CASES IN ADVANCED IMAGING

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WHICH IMAGING TOOL AND WHEN?

Viability: MRI, DSE, Perfusion, PET

2D Echo
M-Mode
TDI
Stress Echo
Stress MRI
TEE
PW/CW Doppler
Color Doppler
Contrast
STRAIN
3D Echo
CORONARY CTA
Stress NUC Perfusion
Calcium Scoring
Cardiac MRI
Dyssynchrony / CRT
Cardiac CT
IMAGING CASES

- BRIEF CLINICAL HISTORY
- INITIAL IMAGING DATA
- EXPERTS’ OPINIONS
- FOLLOW-UP IMAGING DATA
- CLINICAL OUTCOME
CASE 1
VIABLE or NOT?

♥ 62 year old man with severe CAD, PVD (prior BKA), DM1, HTN, HLD, ESRD (s/p kidney txp 5 yrs ago), presents with CHF

♥ INITIAL EVALUATION FOR RENAL TXP
  ♥ DSE (no ischemia / inadequate HR) done prior to PV surgery
  ♥ MODEST LV DYSFUNCTION, EF IMPROVED WITH BP TREATMENT
  ♥ Cardiac Cath: diffuse 3 V CAD, preserved EF
    ♥ TREATED MEDICALLY
    ♥ RENAL TXP WITH NO SUBSEQUENT CARDIAC ISSUES FOR 4 yrs

♥ POST RENAL TXP
  ♥ MULTIPLE VASCULAR ISSUES / INFECTIONS etc.
  ♥ NSTEMI AFTER HIP SURGERY, TREATED MEDICALLY (4 yrs post TXP, one year prior to current presentation)
CASE 1
VIABLE or NOT?

❤ PRESENTS WITH WORSENING PVD / INFECTION

❤ PRE-OP EVALUATION

❤ ADENOSINE MIBI: “Impressive large, dense, and fixed defects noted throughout the septum, inferior, and apical walls.” No ischemia. Severe LV dysfunction, LVEF of 26%.

❤ ECHO: Large LAD territory WMA (new), est EF 30%
CASE 1
VIABLE or NOT?

♥ MANAGED “MEDICALLY”
♥ PLAN: PROCEED TO PV SURGERY, RE-EVALUATE POST OP

♥ SUBSEQUENTLY PRESENTED WITH INCREASING DYSPNEA AND CHEST PAIN

♥ GIVEN ECHO IMAGES AND STRESS TEST, IS ANY FURTHER TESTING / IMAGING WARRANTED?
♥ CARDIAC CATH: RENAL / VASCULAR ISSUES
♥ VIABILITY TESTING: ANY USE WITH ECHO / PERFUSION DATA?
CASE 1
VIABLE or NOT?

12 MONTHS PRIOR

CURRENT
VIABLE or NOT?:
ECHO IMAGES

EF= 29%
VIABLE or NOT?: NUCLEAR IMAGES
VIABLE or NOT?: NUCLEAR IMAGES
CASE 1
VIABLE or NOT?

❤ VIABILITY TESTING OPTIONS:
❤ NONE: UNLIKELY TO HAVE VIABILITY BASED ON ECHO / MIBI / ECG
❤ DOBUTAMINE STRESS ECHO
❤ NUCLEAR (?REST – REDISTRIBUTION T1)
❤ PET
❤ MRI
CASE 1
VIABLE or NOT?

❤ Dr. Raman: opinions / options
CASE 1: VIABLE or NOT?

Conclusions / Case Outcome / Summary
CASE 2: ADVANCED IMAGING IN HCM: RISK STRATIFICATION

 Hearts

 35 y/o man with a history of HTN, a heart murmur and OSA

 Initially presented for second opinion for need for AVR

 Denied any symptoms

 Medications: Metoprolol, diltiazem and lisinopril

 PE: Normal carotid upstrokes; Ejection click; I/VI SEM; II/VI diastolic murmur; Clear Lungs

 Repeat Echo revealed a bicuspid AV (2-3+ AR, no AS, nl EF and LVEDD 5.9 cm); Asymmetric hypertrophy (1.5 cm) with no gradient
CASE 2
HCM CLINICAL EVALUATION

❤ New diagnosis of HCM
❤ Further FH (initially not mentioned)
  ❤ Mother (62 y/o) has “IHSS”
  ❤ Her twin also has HCM
  ❤ Maternal uncle died at age 35 y/o (no etiology)
  ❤ 2 other maternal aunts with no dx of HCM
  ❤ Brother with “CHF” and ICD (unknown dx)
HCM CLINICAL CASE: PEDIGREE
HCM: INITIAL DATA ECHO
HCM:
ECG / HOLTER / STRESS TEST

- Holter: 22 PVC’s, no VT
- Stress Test: No sx, nl BP and HR response
RECOMMENDED EVALUATION

- EKG
- Echo
- CK-MM (1st visit only)
- Holter
- Exercise treadmill testing
- MRI
### CURRENT RECOMMENDATIONS FOR RISK STRATIFICATION IN HCM

**Table 2. Risk Factors for Sudden Death in HCM**

<table>
<thead>
<tr>
<th>Major</th>
<th>Possible in Individual Patients</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cardiac arrest (ventricular fibrillation)</td>
<td>Atrial fibrillation</td>
</tr>
<tr>
<td>Spontaneous sustained ventricular tachycardia</td>
<td>Myocardial ischemia</td>
</tr>
<tr>
<td>Family history of premature sudden death</td>
<td>LV outflow obstruction</td>
</tr>
<tr>
<td>Unexplained syncope</td>
<td>High-risk mutation</td>
</tr>
<tr>
<td>LV thickness greater than or equal to 30 mm</td>
<td>Intense (competitive) physical exertion</td>
</tr>
<tr>
<td>Abnormal exercise blood pressure</td>
<td></td>
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<tr>
<td>Nonsustained ventricular tachycardia (Holter)</td>
<td></td>
</tr>
</tbody>
</table>
HCM “TRADITIONAL” RISK FACTORS

- Patient with no “traditional RF” other than ?? FH in uncle

- CAN ADVANCED IMAGING ADD TO DX AND / OR RISK STRATIFICATION?
HCM:
ROLE OF MRI

Dr. Raman Comments
HCM CLINICAL CASE FOLLOW-UP