

# A 73-year-old Woman with Rhabdomyolysis Induced by Simvastatin (Zocor)

**Author:** Juli Havens-Verkler, RN, BSN, CEN, Mishawaka, Ind

**Section Editor:** Anne Marie Lewis, RN, BSN, BA, MA, CEN

Juli Havens-Verkler, President *North Central Indiana Chapter*, is Staff Nurse, Saint Joseph Regional Medical Center, South Bend, Ind.

For reprints, write: Juli Havens-Verkler, RN, BSN, CEN, 801 E LaSalle St, South Bend, IN 46617; E-mail: ernurse1@sbcglobal.net.

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A 73-year-old woman presented to the ED triage desk with the chief complaint of “legs not working.” She stated that she had had problems moving everything from the waist down since the previous week and had seen her primary care physician 5 days earlier. Results from both a magnetic resonance imaging scan of her back and hips and a lumbar sacral (LS) spine radiogram series were negative at that time. She denied having a fever or headache. Her vital signs at triage were as follows: temperature, 36.2°C (97.1°F); pulse, 77 beats per minute; respiratory rate, 14 breaths per minute; blood pressure, 179/85 mm Hg; and SpO<sub>2</sub>, 97% on room air. Her medications included simvastatin (Zocor), rofecoxib (Vioxx), and an antihypertensive drug. The patient had a history of hypercholesterolemia, angioplasty, myocardial infarction with stent placement in the left anterior descending coronary artery, chronic obstructive pulmonary disease, pneumonia, and arthritis.

The emergency physician developed a differential diagnosis list that included myocardial infarction, exacerbation of arthritis, musculoskeletal strain, carbon monoxide poisoning, congestive heart failure, and transient ischemic attack. He ordered blood tests, chest and LS spine radiograms, and a computerized axial tomography scan of the head. We initiated an intravenous line and administered a bolus of 200 mL of 0.9% normal saline solution and then continued administration of the saline solution at a maintenance rate of 100 mL/h.

Interpretations of the patient’s EKG, computerized axial tomography scan, and chest and LS spine radiograms were negative, as were the results of her sedimentation rate, thyroid-stimulating hormone, troponin I, and brain natriuretic peptide and carbon monoxide levels. (Abnormal test

TABLE 1  
Initial laboratory values

|                 | Patient's results | Normal values |
|-----------------|-------------------|---------------|
| CBC             |                   |               |
| Neutrophils (%) | 78.0              | 37.0–77.0     |
| Lymphocytes (%) | 11.9              | 23.0–44.0     |
| Chemistry       |                   |               |
| BUN             | 53 mg/dL          | 8–23 mg/dL    |
| Creatinine      | 1.6 mg/dL         | 0.6–1.1 mg/dL |
| CK              | 27,680 IU/L       | 24–199 IU/L   |
| CK-MB Act       | 180 ng/mL         | 0.0 ng/mL     |
| CK-MB (%)       | 0.7               | 0.0           |
| Urinalysis      |                   |               |
| Cola - colored  |                   |               |
| Protein         | 100 mg/dL         | Negative      |
| Blood           | Large             | Negative      |
| Leukocytes      | Moderate          | Negative      |
| Bacteria        | Present           | Absent        |
| WBC             | 25/HPF            | 0–5/HPF       |

BUN, Blood urea nitrogen; CBC, complete blood cell count; CK, creatine phosphokinase; WBC, white blood cell count.

results are listed in Table 1.) What condition should the emergency nurse suspect?

*Even at the lowest prescribed dose and in the absence of adverse drug interactions, “simvastatin... can cause potentially life-threatening rhabdomyolysis.”*

This patient was triaged to the “emergent” category and diagnosed by the emergency physician as having quadriceps muscle weakness, renal insufficiency, and rhabdomyolysis resulting from simvastatin use. She was admitted to the medical-surgical unit and had an excellent outcome as a result of a quick and accurate diagnosis and treatment.

#### Discussion

Our patient had a textbook case of rhabdomyolysis, “characterized by muscle cell necrosis and release of muscle cell components into the circulation, most notably creatinine phosphokinase and myoglobin.”<sup>1</sup> Emergency nurses

may see this condition most commonly in an elderly patient who sustains a ground level fall at home and then is “down” for a period of time because of a hip fracture.

Rhabdomyolysis may occur when certain drugs are taken in overdose (eg, cocaine or amphetamines), or even when drugs are taken in normal doses, such as the simvastatin described here. Our patient demonstrated some of the classic clinical manifestations of rhabdomyolysis, including muscle weakness, generalized malaise, and “Coca-Cola”-colored urine. The change in the urine color was the result of myoglobinuria, where myoglobin clogs the renal tubules, thereby slowing the glomerular filtration rate and finally changing the urine color and decreasing the urine output. Our patient excreted approximately 350 mL of dark amber urine prior to her transport to the floor.

The incidence of rhabdomyolysis in the rapidly increasing population of patients taking “statin” drugs is approximately 5%.<sup>2</sup> According to the *Physicians’ Desk Reference*, “Patients...[taking] simvastatin should be advised of the risk of myopathy and told to report promptly unexplained muscle pain, tenderness, or weakness.”<sup>3</sup> A number of disparate drugs, such as erythromycin and verapamil, may increase the risk of myopathy when combined with simvastatin. However, even at the lowest prescribed dose and in the absence of adverse drug interactions, “simvastatin... can cause potentially life-threatening rhabdomyolysis.”<sup>4</sup> Older individuals and women also appear to be particularly predisposed to statin-induced rhabdomyolysis.<sup>5</sup> Whether or not the patients also have acute renal failure, some have died from simvastatin-induced rhabdomyolysis.<sup>2</sup>

*With the increasing number of physicians prescribing “statins” for hypercholesterolemia, be aware that there can be significant adverse effects from this class of drugs.*

Treatment of rhabdomyolysis includes aggressive rehydration. Initially, our patient received an intravenous crystalloid bolus of 200 mL and then received maintenance

fluids of 0.9% normal saline solution at 100 mL/h. After we received the result of her creatinine phosphokinase, we increased the intravenous fluids to 500 mL/h. We inserted a Foley catheter with a urine meter to accurately monitor her hydration status. Our focus was to maintain an adequate urine output for our patient and prevent acute renal failure.

The key to our patients' symptoms often can be found in the bags of medications that they bring to triage. With the increasing number of physicians prescribing "statins" for hypercholesterolemia, be aware that there can be significant adverse effects from this class of drugs, including serious neurologic effects such as severe memory loss.<sup>6</sup> Timely triage, accurate diagnosis, and immediate interventions can prevent the patient from experiencing acute renal failure, as was well illustrated by this case. After the patient is stabilized, the physician may choose to decrease the dose of the "statin" medication or stop the medication completely.

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**This section** features actual emergency situations with particular educational value for the emergency nurse. Contributions (4 to 6 typed, double-spaced pages) should include a case summary focused on the emergency care phase, accompanied by pertinent case commentary. Submit to:

**Anne Marie Lewis, RN, BSN, BA, MA, CEN**, Section Editor,  
c/o Managing Editor, 77 Rolling Ridge Rd, Amherst, MA 01002  
800 900-9659, ext 4044 • [awbkelly@comcast.net](mailto:awbkelly@comcast.net)