement of oxygen in the alveoli, particularly with butane, isobutane, propane and nitrous oxide.\[5\] Chemical pneumonitis with surfactant dysfunction bronchospasm and noncardiogenic or hemorrhagic pulmonary edema may occur.\[5\] This patient developed acute respiratory distress syndrome consistent with the previously published reports.\[4\]\[6\] Volatile substance use may cause metabolic acidosis, urinary calculi and glomerulonephritis.\[3\]\[7\] Toluene, in particular, causes metabolic acidosis with profound potassium and phosphate wasting.\[8\]\[9\] Our patient had history of chronic exposure to toluene and renal insufficiency. A renal stone was evident in the abdominal CT scan. Patients who have an arterial lactate level of more than 5 mmol/L and a pH of less than 7.35 are critically ill and have a very poor prognosis. Multicenter trials have shown a mortality rate of 75% in these patients.\[9\] Few patients with lactic acidosis survive with a pH less than 6.8.

In our case, initial blood gases showed pH of 6.50 with a lactate level of 16 mmol/L and survived with intensive supportive care.

Toluene use (glue-sniffing) may cause muscle weakness that is associated with elevated CK, hypokalemia, hypophosphatemia and metabolic acidosis with a normal or elevated serum anion gap.\[10\] It can also result in temporary or progressive cerebellar dysfunction and cranial neuropathies,\[1,11\] and myocardial depression with decreased heart rate and stroke volume and possible myocardial infarction.\[12\] Our patient’s CK was abnormal and probably likely due to rhabdomyolysis. His ECG, cardiac enzymes (CK-MB, and troponin I) and echocardiography was not consistent with a cardiac ischemic event.

In conclusion, toluene sniffing is associated with major toxicities including ARDS, acute renal failure and metabolic acidosis with lactate accumulation. Toluene sniffing should be considered in evaluating severe metabolic acidosis. Favorable outcome could be achieved with early diagnosis and proper interventions.

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