DEVICE THERAPY FOR HEART FAILURE: ICDS, CRTS AND LVADS, OH MY!

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48M has sustained a STEMI 3 months ago. Despite med mgmt his EF remains low at 30%. He is asymptomatic, his QRS width is 110msec. The most appropriate device is...

- A. ICD
- B. CRT
- C. ICD + CRT
- D. LVAD
OUTLINE

• Device function description, evidence, indications and uses for
  • ICDs
  • CRTs
  • LVADs

• Guidelines and device therapy for heart failure

• JEOPARDY!
BACKGROUND

• Device therapy for heart failure
  • Defibrillator Pacemaker and mechanical support
  • ICD
  • Cardiac resynchronization therapy (biventricular pacemaker)
  • LVAD
ICDS

- Function
- Evidence
- Indications
- Patient selection
- Caveats
ICDS IMPLANTABLE CARDIOVERTER-DEFIBRILLATORS

• Function to primarily or secondarily prevent life threatening ventricular arrhythmias (eg. VT and VF)
ICD EVIDENCE

• MADIT I
  • Prior MI
  • Nonsustained VT
  • Reduced EF <35%
  • Inducible VF on EPS

• MADIT II
  • Prior MI > 30 days prior to enrollment
  • Reduced EF <=30%
ICD EVIDENCE

- SCD HeFT
  - ICD and amiodarone in ischemic and nonischemic cardiomyopathy
  - Overall reduction in mortality with ICD 29 vs 36% in both ischemic and nonischemic
  - ICD had no overall worse risk of QOL
ICD PATIENT SELECTION

• Risk stratification is essential
• Indications from research are quite broad
• Use SHOCKED criteria to help decision making
• The role of Antitachycardia Pacing (ATP)
CARDIAC RESYNCHRONIZATION THERAPY

• Function
• Evidence
• Indications
• Patient Selection
• Caveats
CRT FUNCTION

• Biventricular pacing
  • Simultaneous ventricular pacing
  • For decreased EF
CRT PATIENT SELECTION

- Decreased EF <35%
- NYHA II TO III SYMPTOMS
- QRS WUIDTH GREATER THAN 120 MSEC
  - ESPECIALLY >150
  - ESPECIALLY LBBB
LVADS

• Function
• Evidence
• Indications
• Patient Selection
• Caveats
LVADS FUNCTION

- Axial flow left ventricular assist devices are designed to continuously flow blood from the left ventricle through the aorta bypassing a failing heart in end stage or AHA/ACC Stage D heart failure
LVADS FUNCTION

- https://www.youtube.com/watch?v=mu15tNUH4VU
GUIDELINES AND DEVICE THERAPY

- ICD I
- EF <35% ischemic and nonischemic primary prevention NYHA 2-3 40 days post MI
- CRT I
- EF 35% or less, QRS >150msec, NYHA II, III or ambulatory IV
- LVAD IIa

1. MCS is beneficial in carefully selected‡ patients with stage D HFrEF in whom definitive management (eg, cardiac transplantation) or cardiac recovery is anticipated or planned.660–667 (Level of Evidence: B)
2. Nondurable MCS, including the use of percutaneous and extracorporeal ventricular assist devices (VADs), is reasonable as a “bridge to recovery” or “bridge to decision” for carefully selected‡ patients with HFrEF with acute, profound hemodynamic compromise.668–671 (Level of Evidence: B)
3. Durable MCS is reasonable to prolong survival for carefully selected‡ patients with stage D HFrEF.672–675 (Level of Evidence: B)
LVAD PATIENT SELECTION

• EF <25%
• BYHA II to III
• Failed GDMT
• Pressor dependent
• Multidisciplinary team essential

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CRTs
LVADs
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