Clinical Case Reports

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CASE REPORT

Multisystem toxicity after methamphetamine use

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Key Clinical Message

Methamphetamine (MA) may cause hepatotoxicity, rhabdomyolysis, acute kidney injury, and neurotoxicity separately or together. We report a patient admitted with muscle weakness, pain, and oliguria 1 week after MA use; requiring repeated hemodialysis (HD). Multisystem toxicity may develop as a result of MA use and appropriate treatment may be life saving.

Keywords

Acute kidney injury, hepatotoxicity, methamphetamine, neurotoxicity, rhabdomyolysis.

Introduction

Methamphetamine (MA) is used as a recreational drug for its properties which cause sense of energy and euphoria. Toxicity profile of MA is not always associated with overdose. The same amount of MA may not cause harm in some individuals, however, it also may be seriously toxic for some other individuals. MA may cause hepatotoxicity, rhabdomyolysis, cardiotoxicity, nephrotoxicity, and neurotoxicity separately or sometimes together as multisystem toxicity, mostly as a serious condition requiring hospitalization. Nephrotoxicity generally presents as acute kidney injury, hyponatremia, and hypertension [1–3].

Clinical Case

A 32-year-old male was admitted to our facility with muscle weakness, pain, and a 1 day history of oliguria. He had a history of MA abuse 3 years ago and used the same substance orally 1 week prior to admission. Medical history was otherwise unremarkable. Physical examination revealed acidotic breathing, paleness and bruises of the skin in the lumbar region. Electromyographic examination was consistent with lumbosacral radiculopathy. Laboratory findings on admission included creatinine kinase (CK) 15,000 U/L, lactate dehydrogenase (LDH) 1509 U/L, urea 284 mg/dL, creatinine 8.06 mg/dL, aspartate transaminase 456 U/L, alanine transaminase 753 U/L, and sodium 131 mmol/L, potassium 6.7 mEq/L. He was diagnosed with rhabdomyolysis and acute kidney injury, and intravenous hydration treatment with isotonic saline solution was begun, based on urine output. However, because of his continuing uremic status and hyperkalemia, he underwent five rounds of hemodialysis (HD). Following bed rest, carbohydrate predominant diet, adequate fluid resuscitation, and HD, the clinical status and laboratory parameters improved significantly over the next 12 days of hospitalization (Fig. 1).

Discussion

Drug abuse is increasing worldwide, especially among younger population. Many systems, including especially the nervous system, may be pathologically affected due to these substances. MA generally damages dopaminergic and serotonergic nerves in central nervous system and this contributes its high abuse potential [4]. In addition to cardiovascular and neurological effects, MA abuse may result in hyperpyrexia, hyponatremia, rhabdomyolysis, disseminated intravascular coagulopathy, gastrointestinal bleeding, hepatic failure, and renal failure. MA-induced

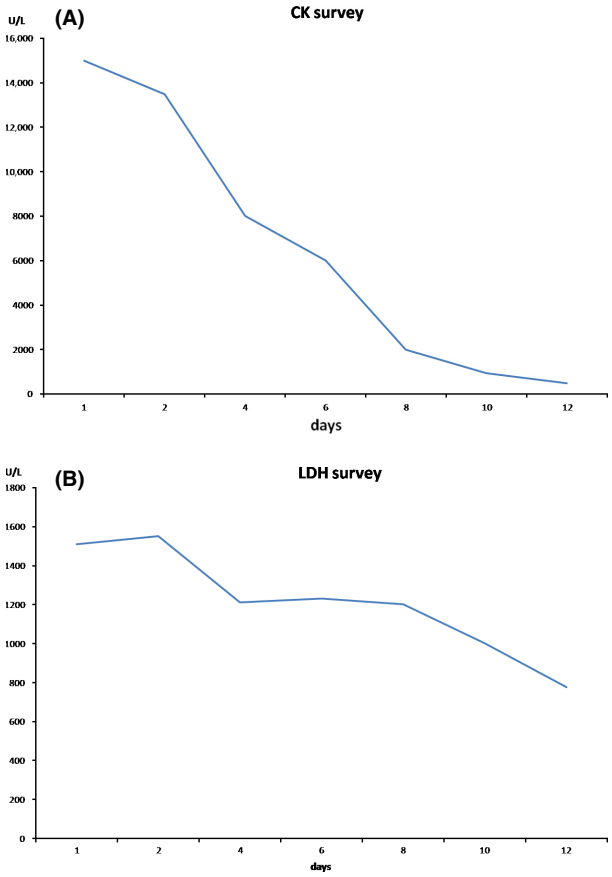

Figure 1. Creatinine kinase and lactate dehydrogenase survey of the patient during follow up.

renal injury possibly occurs due to traumatic rhabdomyolysis, necrotizing vasculitis, urinary tract obstruction, hypertension, proximal tubule dysfunction, and volume depletion [5, 6]. In our case, rhabdomyolysis, acute kidney injury, hepatotoxicity, and neurotoxicity emerged after the use of MA in the acute period. After the discontinuation of the agent and appropriate treatment with hydration and HD, our patient improved significantly.

In conclusion, physicians should be aware that multisystem toxicity may develop as a result of MA use and clinical suspicion, early diagnosis, and appropriate treatment may be life saving.

Conflict of Interests

None declared.

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