



Bidirectional interaction between the brain and the heart: Implications for safe practice after ischemic stroke



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Introduction

The vulnerability of having coronary artery disease and adverse cardiovascular events in a patient presenting with a stroke is something that is addressed in this case report. An estimated one in four patients that present with an initial stroke may have concomitant coronary artery disease. The relationship between the acute ischemic stroke and cardiac events can be manifested by abnormal rhythms as well as concomitant coronary artery disease. Additionally, COVID19 can exacerbate underlying cardiac and cerebro-vascular conditions.

Case Presentation

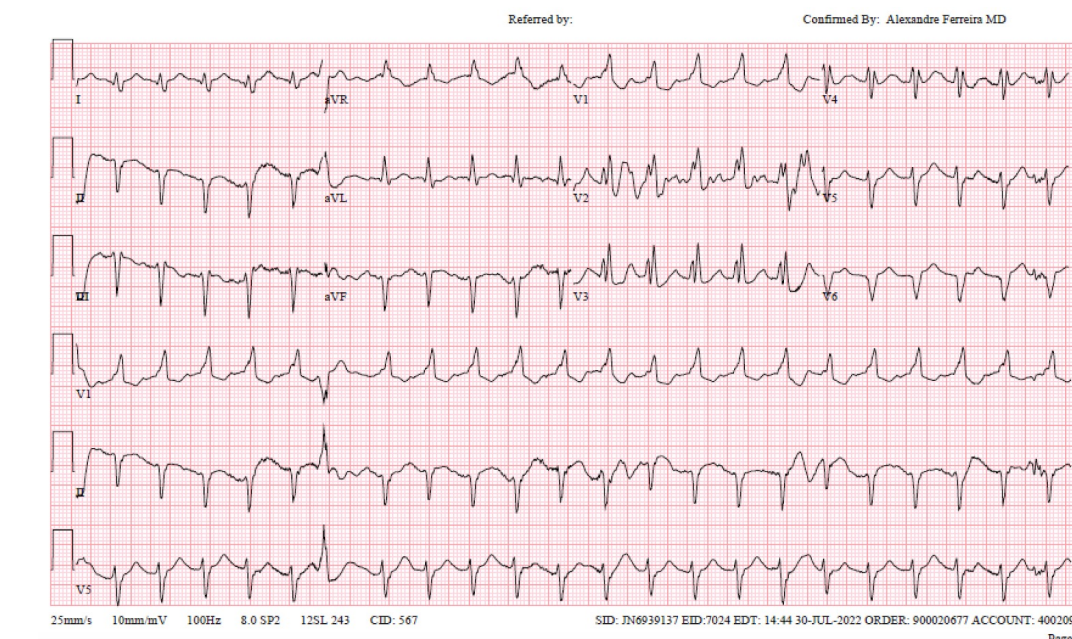
A 69-year-old man with past medical history of hypertension, hyperlipidemia, diabetes mellitus type II, heart failure with reduced ejection fraction, hepatitis C, and history of DVT, presented with right-sided weakness and altered mental status.

History

- Surgical History:** Popliteal bypass with angioplasty and stent placement
- Medications:** Acetaminophen/Oxycodone, Alprazolam, Amitriptyline, Anastrozole, Baclofen, Humalog, Lantus, Eliquis, Carvedilol, Furosemide, Simvastatin
- Allergies:** No known drug allergy.
- Family History:** Brother with Diabetes mellitus
- Social History:** 10-year alcohol and tobacco use.

Clinical Course and Investigation

- Patient presented to the ED and Stroke Protocol was activated.
- Patient received TPA treatment and Remdesivir treatment for COVID-19.
- Subsequent CTs and MRIs showed no acute ischemic or hemorrhagic stroke, likely TIA.
- ECG on admission as well as elevated troponins were consistent with NSTEMI and QTc prolongation. During hospital course telemetry showed multiple PVC's
- Patient improved during his hospitalization and was ready for discharge on the 9th day.
- On the day of the discharge patient went into Cardiac Arrest precipitated by Torsade's de Pointe.
- The patient had a repeat Echocardiography which demonstrated a decreased ejection function from 40-45% to 25-30%.
- Catheterization was done which showed a single vessel coronary artery disease with 100% subacute occlusion.

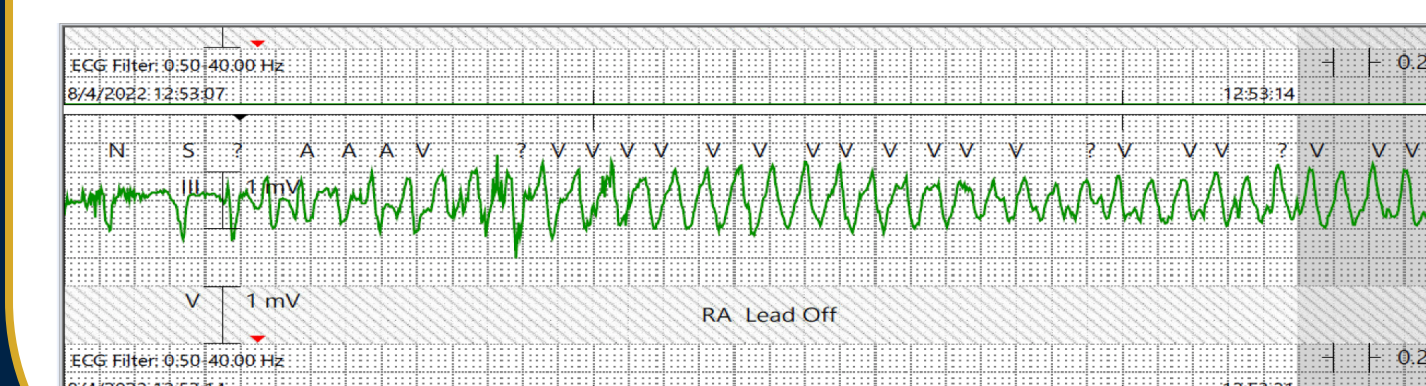
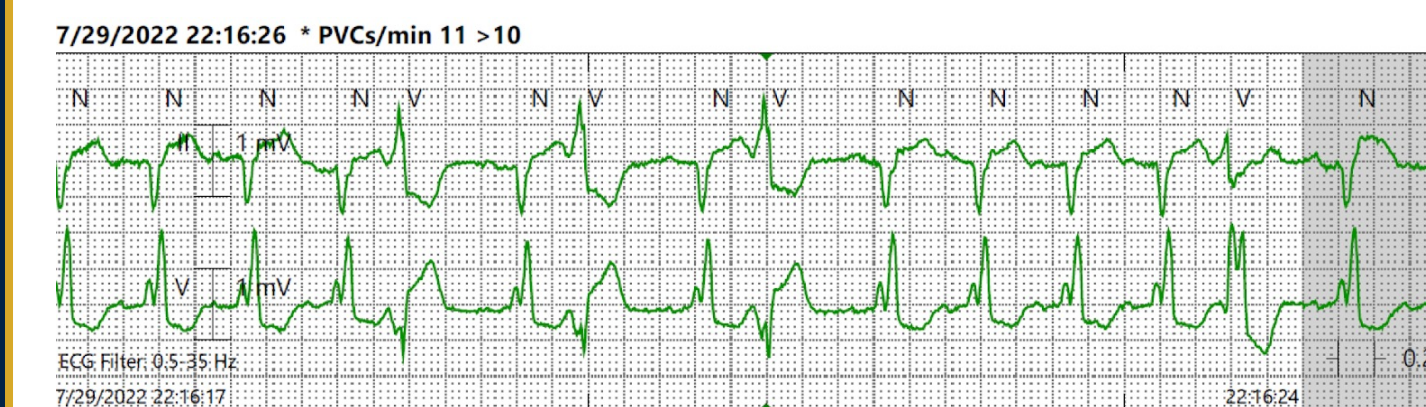


Admission

Vitals: T 39.5 °C, HR 127, BP 174/73, RR 17, O₂ 96% on Room Air
General: AOx1. Not following commands
Cardio: Elevated rate with regular rhythm
Neuro: Right sided hemiparesis, slurred speech, hypoesthesia, right upper extremity drift
Labs: NT-proBNP: 5100, Cr: 1.70, BUN: 23, WBC: 15.2, HGB: 13.0, COVID19 positive. First Trop 2.71 second 1.89

Torsade's de Pointe

- Telemetry reading prior to cardiac arrest.
- Multiple PVC's seen on telemetry.



Discussion

This patient presented with cerebrovascular complicated by a single vessel disease and arrhythmia.

- Most patients who have cerebrovascular accident have an underlying coronary artery disease.
- SCA account for 15-20% of deaths in adults in the USA and Western Europe, and up to 50% of all cardiovascular deaths.
- All patients with cerebrovascular accidents with risk factors should have a concurrent cardiovascular workup.
- COVID19 can also predispose to cerebrovascular and cardiovascular events.
- This case illustrates the importance of taking into consideration cardiovascular risks in those with cerebrovascular events.

References

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