

“Unexplained Sinus Tachycardia”

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Vignette

A 90-year-old woman is sent from the nursing home where she lives to the emergency department of your local hospital for evaluation of an unexplained sinus tachycardia and mild hypotension. The patient is unable to provide any history and, on examination, she is afebrile, appears adequately hydrated, and has a heart rate of 120 beats per minute (bpm) and a blood pressure of 95/60 mmHg. Her electrocardiogram (ECG) is shown in Figure 1.

Questions

1. What do you conclude about her “unexplained sinus tachycardia?”
2. How do you clarify the diagnosis?

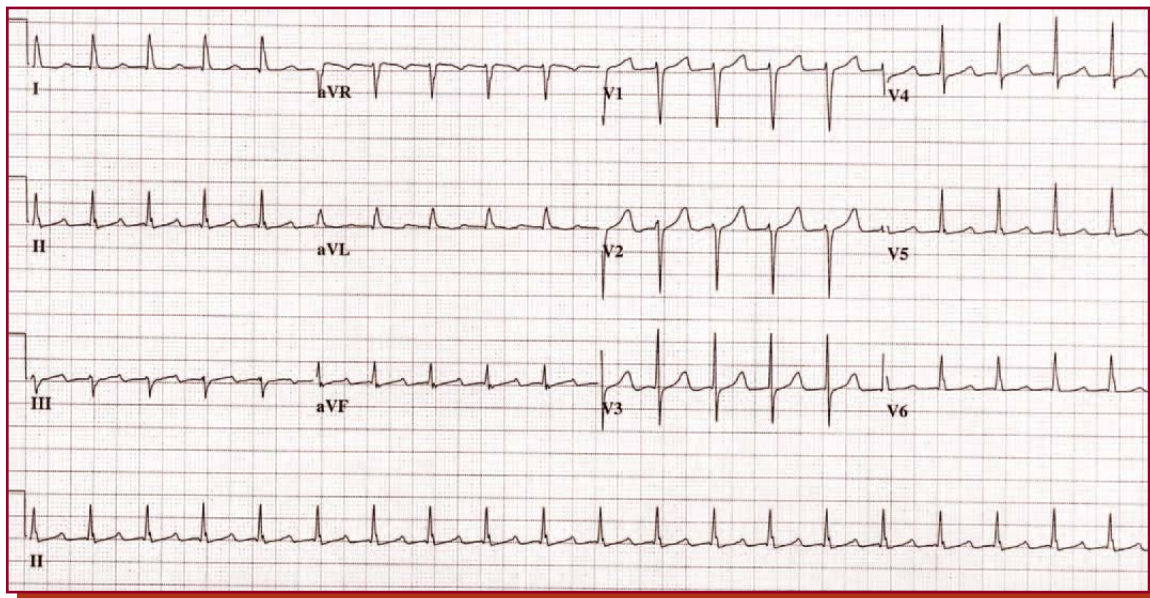


Figure 1. ECG.

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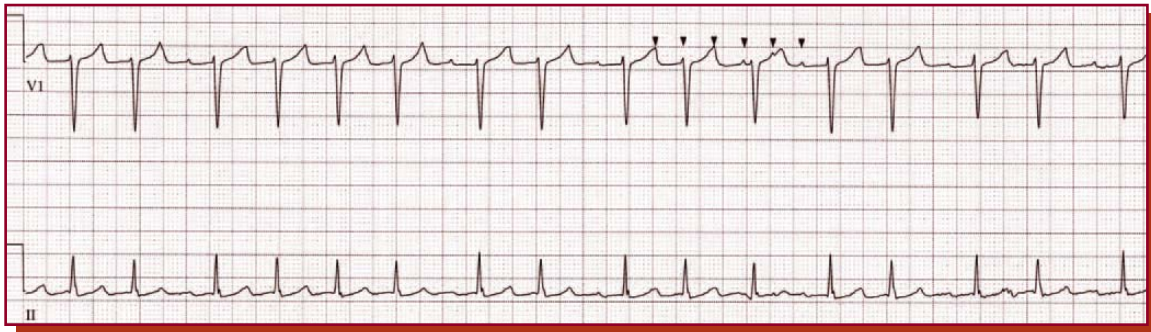


Figure 2. ECG after CSM.

Answer

1. The ECG shows a regular narrow QRS complex tachycardia at a rate of 120 bpm. Although P waves cannot be easily seen, it appears likely that there is a P wave buried in the distal portion of each T wave. If this is indeed the case, and if the P waves have the appropriate morphology (upright in leads I and II), then sinus tachycardia is a possibility, although the PR interval would be long at approximately 0.24 seconds. The conditions which

promote sinus tachycardia (pain, fever, stress, dehydration, *etc.*) are usually associated with increased adrenergic stimulation, which tends to enhance atrioventricular (AV) nodal conduction and thus shorten PR interval; therefore, sinus tachycardia with first-degree heart block is a little unusual. Perhaps there is another explanation.

2. A simple and practical approach to the problem of supraventricular tachycardia is to assess the response, if any, to carotid sinus massage (CSM).

In this elderly patient, careful auscultation of the carotid arteries to rule out severe underlying carotid disease is an important precaution to be taken before CSM. CSM should initially be very gentle and brief, as some elderly patients may prove to be extremely sensitive.

This patient's response is shown in Figure 2. The rhythm is shown to be an ectopic atrial tachycardia, with an atrial rate of 240 bpm (arrows) and a 2:1 AV conduction. CSM has slowed AV node conduction and unmasked some of the concealed P waves. The usual response of a sinus tachycardia to CSM is gradual, transient slowing of the heart rate, with each QRS complex continuing to be preceded by a P wave. AV nodal re-entrant tachycardias will often terminate abruptly.

This patient was subsequently discovered to have digoxin toxicity and the arrhythmia resolved after withdrawal of the drug. \square

Avapro^{*}
(irbesartan)

Angiotensin II Receptor Blocker

Avalide^{*}
(irbesartan/hydrochlorothiazide)

Angiotensin II Receptor Blocker/Diuretic

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