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Case Report

Spinning-induced rhabdomyolysis: A case report and review of literature

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Abstract

Rhabdomyolysis is a condition of skeletal muscle breakdown in which muscle injury causes a release of myoglobin and the muscle enzymes creatine phosphokinase (CPK), lactate dehydrogenase (LDH), and transaminases. Exertional rhabdomyolysis, which is precipitated by exercise or exertion, ranges from mild muscle injury with negligible symptoms or systemic effects to fulminant cases. Herein, we report a 26-year-old female patient who was admitted to our Physical Medicine and Rehabilitation outpatient clinics with severe bilateral thigh pain persisting for 5 days after participating in a spinning class and diagnosed with exertional rhabdomyolysis. Timely diagnosis and treatment prevented the potentially life-threatening consequences. We assume that it is essential to raise the awareness of this phenomenon not only by physicians but also by the community, since regular exercise and being physically active are increasingly encouraged in modern life.

Keywords: Exercise, muscle disorders, pain

Introduction

Rhabdomyolysis is a condition of skeletal muscle breakdown in which muscle injury causes a release of myoglobin and the muscle enzymes creatine phosphokinase (CPK), lactate dehydrogenase (LDH), and transaminases. Myoglobin release may cause nephrotoxicity, leading to renal impairment. Exertional rhabdomyolysis, which is precipitated by exercise or exertion, ranges from mild muscle injury with negligible symptoms or systemic effects to fulminate cases. It is most frequently seen in running or prolonged exertion activity. Various extrinsic and intrinsic factors, including dehydration, infection, excessive muscle overload activities, and deconditioned state (especially with rapidly accelerated physical training), may enhance the susceptibility to rhabdomyolysis (1, 2).

Herein, we report a 26-year-old female patient who experienced rhabdomyolysis after her first spinning exercise session.

Case Presentation

A previously healthy 26-year-old female patient was admitted to our Physical Medicine and Rehabilitation outpatient clinics with severe bilateral thigh pain persisting for 5 days after participating in a spinning class for the first time. She defined some difficulty during the 30-minute-long session after 10 minutes of warm-up but completed the session without any serious discomfort. She was performing aerobic exercises 3 times per week for the last 5 months but had not performed spinning before. She admitted poor fluid intake on the day of the spinning exercise. She did not notice dark-colored urine and defined using a nonsteroidal anti-inflammatory drug for the last few days. On the physical examination, the bilateral thigh muscles were tender and slightly swollen. Range of motion was not limited in the lower extremities. There was no neurological deficit. Blood work showed a raised CK level of 55235 U/L (26-192), ALT of 314 U/L (0-33), AST of 974 U/L (0-32), LDH of 1508 U/L (135-214), and myoglobin of 3984 ng/mL (0-58) with normal urea and electrolytes. In the urine analysis, positive Hgb with no RBCs was observed. After administration of intravenous hydration and fluid balance monitoring, her symptoms resolved significantly, and the blood tests decreased rapidly. On the third day of treatment, CK was 7198 U/L, ALT was 252 U/L, AST was 291 U/L, LDH was 417 U/L, myoglobin was 331 ng/mL, and the urine analysis was normal. All values returned to normal at the first month follow-up.

Discussion

Spinning is an increasingly popular cycle-based indoor fitness activity worldwide. Although being an entertaining activity, the workouts are often high-intensity. To date, there have been several reports concerning spinning exercise and rhabdomyolysis (3-6). Since the spectrum of the disease ranges from mild muscle

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injury with negligible symptoms to fulminate cases, mild cases of exertional rhabdomyolysis may resolve without seeking medical care or be misdiagnosed as delayed-onset muscle soreness by physicians; therefore, probably, most of the cases remain unreported. However, inappropriate management may cause potentially life-threatening consequences in some patients; therefore, awareness of this phenomenon, timely diagnosis, and treatment are of particular importance (1, 2, 5).

Rhabdomyolysis can occur at any level of exercise intensity, even in low intensities (5, 7). Cases of recurrent exercise-induced rhabdomyolysis-associated with low-intensity fitness exercise were also reported (7, 9). Underlying causes should be investigated in patients with recurrent rhabdomyolysis, and patients should be advised to avoid triggers and ensure adequate hydration and be encouraged to warm up before exercise (8, 9). Although our patient was performing aerobic exercises regularly, she had never experienced similar symptoms before. However, hereafter, we must be vigilant about the risk of recurrent rhabdomyolysis while planning her future exercise programs.

Initial laboratory studies should include a basic electrolyte panel and also creatinine (Cr), CPK, transaminases, LDH, uric acid, CBC, and urinalysis with microscopy. Positive Hgb with no RBCs in the the urinalysis are used as indicators of myoglobinuria (2). Further laboratory tests are needed in patients with recurrent rhabdomyolysis to exclude possible genetic predispositions, such as glycolysis and glycogenolysis defects, lipid metabolism defects, mitochondrial myopathies, or muscular dystrophies.

Guidelines on acute treatment of rhabdomyolysis indicate that supportive therapy with aggressive intravenous hydration with normal saline or crystalloids helps to maintain renal function, with a goal of urine output of 200-300 mL/h. (6). Patients with uncomplicated mild to moderate rhabdomyolysis may return to activity after all enzymes have returned to normal, but exercise intensity should be increased carefully and gradually. Patients should be advised to avoid overheating, dehydration, and diuretic and alcohol use on the exercise day (2, 6).

To conclude, performing high-intensity exercise with poor hydration probably triggered the rhabdomyolysis in our patient. Fortunately, timely diagnosis and treatment prevented the potentially life-threatening consequences. We assume that it is essential to raise the awareness of this phenomenon not only by physicians but also by the community, since regular exercise and being physically active are increasingly encouraged in modern life.

Informed consent: Written informed consent was obtained from patients who participated in this case.

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