Catheter Ablation of J wave Syndrome

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- 38 YO male, No past medical history
- FHx: older brother died suddenly during sleep
- Sudden cardiac arrest at 4 o’clock in the morning
  ➔ CPR by his son ➔ AED applied
• ECG at ER
ECG during Hypothermia

BT 32 °C
Telemetry at CCU
- VF Storm (11 Defibrillation)
● ECG after Hypothermia
J-Wave Syndrome

- Because accentuated J waves characterize both Brugada syndrome (BS) and Early repolarization syndrome (ERS), these syndromes have been grouped under the term “J-wave syndromes”
Brugada Syndrome and ERS

Genetic, clinical, electrophysiological, & pharmacological characteristics

Brugada Syndrome

Early Repolarization Syndrome
Osborn wave

- Also known as camel-hump sign, late delta wave, prominent J wave
- Positive deflections occurring at the J point
- Generally observed in hypothermic patients (<32°C)
- Amplitude inversely related to BT
- 44-year-old male
- Previously healthy, No FHx of SCD
- Sudden collapse while having breakfast (AM 06:13)
- Documented VF on AED by 911
Lab
- fT4 1.44 ng/dL, TSH 2.23 uIU/mL
- CPK / CK-MB / TnI  97 IU/L / 0.83 / 0.008 ng/mL
- Na / K / Cl  142 / 4.2 / 107 mmol/L
- Total Ca / Mg  8.9 mg/dL / 2.0 mmol/L

Echocardiography
- Normal sized cardiac chambers
- Normal LV systolic function (LVEF=60%)
- No RWMA
- No valvular abnormality
- ABNORMAL ECG -
Coronary angiography

Normal Coronary Artery, Provocation Test: Negative
CASE 2

- Provocation test

  - Epinephrine test: no QT prolongation
  - Flecainide test: no ST elevation
● ICD implantation (Aug, 2014)
● ICD Shock after 3 weeks

4:40 AM
Recurrent ICD Shocks, 1 month later
ECG at OPD

Admission, Quinidine 200 mg tid
Next day, telemetry monitoring

Isoproterenol infusion
• F/U ECG
Progress

- Dec 2014: intolerable to quinidine (diarrhea, myalgia, general weakness, tinnitus, gout..) → stop quinidine

- Mar 2015: ICD shock → admission (isoproterenol, quinidine)

- Feb 2016: ICD shock under quinidine

- May 2017: ICD shock without quinidine

→ Decided to undergo EPS & RF catheter ablation
Baseline rhythm and catheter position
• Epicardial potential at LV lateral wall
Endocardial potential at LV lateral wall
● Voltage mapping

**Endo**

**Epi**
● Hypothermia-induced J wave


⇒ Epicardial infusion of cold saline

Before cold saline infusion
● After cold saline infusion (40 sec)
- Before cold saline infusion
After cold saline infusion (40 sec): delayed potential
- 2 min later: no delayed potential
- Mapping of delayed potential

![Diagram showing electrocardiogram tracings with annotations for ABLd, ABLp, ENDd, and ENDp with arrows pointing to specific areas of interest.](image-url)
Mapping of delayed potential
During ablation of LV lateral wall (epicardial)
- No VT induction
- Vagal denervation: vein of Marshall area

Failed CS cannulation
Vagal denervation: vein of Marshall area

Epicardial approach
- Bradycardia during ablation
Final ablation lesions
- Cold saline infusion after ablation
- Cold saline infusion after ablation
Post RFCA sinus rhythm
ECG F/U, POD #1
ECG F/U, POD #7
○ ECG F/U, 1 month later
Conclusions

- We report a case of catheter ablation of J-wave syndrome using combined delayed potential ablation and vagal denervation.