

PubMed Health. A service of the National Library of Medicine, National Institutes of Health.
A.D.A.M. Medical Encyclopedia [Internet]. Atlanta (GA): A.D.A.M.; 2013.

Rhabdomyolysis

Rhabdomyolysis is the breakdown of muscle tissue that leads to the release of muscle fiber contents into the blood. These substances are harmful to the kidney and often cause kidney damage.

Causes, incidence, and risk factors

When muscle is damaged, a protein called myoglobin is released into the bloodstream. It is then filtered out of the body by the kidneys. Myoglobin breaks down into substances that can damage kidney cells.

Rhabdomyolysis may be caused by injury or other any condition that damages skeletal muscle.

Problems that may lead to this disease include:

- Trauma or crush injuries
- Use of drugs such as [cocaine](#), amphetamines, statins, [heroin](#), or PCP
- Genetic muscle diseases
- Extremes of body temperature
- Ischemia or death of muscle tissue
- Low phosphate levels
- [Seizures](#) or muscle tremors
- Severe exertion, such as marathon running or calisthenics
- Lengthy surgical procedures
- Severe dehydration

Symptoms

- Dark, red, or cola-colored urine
- Decreased urine output
- General weakness
- Muscle stiffness or aching ([myalgia](#))
- Muscle tenderness
- [Weakness](#) of the affected muscles

Other symptoms that may occur with this disease:

- [Fatigue](#)
- [Joint pain](#)
- [Seizures](#)
- [Weight gain \(unintentional\)](#)

Signs and tests

A physical exam will show tender or damaged skeletal muscles.

The following tests may be done:

- [Creatine kinase \(CK\)](#) level
- Serum calcium
- [Serum myoglobin](#)
- [Serum potassium](#)
- [Urinalysis](#)

- [Urine myoglobin](#) test

This disease may also affect the results of the following tests:

- [CK isoenzymes](#)
- [Serum creatinine](#)
- [Urine creatinine](#)

Treatment

You will need to get fluids containing bicarbonate to help prevent kidney damage. You may need to get fluids through a vein (IV). Some people may need kidney dialysis.

Your doctor may prescribe medicines including diuretics and bicarbonate (if there is enough urine output).

[Hyperkalemia](#) and low blood calcium levels (hypocalcemia) should be treated right away. [Kidney failure](#) should also be treated.

Expectations (prognosis)

The outcome depends on the amount of [kidney damage](#). Acute kidney failure occurs in many patients. Getting treated soon after rhabdomyolysis begins will reduce the risk of permanent kidney damage.

People with milder cases may return to their normal activities within a few weeks to a month. However, some people continue to have problems with fatigue and muscle pain.

Complications

- [Acute tubular necrosis](#)
- [Acute renal failure](#)
- Harmful chemical imbalances in the blood
- [Shock](#) (low blood pressure)

Calling your health care provider

Call your health care provider if you have symptoms of rhabdomyolysis.

Prevention

Drink plenty of fluids after strenuous exercise. This will help to dilute your urine and flush any myoglobin that is released from your muscles out of your kidneys. Also drink a lot of fluids after any condition that may have damaged skeletal muscle.

References

1. O'Connor FG, Deuster PA. Rhabdomyolysis. In: Goldman L, Schafer AI, eds. *Cecil Medicine*. 24th ed. Philadelphia, Pa: Saunders Elsevier; 2011:chap 115.
2. Shafuddin AA, Weisbord SD, Palevsky PM, et al. Acute kidney injury. In: Taal MW, Chertow GM, Marsden PA et al. eds. *Brenner and Rector's The Kidney*. 9th ed. Philadelphia, Pa: Saunders Elsevier; 2011:chap 30.

Reviewed by: Scott Miller, MD, Urologist in private practice in Atlanta, Georgia. Also reviewed by David Zieve, MD, MHA, Bethanne Black, and the A.D.A.M. Editorial team.

Last reviewed: October 2, 2013.