

Quick or Slow Rhythm?

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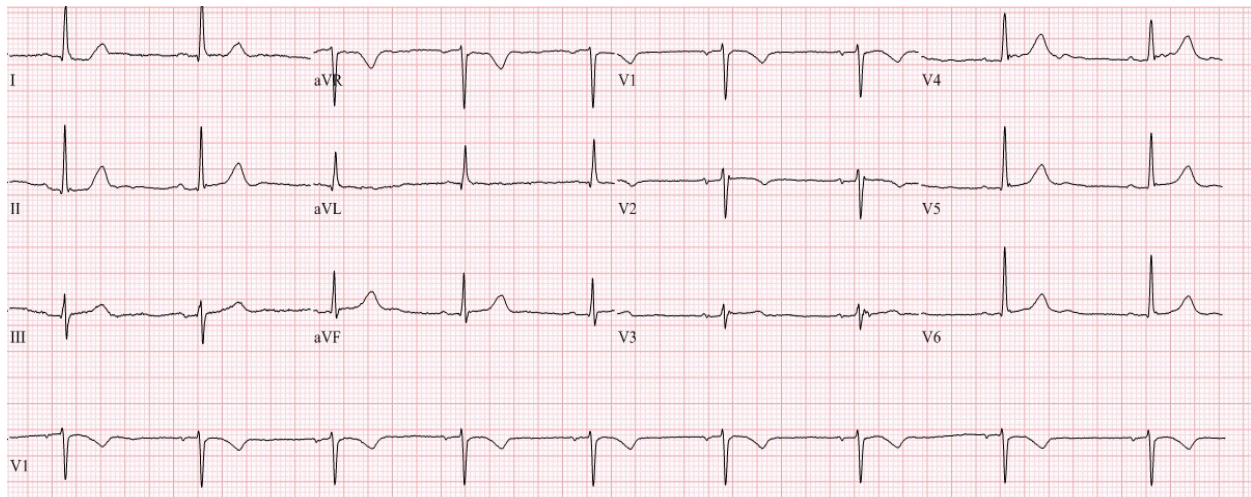
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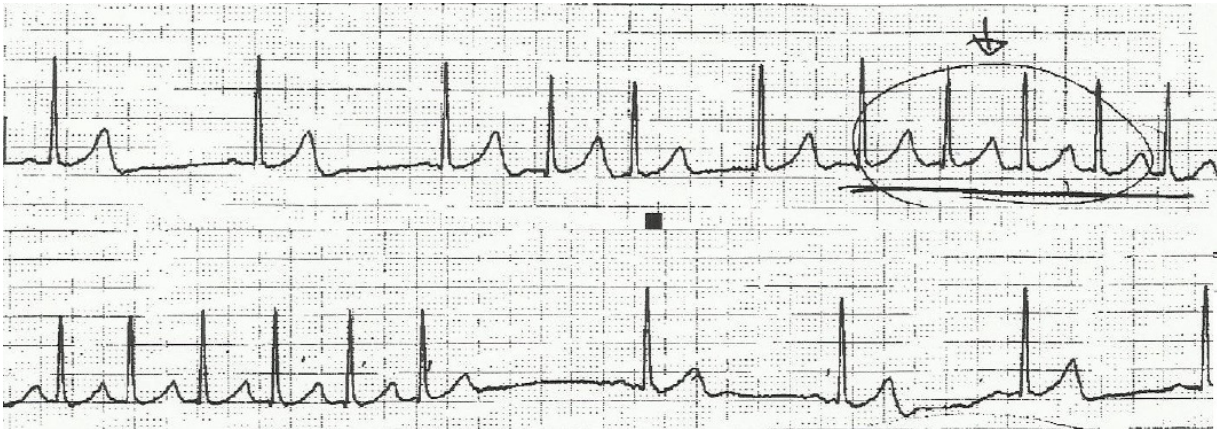
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A 74-year-old Caucasian male presented with recurrent pre-syncope episodes. He reported having diaphoresis as a prodrome, then feeling “about to lose consciousness” without actual loss of consciousness. These symptoms occurred more frequently in the past three weeks. He reported no visual disturbances, and the duration of each episode was only a few minutes. He denied any history of recent head trauma. He denied chest pain, palpitations, shortness of air, or orthopnea. His physical examination revealed normal heart sounds with no murmurs. Bradycardia (55 bpm) was present. Otherwise, the physical exam was unremarkable, including normal orthostatic vitals. Labs showed a normal complete blood count and comprehensive metabolic panel. His thyroid-stimulating hormone level was 9.3 μ IU/ml and his free thyroxine and free triiodothyronine levels were normal.

The initial ECG:



Telemetry while asymptomatic and sleeping:



What is the diagnosis?

- A) Supraventricular tachycardia
- B) Atrial fibrillation
- C) Variable AV block
- D) Tachycardia-bradycardia syndrome - Sick sinus syndrome

Answer on next page...

Correct Answer: D

Sick sinus syndrome (sinus node dysfunction) is a group of cardiac rhythm disturbances characterized by abnormalities of the sinus node including: (1) sinus bradycardia, (2) sinus arrest or exit block, (3) combinations of sinoatrial or atrioventricular conduction defects, and (4) alternating paroxysmal supraventricular tachyarrhythmias (tachycardia-bradycardia syndrome) that result in atrial rates that are inappropriate for physiologic needs.¹ Table 1 shows the intrinsic and extrinsic factors in the etiology of sick sinus syndrome.

Treatment of sick sinus syndrome is directed at symptoms.² Some patients may benefit from antiarrhythmic drugs and beta-blockers. Indications for pacemaker insertion are summarized in Table 2. Our patient underwent a permanent pacemaker insertion. At one-month follow-up, he reported resolution of his pre-syncope and absence of other significant cardiovascular symptoms.

Table 1. Etiology of sick sinus syndrome.³

Intrinsic	Extrinsic
Hypothyroidism	Trauma, including cardiac surgery
Fibrocalcific degeneration	Drugs - Calcium channel blockers
Increased vagal tone	- Beta-blockers
Congenital mutations	- Digoxin
Scleroderma	- Antiarrhythmics
Amyloidosis	- Lithium
Chagas disease	

Table 2. Indications for pacemaker insertion for patients with sinus node dysfunction.²

Class I indications
Documented symptomatic bradycardia, including frequent sinus pauses that produce symptoms (level of evidence: C)
Symptomatic chronotropic incompetence (level of evidence: C)
Symptomatic sinus bradycardia that results from required drug therapy for medical conditions (level of evidence: C)
Class IIa recommendations
Heart rate greater than 40 bpm when a clear association between significant symptoms consistent with bradycardia and the actual presence of bradycardia has not been documented (level of evidence: C)
Syncope of unexplained origin when clinically significant abnormalities of sinus node function are discovered or provoked on electrophysiological studies (level of evidence: C)
Class IIb recommendations
Minimally symptomatic patients with chronic heart rate greater than 40 bpm while awake (level of evidence: C)
Class III recommendations
Permanent pacemaker implantation is <u>not</u> indicated for sinus node dysfunction in asymptomatic patients (level of evidence: C)
Permanent pacemaker implantation is <u>not</u> indicated for sinus node dysfunction in patients for whom the symptoms suggestive of bradycardia have been clearly documented to occur in the absence of bradycardia (level of evidence: C)
Permanent pacemaker implantation is <u>not</u> indicated for sinus node dysfunction with symptomatic bradycardia due to non-essential drug therapy (level of evidence: C)

References

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- ² Epstein AE, DiMarco JP, Ellenbogen KA, et al. ACC/AHA/HRS 2008 Guidelines for Device-Based Therapy of Cardiac Rhythm Abnormalities: A report of the American College of Cardiology/American Heart Association Task Force on Practice Guidelines (Writing Committee to Revise the ACC/AHA/NASPE 2002 Guideline Update for Implantation of Cardiac Pacemakers and Antiarrhythmia Devices) developed in collaboration with the American Association for Thoracic Surgery and Society of Thoracic Surgeons. J Am Coll Cardiol 2008; 51(21):e1-62. PMID:18498951.
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Keywords: sick sinus syndrome, electrocardiography, presyncope