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An atypical case of vagally mediated atrial fibrillation in an elderly woman: Electrocardiographic caveats to diagnosis☆

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Abstract Vagally mediated paroxysmal atrial fibrillation is typically described to occur in otherwise healthy young-to-middle aged males during periods of high vagal tone. We report a case of cardioinhibitory type neurocardiogenic syncope associated with atrial fibrillation in an elderly female during episodes of nausea. This was replicated during tilt-table testing. The atrial fibrillation was part of a unique snap shot of the entire electrophysiological spectrum of the vagal response captured in detail in this index patient.

Keywords: Complete atrioventicular block; Syncope; Vagally mediated atrial fibrillation

Introduction

Vagally mediated paroxysmal atrial fibrillation (AF), initially reported by Coumel, is now a well-recognized clinical entity [1–4]. Recurrent paroxysms of AF tend to occur in otherwise healthy males between 30 and 50 years of age and are typically precipitated by increased vagal tone during nocturnal hours. Episodes are often preceded by progressive bradycardia and the AF may characteristically alternate with typical atrial flutter. The mechanism is thought to be secondary to vagally triggered heterogeneous shortening of the atrial refractory period promoting functional reentry, often heralded by atrial premature beats [1,2,5,6]. We report the atypical case of vagally mediated AF that coincided with episodes of nausea in a previously healthy elderly female presenting with new onset syncope. The vagal response was characterized by a reproducible sequence of events including sinus bradycardia, prolongation of the PR interval, complete atrioventicular (AV) block, asystole, transition to AF without an initial escape rhythm, and resolution of syncope with resumption of irregular ventricular response. Withdrawal of the vagal response with improvement in nausea coincided with a rapid ventricular conduction and abrupt termination of AF to normal sinus rhythm without any pause.

Case report

A 74-year old previously healthy sedentary female presented to the emergency room for evaluation of new onset syncope and nausea that occurred the same morning. Her past medical history was unremarkable for any cardiac or non-cardiac comorbidity. Family history was negative for premature coronary artery disease or any cardiac arrhythmias. She was afebrile and not taking prescription or over the counter medications. Her mentation, vital signs, physical examination, and laboratory evaluation including electrolytes and complete blood counts were normal. The resting electrocardiogram (ECG) was unremarkable. She then experienced a bout of nausea followed by syncope with subsequent spontaneous full recovery. An immediate electrophysiology consult was placed for consideration of an implantable pacemaker because she was deemed to be in 'heart block' and atrial fibrillation during the episode.

However, careful evaluation of the telemetry and ECG tracings (Figs. 1 and 2) and their correlation to her clinical symptoms established the diagnosis of vagally mediated neurocardiogenic syncope. The etiology of her nausea was thought be secondary to a viral illness. The onset of nausea during the initial representative episode (Fig. 1) was heralded by progressive prolongation of the PP interval and sinus bradycardia. Prolongation of PR interval preceded the onset

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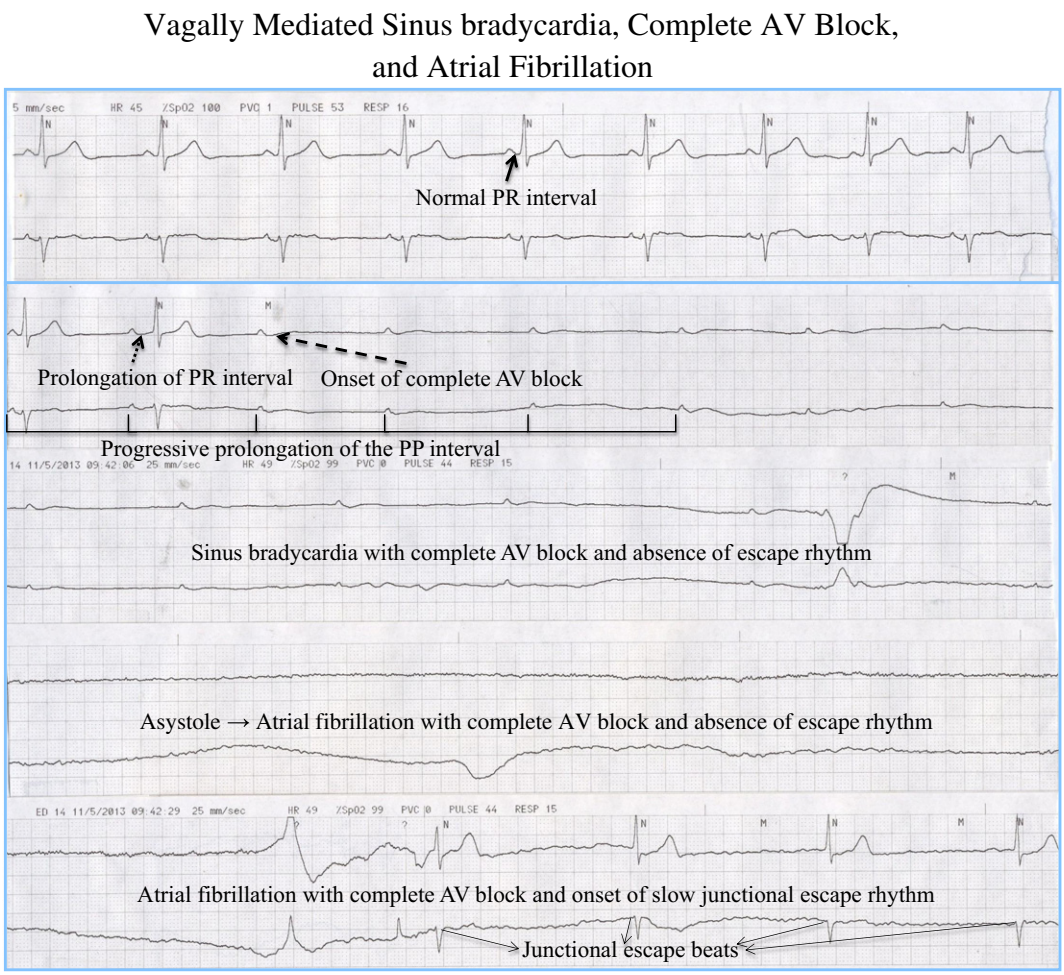

Fig. 1. The PR interval was normal at baseline (*short thick arrow*). Onset of nausea coincided with progressive prolongation of PP interval, prolongation of the PR interval (*short thick shaded arrow*), and onset of complete atrioventicular (AV) block (*long thick shaded arrow*). There was absence of any ventricular escape rhythm during sinus bradycardia. The asystole was followed by atrial fibrillation with continuation of complete AV block without any escape rhythm. The patient experienced syncope during the course of events. Finally slow junctional escape bradycardia (*long thin arrows*) occurred at a rate of ~30 beats/minute.

of complete AV block without any escape rhythm. Asystole was followed by AF with continuation of complete AV block without an escape rhythm. She experienced syncope for a few seconds while lying supine in her bed during this sequence of events. A slow junctional escape rhythm at a rate of 30 beats/minute occurred during AF. Resolution of syncope coincided with resumption of irregular ventricular conduction during AF. After awakening, she reported improvement of her nausea which was concurrent with more rapid ventricular conduction. The AF then abruptly terminated without any pause and was replaced by normal sinus rhythm (Fig. 2A).

She experienced two more telemetrically documented similar episodes of vagally mediated syncope triggered by nausea during her brief hospital stay. Telemetry of the second episode later that day was associated with a prolonged pause (almost 34 seconds) and syncope during AF (Fig. 2B). Again, termination of AF was preceded by rapid ventricular conduction. An 80 degree head-up tilt table test performed two days after admission was positive for a cardio-inhibitory vasovagal response associated with an initial drop in blood pressure. Tilt table testing also reproduced the characteristic sequence of events noted during the clinical episodes including sinus bradycardia, complete AV block, and the pattern of atrial fibrillation as described above (Fig. 3). The echocardiogram revealed a structurally normal heart with good biventricular function and no valvular abnormalities. The patient's nausea symptoms resolved and she experienced no further episodes. A pacemaker was not recommended because of the vagal etiology of her symptoms and she was discharged without any medications. During a 6 month follow up period, she did not experience any more episodes of syncope or palpitations.

Discussion

We report an atypical case of cardioinhibitory type neurocardiogenic syncope with vagally mediated AF in a previously healthy elderly female. This is a unique and unequivocal description of initiation and termination of a clinical episode of vagally mediated AF paralleling the onset and withdrawal of vagal tone. Such a comprehensive compendium of a vagal response which included AF and