Tzu Chi Medical Journal 27 (2015) 44–45

Contents lists available at ScienceDirect

Tzu Chi Medical Journal

journal homepage: www.tzuchimedjnl.com

Clinical Practice and Therapeutics

Case of asymptomatic rhabdomyolysis diagnosed at medical check-up

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ARTICLE INFO

Article history:
Received 22 October 2014
Received in revised form
5 November 2014
Accepted 11 November 2014
Available online 7 January 2015

Rhabdomyolysis is a potentially life-threatening syndrome. A serum creatine kinase (CK) level greater than five times the normal value is a criterion for diagnosis. Rhabdomyolysis with acute renal failure caused by statin-related myopathy is of most concern. However, exertional activity causing rhabdomyolysis, especially in untrained individuals or under extremely hot or humid conditions, is more commonly reported. The serum CK level begins to rise approximately 2–12 hours after the onset of muscle injury, peaks within 24–72 hours, and then declines at a relatively constant rate of 40% of the previous day's value. Rhabdomyolysis is treated by fluid administration and prevention of acute renal failure.

A 50-year-old man came for his annual medical check-up. He maintained a healthy lifestyle, did not smoke or drink alcohol, and exercised regularly. He was not taking any medication, and had no history of hepatitis or known drug allergies. His father had hypertension, diabetes mellitus, and gastric cancer. Since his serum CK level was abnormally high (970 IU/L) at his last check up 1 year earlier at another hospital, he requested a serum CK test, although it is not a recommended screening item at our hospital.

On examination, his body mass index was found to be 22.7 kg/m^2. His general physical examination showed no abnormalities or physical distress. The body temperature was 36.8°C, blood pressure 128/76 mmHg, pulse 86 beats per minute, and respiratory rate 16 breaths per minute. He was physically fit, without complaints of malaise or changes in appetite or weight. He reported mild muscle aching that might have been associated with jogging for 4–5 hours in the previous 48 hours.

Blood tests revealed highly elevated levels of CK (81,420 IU/L), alanine transaminase (314 IU/L), and aspartate transaminase (1066 IU/L). Urinalysis showed occult blood 3+, but only a few red blood cells under microscopic investigation. Serologic testing was positive for hepatitis B surface antibody, and negative for hepatitis A and C viruses. The results of the complete blood count, erythrocyte sedimentation rate, renal-function tests, and blood levels of electrolytes, total protein, albumin, globulin, and free thyroxine were all normal. Other test results are shown in Table 1. Abdominal echography and resting electrocardiography showed no abnormalities.

On the following day, he was seen at our nephrology clinic. Asymptomatic rhabdomyolysis was the diagnosis, and the serum levels of CK and aspartate transaminase had decreased by nearly 50%. He was prescribed sodium bicarbonate 300 mg orally twice a day for 1 week. At the follow-up 1 week later at the outpatient clinic, the CK and liver enzyme levels had further decreased significantly.

Hereditary disorders that can cause recurrent and usually exertional rhabdomyolysis include enzyme deficiencies in

Table 1
Laboratory data.

Serum/urine tests	Reference range	Day 0	Day 1	Day 7
AST (IU/L)	15–37	1066	723	39
ALT (IU/L)	3–41	314	339	115
ALP (IU/L)	50–136	65		
TBI (mg/dL)	0.4–1.0	1.3		
DBI (mg/dL)	0–0.3	0.2		
BUN (mg/dL)	7–18	12	15	14
CRE (mg/dL)	0.8–1.3	1	1	1
TCH (mg/dL)	130–145	135		
GGT (mg/dL)	15–85	16		
Uric acid (mg/dL)	3.5–7.2	5.5	5.2	5.7
Potassium (mmol/L)	3.5–5.1	4.1	4.1	4
Occult blood	<0.03	1.5		
Urine protein (mg/dL)	10–20	20		
Red blood cells count/HPF	<3	0–2		
Creatine kinase (IU/L)	39–308	81,420	44,820	1354
CK-MB (IU/L)	7–25		622	39
Myoglobin (μg/L)	16–96		>1000	136

ALP = alkaline phosphatase; ALT = alanine transaminase; AST = aspartate transaminase; BUN = blood urea nitrogen; CK-MB = creatine kinase-myocardial band; CRE = creatinine; DBI = direct bilirubin; GGT = gamma-glutamyl transferase; HPF = high power field; TBI = total bilirubin; TCH = total cholesterol.

Conflicts of interest: none.

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http://dx.doi.org/10.1016/j.tcmj.2014.11.002

carbohydrate or lipid metabolism and myopathies. Patients with recurrent rhabdomyolysis after minimal or moderate exertion, or those with childhood onset are more likely to have a genetically determined metabolic myopathy. This case highlights the occurrence of rhabdomyolysis even after nonexhaustive exercise. Probably some cases in this setting go unrecognized and are diagnosed as simple muscle strain. Excessive or sporadic strenuous exercise may cause muscle injury. Adequate hydration and rest periods should be emphasized at physical activity consultations.

Further reading

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