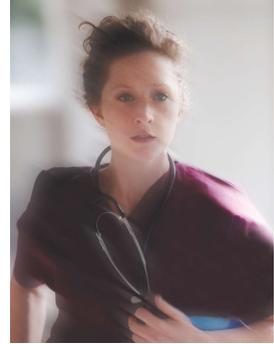


A stubborn case of supraventricular tachycardia

● The patient's heart rate soars to 210 beats/minute.

By Stephanie Magallanes, MSN, RN, PHN



JAKE KARCHNER, age 65, is admitted for treatment of acute myeloid leukemia. Because of his history of supraventricular tachycardia (SVT), the physician has ordered telemetry monitoring.

When you enter Mr. Karchner's room, you observe that he's awake, alert, and oriented. However, he seems upset that he's in the hospital. The monitor technician reports his heart rhythm has gone from a normal sinus rhythm to SVT.

History and assessment hints

The patient states, "I can feel my heart racing." After verifying SVT on the monitor, you assess his vital signs: heart rate 190 beats/minute (bpm), blood pressure (BP) 130/70 mm Hg, respiratory rate (RR) 20 breaths/minute, and oxygen saturation (SpO₂) 97% on room air. He is afebrile.

Knowing that tachycardia increases oxygen demand, you place Mr. Karchner on supplemental oxygen 3 L/minute by nasal cannula, per standing orders. He states he feels slightly short of breath, but he doesn't have chest pain, dizziness, or respiratory distress. He remains alert and oriented.

When reviewing his chart, you note a PRN order for metoprolol 5 mg by I.V. push to treat SVT, a heart rate above 160 bpm, and systolic pressure above 100 mm Hg. After giving the medication, you see that Mr. Karchner's heart rhythm still hasn't converted to a normal sinus rhythm. Realizing metoprolol may decrease the heart rate and BP, you obtain a new set of vital signs: heart rate 185 bpm, BP 115/70 mm Hg, RR 20 breaths/minute, SpO₂ 97%, and temperature 102° F (38.3° C).

To stimulate the vagus nerve to slow electrical impulses through the atrioventricular node, you instruct the patient to try vagal maneuvers, including coughing and bearing down—but these measures fail to restore a normal sinus rhythm. When his heart rate climbs from 190 to 210 bpm, you call the rapid response team (RRT) and the patient's cardiologist.

On the scene

The cardiologist orders a 12-lead electrocardiogram, cardiac enzyme tests to check for myocardial injury, basic metabolic panel, complete blood count, and

chest X-ray. He also orders adenosine 6 mg by I.V. push STAT.

After ensuring that emergency equipment is on hand, you administer adenosine followed by 20 mL normal saline solution. When the RRT arrives, you brief them on Mr. Karchner's situation.

You elevate the patient's arm to promote drug circulation, and watch for adverse reactions, such as atrial flutter or fibrillation, headache, lightheadedness, dizziness, tingling in the arms, apprehension, blurred vision, a burning sensation, facial flushing, sweating, chest pain, palpitations, dyspnea, nausea, a metallic taste, and a tight sensation in the throat.

Outcome

A few minutes after Mr. Karchner receives adenosine, he still has SVT. His heart rate is 190 bpm; BP, 110/70 mm Hg; and RR, 20 breaths/minute. The cardiologist orders another adenosine dose—this time increased to 12 mg—which finally restores a normal sinus rhythm. (Up to three adenosine doses are acceptable, with no single dose higher than 12 mg.) The patient's heart rate drops to 82 bpm, his BP measures 120/74 mm Hg, and RR is 20 breaths/minute.

Education and follow-up

If untreated, SVT may lead to heart failure. SVT has many causes, including atherosclerosis, heart failure, pneumonia, stress, pulmonary emboli, pericarditis, alcohol abuse, smoking, emotional stress, and adverse effects of certain medications (such as digitalis and asthma drugs). Mr. Karchner's SVT probably stemmed from stress.

You teach him how to recognize signs and symptoms of SVT, including palpitations, lightheadedness, syncope, fatigue, chest pain, or shortness of breath. You instruct him to report these problems to hospital staff or to call 911 if symptoms occur at home. ★

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When she wrote this article, Stephanie Magallanes was an ICU Clinical Nurse II at the City of Hope Hospital in Duarte, California. She is now a nursing instructor at California State University-Los Angeles and Glendale Community College in Glendale, California, as well as a per-diem nurse at UCLA. (Names in scenarios are fictitious.)