



# CONVULSIVE SYNCOPES SECONDARY TO IDIOPATHIC SINUS ARREST: A DIAGNOSTIC PITFALL

Christopher Groetsch OMS-IV<sup>1</sup>, Priyanka Ghosh DO<sup>2</sup>, Katherine Kaminski MD<sup>3</sup> Michelle Kaminski MPH, OMS-III<sup>1</sup>

<sup>1</sup>Lake Erie College of Osteopathic Medicine, Erie, PA,

<sup>2</sup>Department of Structural and Interventional Cardiology, AnMed Medical Center, Anderson, SC

<sup>3</sup>Department of Medicine, NYU Langone Health, New York, NY



## Introduction

- Sinus node dysfunction includes disorders of impulse generation or conduction from the sinoatrial node
- It is a common indication for permanent pacemaker implantation in older adults
- Sinus node dysfunction is often associated with structural heart disease, ischemia, medication effects, or metabolic disturbances
- Spontaneous sinus arrest without an identifiable precipitating cause is uncommon
- Clinical presentation may be nonspecific, which can delay recognition
- Convulsive syncope caused by prolonged asystole may mimic seizure activity
- This overlap can create diagnostic challenges and delay appropriate management

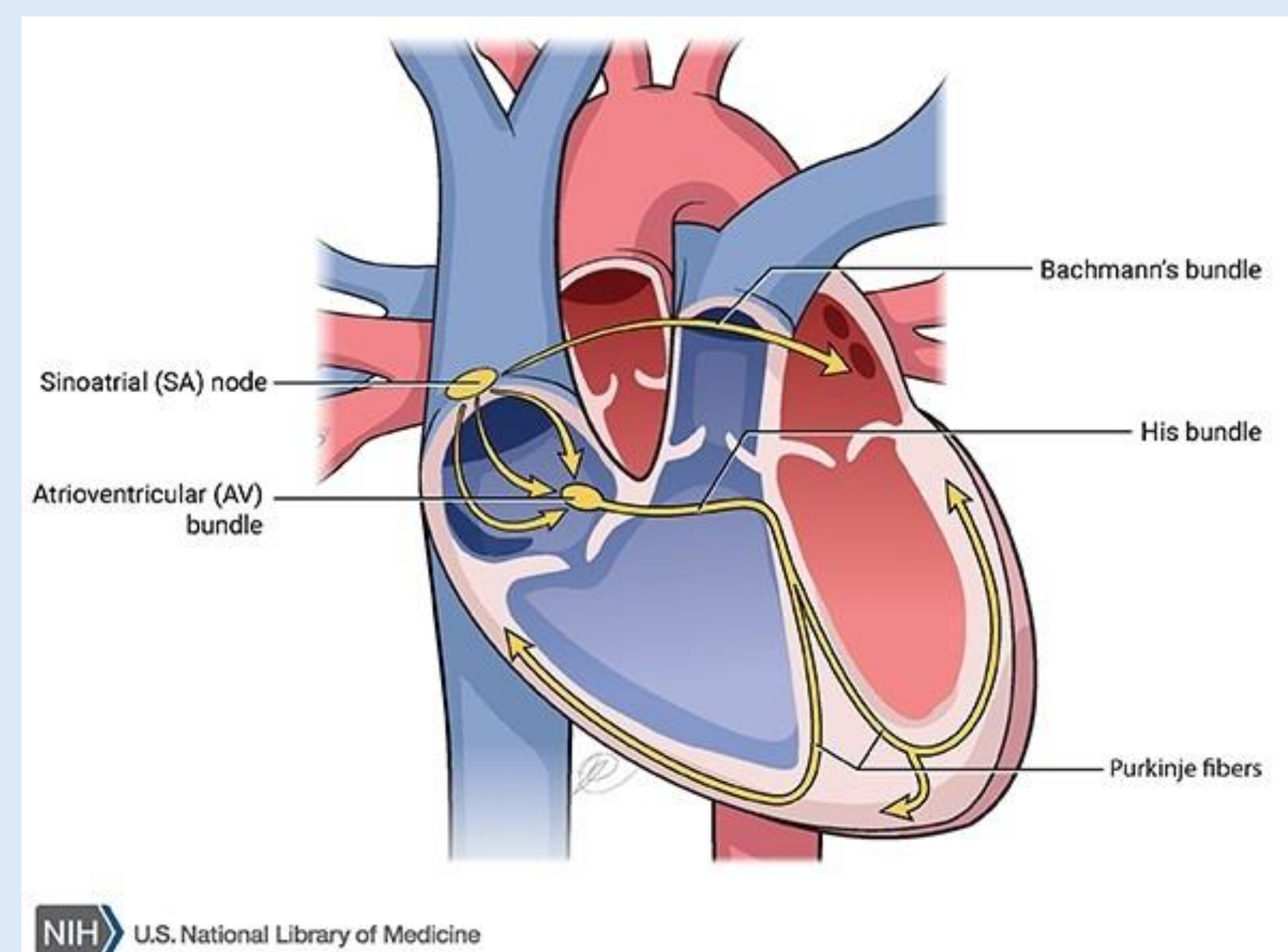


Image 1: Cardiac Electrical Conduction System

## Case Presentation

- 74-year-old male with no significant past medical history presented after a syncopal episode with convulsive features
- Reported several months of intermittent dizziness and light-headedness without prior syncope
- Initial ED evaluation, including labs, EKG (**Figure 2**), and head imaging, was unrevealing
- Initial episode was presumed to be new-onset seizure activity, and he was discharged with outpatient follow-up
- Shortly after discharge, he developed recurrent syncopal episodes and presented to a second facility
- Telemetry captured sudden bradycardia progressing to prolonged asystole with spontaneous recovery
- Required transcutaneous pacing and isoproterenol infusion while awaiting transfer for permanent pacemaker placement
- Hospital course was complicated by additional episodes of asystole with loss of capture, requiring brief ACLS
- Return of spontaneous circulation occurred rapidly without defibrillation
- Underwent emergent dual-chamber permanent pacemaker implantation
- Echocardiogram showed no structural abnormalities; Lyme serologies were negative
- No reversible metabolic, ischemic, or pharmacologic cause was identified
- At 1-week follow-up, pacemaker interrogation showed minimal pacing burden, and the patient remained asymptomatic

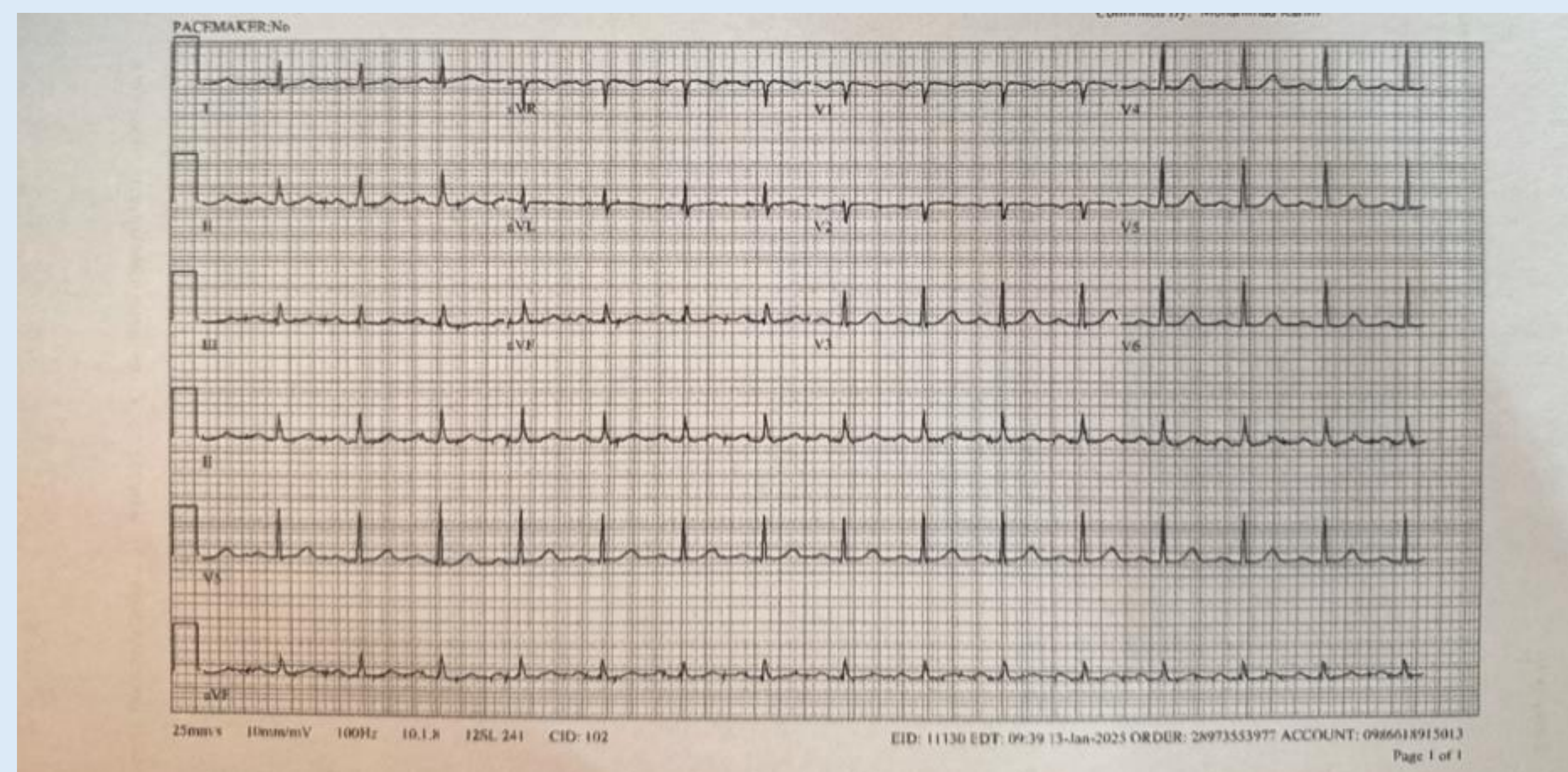


Figure 2: Patient's Initial EKG at presentation

## Discussion

- Sinus node dysfunction accounts for approximately half of permanent pacemaker implantations in older adults

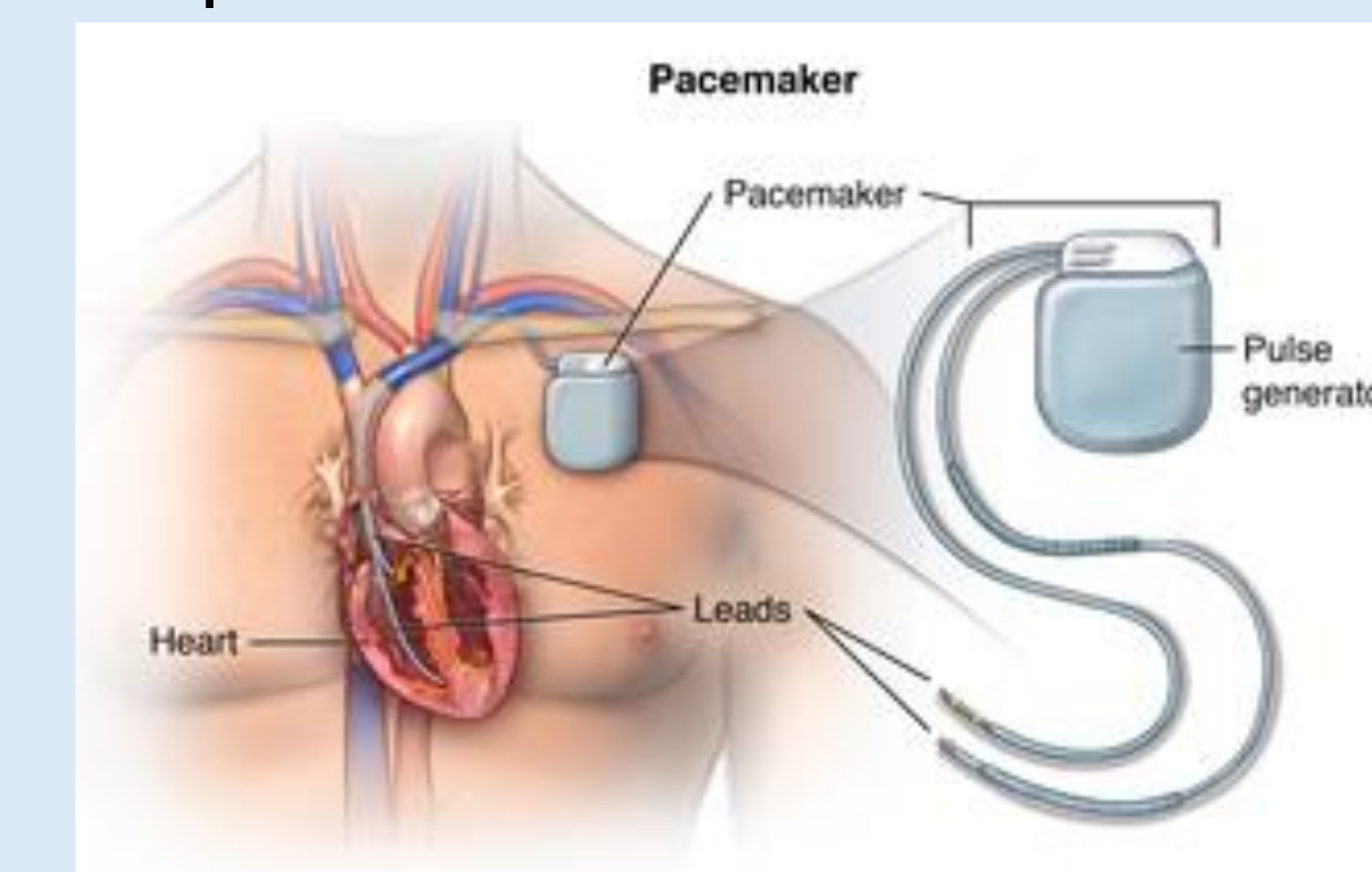


Image 2: Pacemaker and Transvenous Leads

- Although often linked to identifiable causes, idiopathic spontaneous sinus arrest is rare and clinically important
- Prolonged asystole can cause cerebral hypoperfusion, producing tonic or myoclonic movements that mimic seizure activity
- This overlap increases the risk of misdiagnosis and delayed treatment
- Cardiac arrhythmias should remain high on the differential in older adults with unexplained syncope
- Prodromal dizziness or light-headedness may be an important clinical clue
- Continuous cardiac monitoring was critical in establishing the diagnosis in this case
- Early recognition allowed timely intervention with permanent pacemaker implantation
- Prompt diagnosis and treatment are essential to prevent recurrent syncope, cardiac arrest, and death

## References

For a complete list of references contact Christopher Groetsch at [cgroetsch67812@med.lecom.edu](mailto:cgroetsch67812@med.lecom.edu)