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Acute Kidney Injury

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A young man with acute kidney injury and severe flank pain without a definite history of exercise

Youngrok Ham* [1], Won Jung Choi, Hae Ri Kim, Hong Jae Jeon, Dae Eun Choi, Kang Wook Lee, Ki Ryang Na

[1]Renal Division, Department of Internal Medicine, Chungnam National University Hospital, Daejeon, Korea, Republic Of

Background: Acute renal failure with severe loin pain after anaerobic exercise (ALPE) is an uncommon clinical syndrome that usually occurs several hours after exercise and is accompanied by severe loin pain. Anaerobic exercise, such as short track races or short-distance dashes, is considered to be a main cause. AKI without history of anaerobic exercise is very rare. We present case of acute renal failure and severe loin pain without a definite history of exercise.

Methods: .

Results: A 19-years old man was admitted to our emergency room with both loin pain, nausea, and vomiting. Two weeks ago, he was taking general cold medicine due to common cold for 3 days and had one meal a day during last one week. He continued to play computer game over 8 hours during three days. One hour ago before admission, severe both flank pain and nausea abruptly developed while he played computer game. His vital sign were following; blood pressure 128/79 mmHg, heart rate 87/min, respiratory rate 20/min, and body temperature 36.2 ºC. In physical examination, there were no abnormal findings except tenderness in the both flank. Laboratory test revealed white blood cells 9,500/mm^3, hemoblobin 14.9 g/dL, platelets 230,000/mm^3, total protein/albumin 7.1/4.2 g/dL, Glucose 85 mg/dL, d-dimer 124 ng/mL, blood urea nitrogen (BUN)/creatinine 23/2.84 mg/dL, estimated glomerular filtration rate (eGFR) 30.7 ml/min per 1.73m^2. Urinary sodium excretion was 34.3 mEq/L and fractional excretion of sodium ratio (FENa) was 0.43%. Urinalysis showed a 2+ test for protein and urinary myoglobin was not detectable. Serum LDH, CK, and AST/ALT level were normal. Non-enhanced abdominal-pelvic computed tomography (APCT) showed no abnormality of both kidney. We diagnosed as acute kidney injury with intrinsic renal origin and started to treat empirically fluid replacement. On admission day, total urine volume was 3,300 ml/day. On 4th day after admission, Doppler ultrasound was performed and revealed no abnormality of both renal artery. In laboratory test, protein C level was mildly decreased and protein S, Anti PL IgG/M, PR-3 Ab, MPO Ab, and ACA Ab were normal. On 6th day after admission, laboratory data were BUN/Cr 9.6/1.73 mg/dL, eGFR 54.4 ml/min per 1.73m^2. Enhanced APCT revealed multifocal wedge shaped perfusion defect in both kidney and unremarkable both renal artery. We confirmed the diagnosis as ALPE without a definite exercise history. On 8th day after admission,, he was discharged with improving renal function test results (BUN/Cr 8.4/1.49 mg/dL, eGFR 64.6 ml/min per 1.73m^2). One month later, the patient visits the hospital as an outpatient regularly in a health state, maintaining anti-

hypertensive drug (calcium channel blocker). laboratory test were BUN/Cr 15.2/1.07 mg/dL, eGFR 94.6 ml/min per 1.73m^2.

Conclusion: Acute renal failure with sever loin pain after anaerobic exercise is a rare syndrome. Careful history taking, appropriate image studies, and suspicion enable the diagnosis and management of this syndrome.

Keywords: acute kidney injury, renal vasoconstriction