



CENTER FOR HEALTH SCIENCES

INTO UNFAMILIAR TERRITORY: TO ICD OR NOT TO ICD

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Introduction

- Brugada syndrome (BrS) is an inheritable arrhythmogenic disease that was originally described by Dr. Brugada in 1992. It is a complex syndrome recognized by its classic ECG patterns and increased risk of cardiac arrest (CA) in otherwise healthy individuals.

Brugada Types

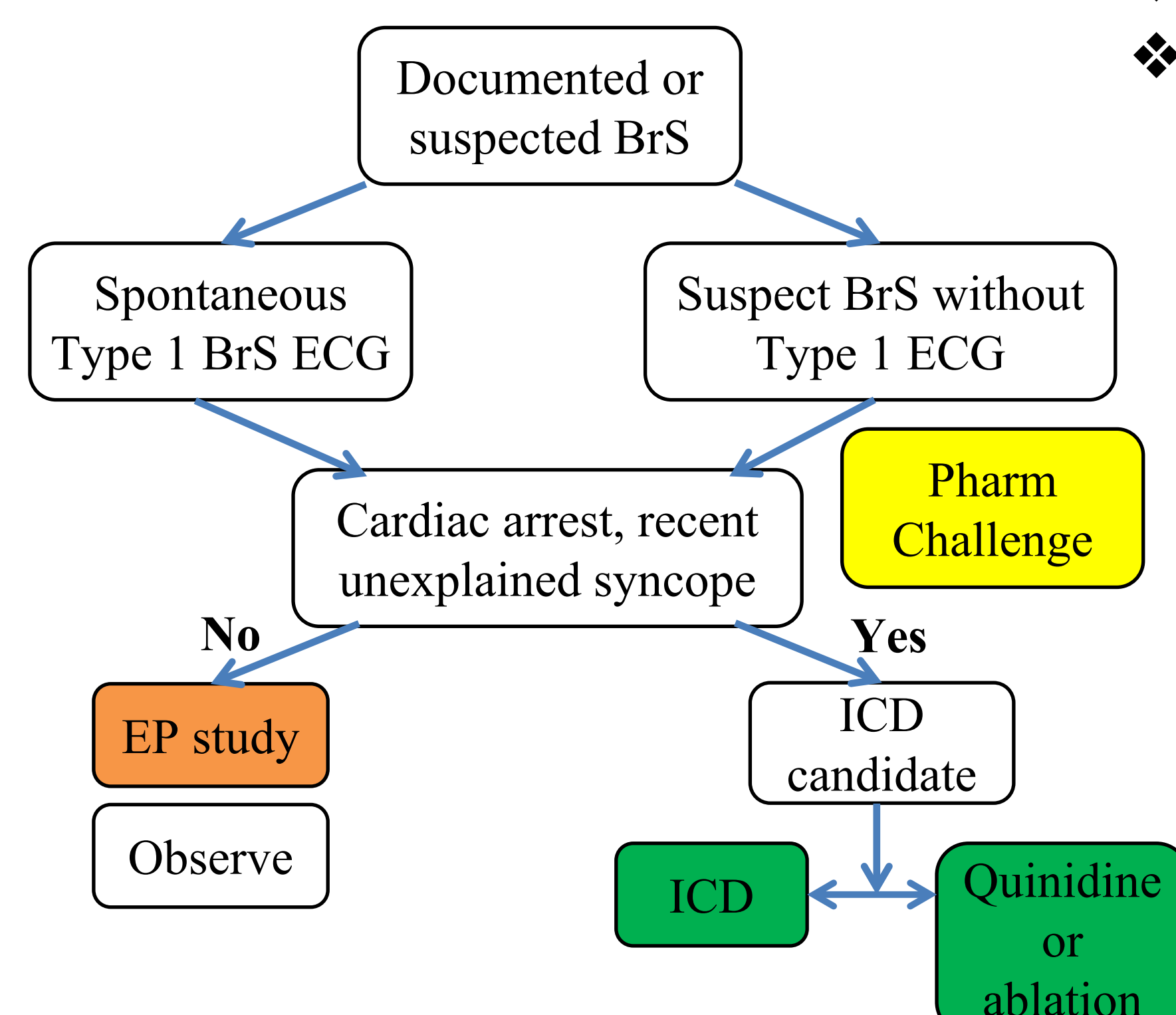
1. Coved ST elevation

2. Saddleback ST elevation

3. Either coved or saddleback

- Loss of function mutation involving the SCN5A gene encoding a subunit of the cardiac sodium channel contributes to 25% of BrS cases.
- Symptomatic patients with the spontaneous ECG pattern benefit from ICD implantation

Therapy Described by Guideline



Case

Presentation

- HPI:** A 21-year-old male presented to the ED with stabbing back pain radiating to the chest on the day of arrival. Patient denied previous episodes. He had one episode of syncope at 10th grade preceded by nausea.

- PMH:** None

- FHx:** Maternal uncle died during sleep at 24. Maternal grandmother died during sleep in 30s.

- SHx:** Denied tobacco, alcohol and drug use

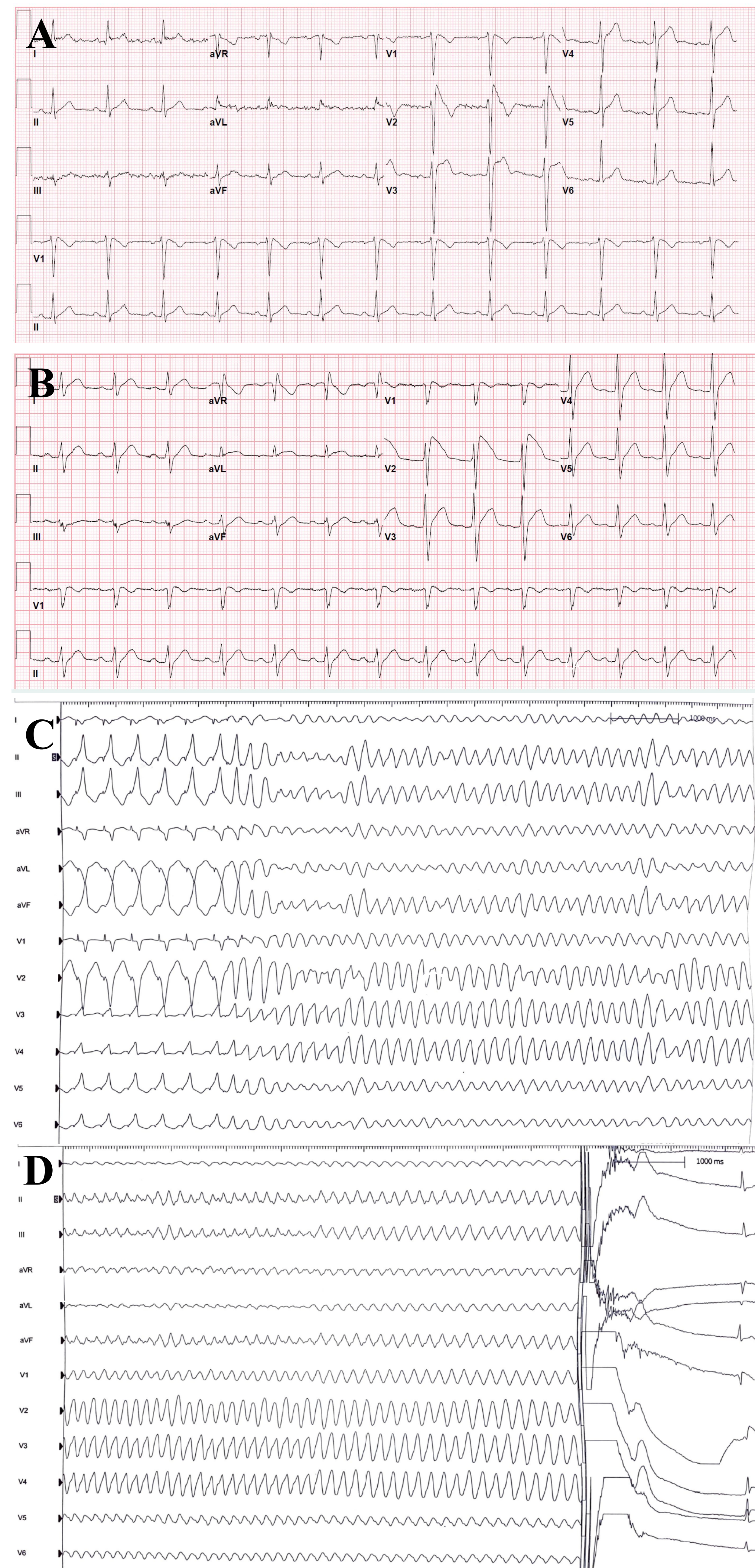
- Vitals on presentation:** BP 140/92; HR 79; RR 19; Temp 37.4C; 100% on RA; BMI 22.2

Cardiovascular Exam:

- Normal S1 and S2,
- Regular rate and rhythm.
- No murmurs, rubs, or gallops appreciated.
- Distal pulses are intact bilaterally.

Labs/imaging:

- Troponin: negative
- CT chest: negative for aortic dissection or significant cardiopulmonary processes



Clinical Course

Initial ECG consistent with Type 1 BrS

Ruled out ACS and aortic dissection

Patient was given 300mg Flecainide challenge

The QRS widened >125% with Flecainide challenge prompting EPS

Sustained ventricular flutter was induced with 400/200/200 protocol that required DCC to terminate

After shared decision discussion, the patient received subcutaneous ICD placement

Discussion

- Accurate risk stratification for BrS is challenging with potential devastating outcome in otherwise healthy population
- Current data do not provide guidance on risk stratification for asymptomatic or drug inducible BrS.
- A recent study revealed low but not insignificant risk of ventricular arrhythmia (0.81%/y) in asymptomatic BrS.
- Flecainide challenge is typically reserved for suspected BrS without Type 1 ECG. We were able to identify QRS prolongation with Brugada pattern enhancement.
- Our patient experienced no immediate or perioperative complications.
- Asymptomatic BrS Type 1 pattern remains a difficult clinical conundrum. Pharmacologic testing is safe under controlled setting that can guide shared decision making.

Reference

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- Li KHC, Lee S, Yin C, et al. Brugada syndrome: A comprehensive review of pathophysiological mechanisms and risk stratification strategies. *Int J Cardiol Heart Vasc*. 2020;26:100468. Published 2020 Jan 21. doi:10.1016/j.ijcha.2020.100468
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Figure 1. 12 lead EKG demonstrating type 1 BrS pattern (A). 12 lead ECG demonstrating 25% QRS widening and type 1 pattern enhancement (B). Electrophysiology study with 400ms drive train with 200ms ventricular premature contraction inducing sustained ventricular flutter. (C). Sustained ventricular flutter terminated with 200 J defibrillation (D).