CHEST

A 38-Year-Old Man With Obesity, Intermittent Tachycardia, and One Episode of Syncope

Karolina K. Marinescu, MD; Mazhar Khan, MD; James A. Rowley, MD, FCCP; and Teferi Y. Mitiku, MD

A 38-year-old man with history of diabetes, hypertension, hyperlipidemia, and obesity was referred to the electrophysiology clinic for evaluation of infrequent palpitations and remote history of syncope. The patient described a sensation of racing of the heart, which lasted about 30 min to 1 h and occurred several times over the past year. This was associated with a sense of anxiety and shortness of breath and appeared to resolve spontaneously. The patient also experienced one episode of syncope in the past while enjoying a barbecue on a hot summer day. He did not recall if this episode was accompanied by palpitations, however, the previously mentioned symptoms prompted the consultation. Upon further questioning the patient also reported experiencing fatigue. He stated that he noted decreased energy and frequent daytime sleepiness. CHEST 2015; 148(1):e22-e25

Physical Examination Findings

The patient was 1.6 m tall and weighed 108.9 kg with a BMI of 40. The measurement of vital signs showed the following: BP, 125/78 mm Hg; heart rate, 98 beats/min; respiratory rate, 18 breaths/min; and oxygen saturation, 98% on room air. The patient was alert, oriented, and in no acute distress. Examination of the head, ears, eyes, nose, throat, lungs, heart, and extremities revealed normal jugular venous pressure without distention; clear lungs with good respiratory effort; regular rate and rhythm with no murmurs, rubs, or gallops; and absence of clubbing, cyanosis, or edema.

Diagnostic Studies

A comprehensive metabolic panel showed the following values: sodium, 144 mM; potassium, 4.5 mM; chloride, 105 mM; bicarbonate, 30 mM; BUN, 11 mg/dL; creatinine, 1.1 mg/dL; total cholesterol, 126 mg/dL; high-density lipoprotein, 29 mg/dL; low-density lipoprotein, 63 mg/dL; thyroid-stimulating hormone, 3.35 μIU/mL; and troponin, <0.04 ng/mL. A 12-lead ECG showed a normal sinus rhythm, normal axis, with nonspecific T-wave inversions in inferior leads (Fig 1). An echocardiogram showed normal left ventricular size, thickness, and systolic function, with no wall motion abnormalities. The valvular structures were normal, however, tricuspid valve regurgitation Doppler data were suboptimal precluding comments on pulmonary pressures.

Since the patient's symptoms were rare, the decision was made to proceed with an implantable loop recorder (ILR). Device interrogation on follow-up testing showed episodes of supraventricular tachycardia during wake hours. Interestingly, there were also recurrent short bursts of profound sinus bradycardia during sleep, followed by sudden increases in heart rate, which were noted to be sinus tachycardia (Fig 2).

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AFFILIATIONS: From the Division of Cardiovascular Medicine (Drs Marinescu, Khan, and Mitiku) and Division of Pulmonary, Critical Care & Sleep Medicine (Dr Rowley), School of Medicine, Wayne State University, Detroit, MI.

CORRESPONDENCE TO: Karolina K. Marinescu, MD, School of Medicine, Wayne State University, Harper University Hospital, 8 Brush, Detroit, MI 48201; e-mail: Kmirowsk@med.wayne.edu

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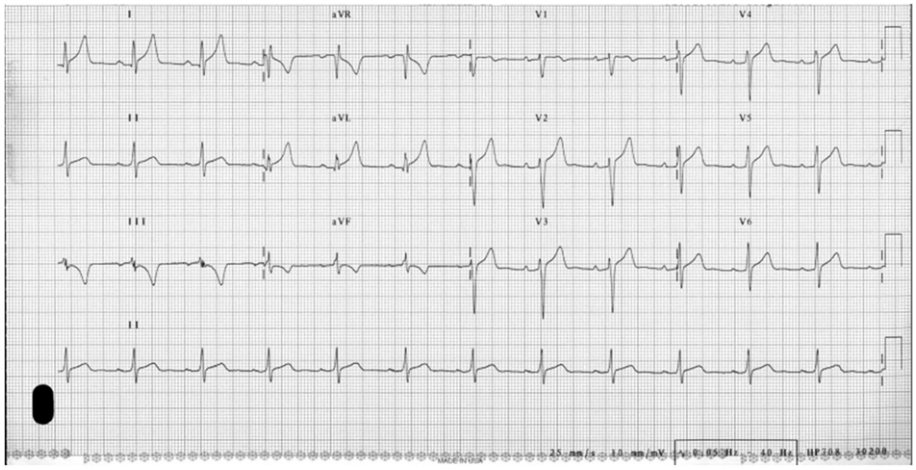

Figure 1 – *Normal sinus rhythm, normal axis, nonspecific T-wave inversions in inferior leads. aVF = augmented vector foot; aVL = augmented vector left; aVR = augmented vector right.*

ID#	Type	Date	Time hh:mm	Duration hh:mm:ss	Max V. Rate	Median V. Rate
1599	Brady	01-Oct-2013	08:02	:05	Min = 69 bpm	69 bpm (870 ms)

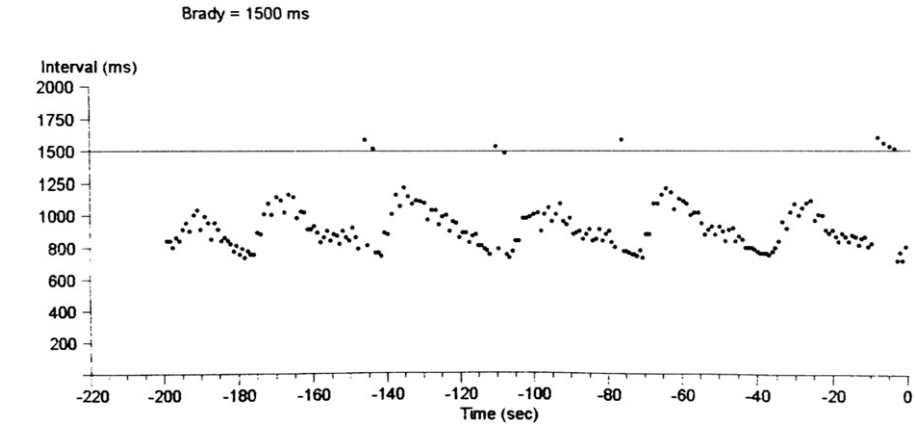

Figure 2 – *Arrhythmia recorded during sleep. The patient was noted to be in sinus rhythm with variable heart rates (HRs) as seen by the cyclical changes in the RR interval, measures in ms (RR interval of 1,500 ms corresponds to HR of 40, whereas RR interval of 700 ms corresponds to HR of 88). bpm = beats/min; Max V = maximum ventricular rate; Median V = median ventricular rate.*

What is the underlying cause of the arrhythmias occurring during sleep?