ABCs of ACS in the Hospitalized Patient

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Disclosures

- I have no relevant disclosures.

Mr. Ross

- 72M CC of substernal chest pressure began 3 hours ago with walking, now a 5/10 in ED
- PMH – DMII, HTN, HLD, emphysema

What to do?

- Obtain data to make a diagnosis
  - 12-ECG, troponin
  - Patient signs and symptoms
    - typical versus atypical
    - history and co-morbidities
- Diagnosis
- Treatment plan
- Consult cardiology
- Assess risk
- What does the evidence say?

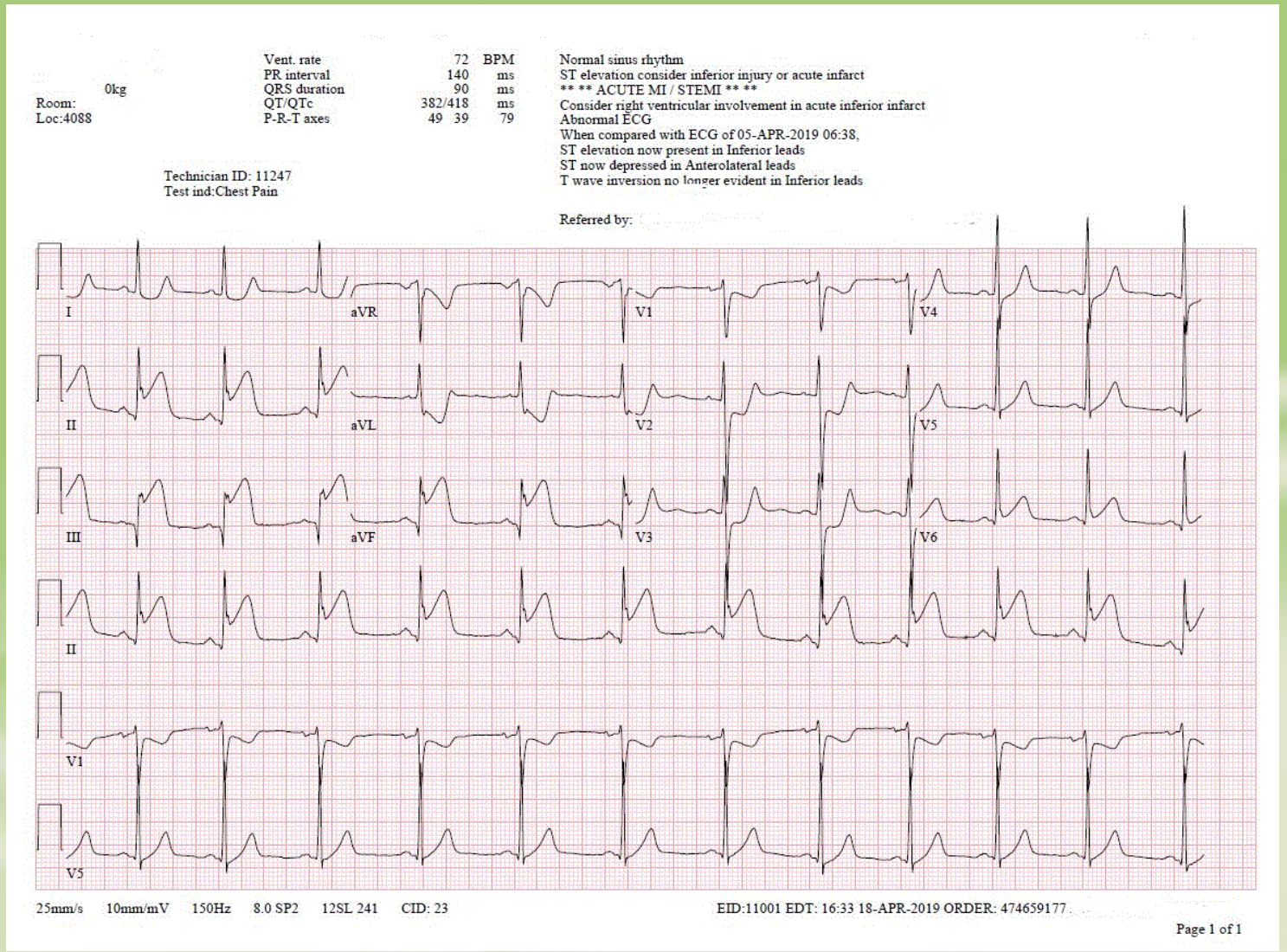
ACS Risk Factors

- Male, Age>60
- DMII
- HTN
- HLD
- Other risk factors
  - Personal history of CAD
  - Family history of CAD, especially premature male <55, female <65
  - Autoimmune diseases – Lupus and RA
    - accelerate atherosclerosis and premature heart disease

ACS Risk Scale

- GRACE ACS Risk and Mortality Calculator
  - Age
  - Heart rate (60-100)
  - Systolic BP (100-120)
    Creatinine (0.7-1.3)
  - Cardiac arrest at admission
  - ST segment deviation on EKG?
  - Abnormal cardiac enzymes
  - Killip class (signs/symptoms of CHF)

12-ECG


0kg
Room:
Loc:4088
Vent. rate 72 BPM
PR interval 140 ms
QRS duration 90 ms
QT/QTc 382/418 ms
P-R-T axes 49 39 79
Normal sinus rhythm
ST elevation consider inferior injury or acute infarct
** ** ACUTE MI / STEMI ** **
Consider right ventricular involvement in acute inferior infarct
Abnormal ECG
When compared with ECG of 05-APR-2019 06:38,
ST elevation now present in Inferior leads
ST now depressed in Anterolateral leads
T wave inversion no longer evident in Inferior leads
Technician ID: 11247
Test ind:Chest Pain
Referred by:
I
aVR
V1
V4
II
aVL
V2
V5
III
aVF
V3
V6
II
V1
V5
25mm/s 10mm/mV 150Hz 8.0 SP2 12SL 241 CID: 23
EID:11001 EDT: 16:33 18-APR-2019 ORDER: 474659177
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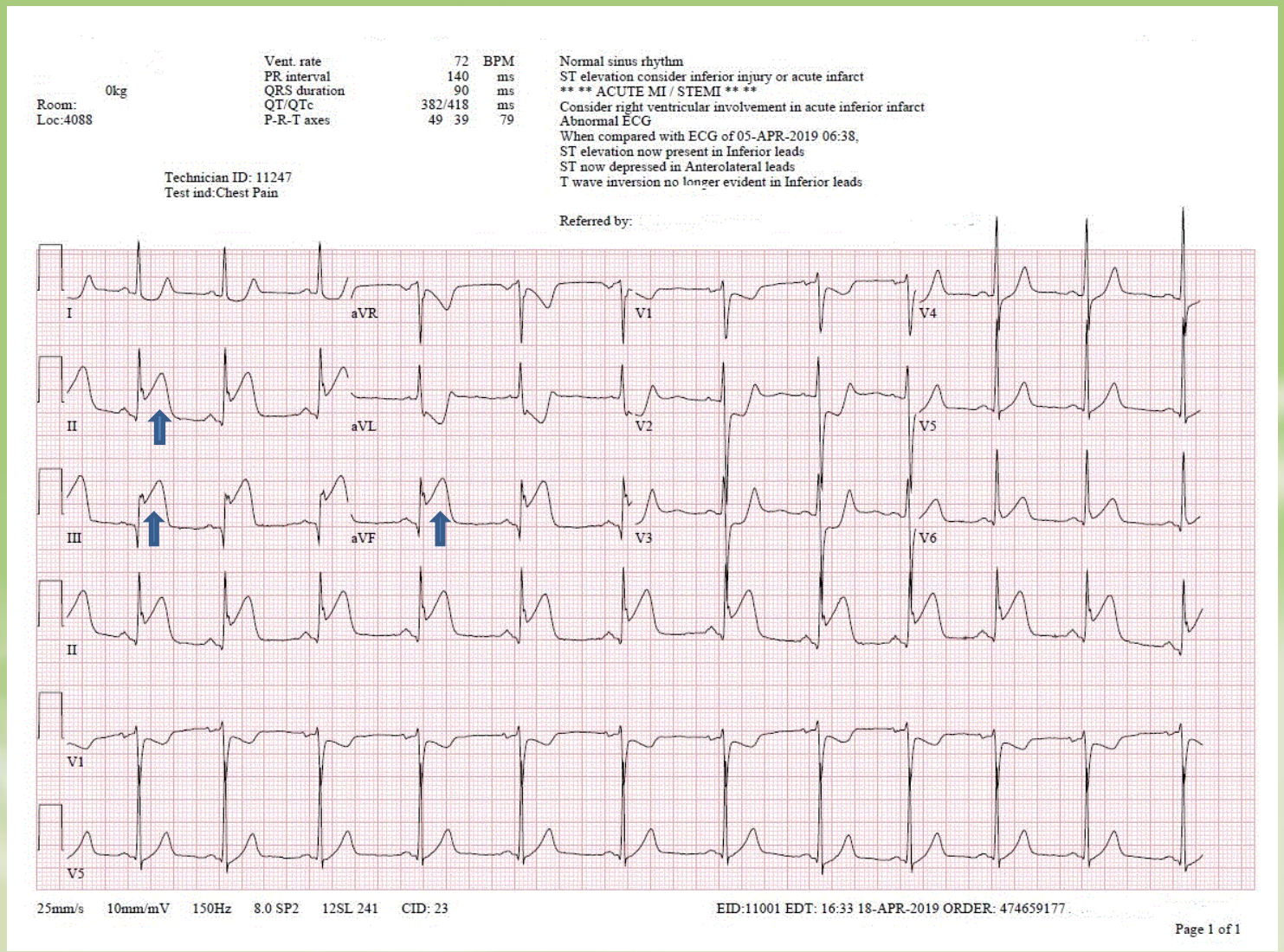
12-ECG



	Vent. rate	72	BPM
	PR interval	140	ms
0kg	QRS duration	90	ms
Room:	QT/QTc	382/418	ms
Loc:4088	P-R-T axes	49 39	79

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Test ind:Chest Pain

Referred by:

I aVR V1 V4
II aVL V2 V5
III aVF V3 V6
II
V1
V5

25mm/s 10mm/mV 150Hz 8.0 SP2 12SL 241 CID: 23

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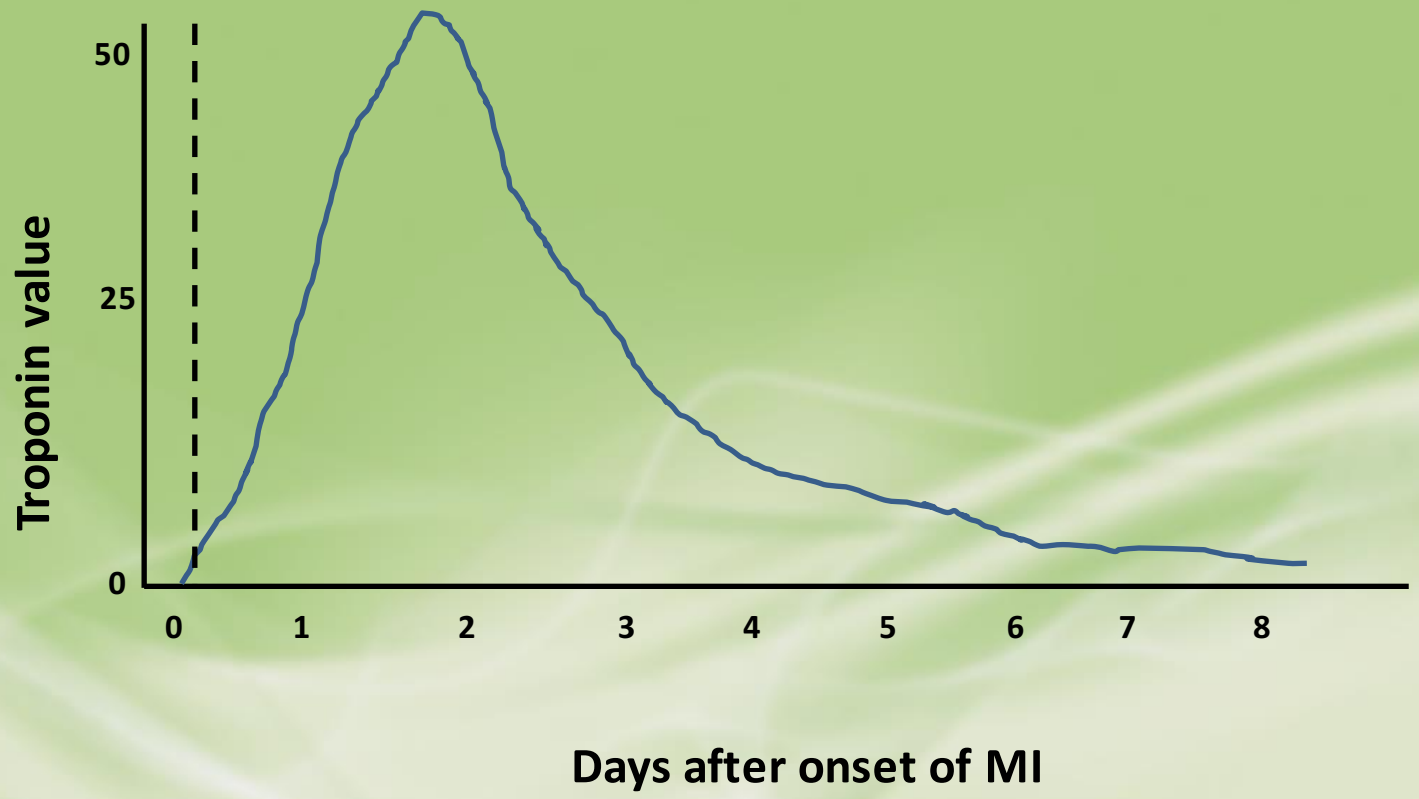
RIP

Diagnostics

- Troponin



Signs and Symptoms

- CC of substernal chest pressure that began 3 hours ago with walking, now a 5/10
- Classic – ask about chest *discomfort*
  - location
  - type
  - onset with activity
- Concerning symptom that needs immediate intervention
  - ongoing chest discomfort

ACS Guidelines

STEMI

- Immediate medical interventions
  - Aspirin 324mg po
- LHC with door to balloon time 90min

Non-STEMI

- Immediate medical interventions
  - Aspirin 324mg po
- May need LHC and intervention in future

Immediate Medical Interventions

- Aspirin 324mg chewed
- 12-ECG
- Nitro SL, morphine 2-4mg IV for ongoing CP
- Labs
  - Troponin, PT/PTT, BMP, CBC
  - Creatinine, glucose, electrolytes, H&H
  - HA1c, lipids
- Chest x-ray to check for signs of aortic dissection

Brief Physical Examination

- A, B, C
  - Airway, Breathing, Circulation
- Vital signs
- Signs of CHF
  - Jugular venous distension
  - Pulmonary auscultation for rales
- Cardiac for murmurs and gallops
- Neuro for focal defect indicative of stroke
- Upper and lower extremity assessment for pulses
- Systemic hypoperfusion (cool, clammy, pale)

Key History Points

- Allergies
  - Contrast dye
- Bleeding issues
- Upcoming surgeries
- Medications
  - Blood thinners
  - Last taken?
- Previous history of MI, interventions
  - Records
  - *Does this feel the same?*

Take for Left Heart Cath?

Pros

- LHC for intervention on completely occluded vessel responsible for STEMI
- Early intervention to preserve heart muscle and function

Cons

- Complication from LHC
- Adverse reaction to new medication
- Compliance issues
- Insurance issues

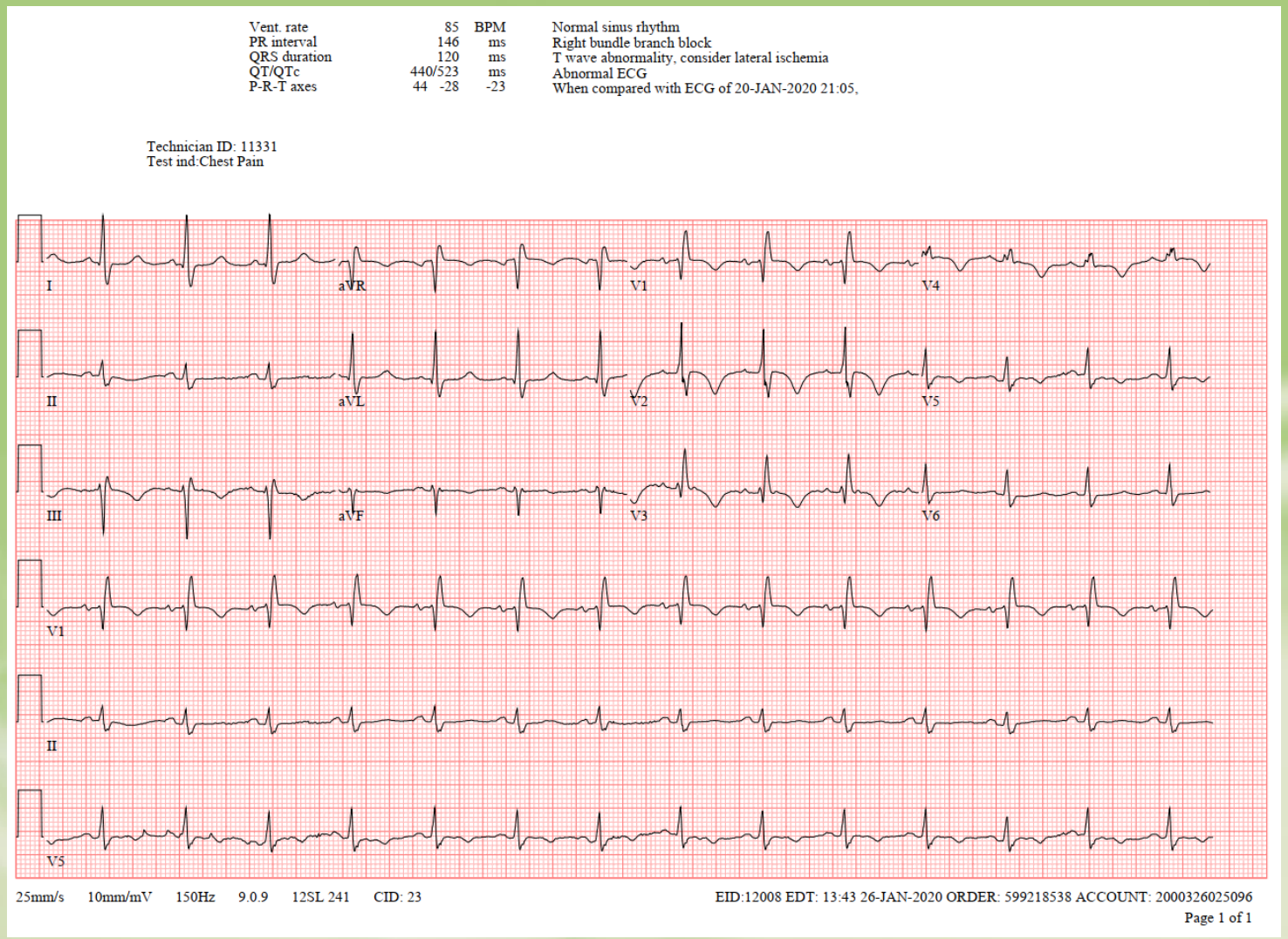
Other Interventions

- A – anti-platelets / anti-coagulation loading
  - aspirin
  - clopidogrel / ticagrelor
  - heparin IV drip
- B – beta blocker
- A – ace inhibitor
- S – statin

Mr. Smith

- 56M s/p renal transplant 2 days ago complicated by intra-abdominal hematoma and slow graft function
- PMH – DMI, CAD s/p LAD stent 4 years ago
- Substernal chest pain with ambulation in hallway and elevation of HR to 130s
- T wave inversions on telemetry and 12-ECG
- CP relieved after nitro SL x1 and cessation of activity

12-ECG



Vent. rate	85	BPM	Normal sinus rhythm
PR interval	146	ms	Right bundle branch block
QRS duration	120	ms	T wave abnormality, consider lateral ischemia
QT/QTc	440/523	ms	Abnormal ECG
P-R-T axes	44 -28	-23	When compared with ECG of 20-JAN-2020 21:05,

Technician ID: 11331
Test ind:Chest Pain

25mm/s 10mm/mV 150Hz 9.0.9 12SL 241 CID: 23

EID:12008 EDT: 13:43 26-JAN-2020 ORDER: 599218538 ACCOUNT: 2000326025096

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Immediate Medical Interventions

- Aspirin 324mg chewed
- No other anti-platelet, no heparin d/t intra-abdominal hematoma
- Delayed graft function requiring dialysis
- Creat=6.2
- Troponin elevated
- Anemic
- Chest x-ray neg for aortic dissection

Critical Decision Points

Should this patient go for a LHC?

1. No. The risk to the new kidney is too high.
2. Yes. This is evidence of a new blockage that needs to be addressed.
3. Not yet. Initiate medical treatment first, then plan for LHC when new kidney is functioning well.

Take for LHC?

Pros

- Chest discomfort with ST depression with minimal ambulation indicates a blockage
- Blockage needs to be addressed in order to continue recovery

Cons

- Delayed graft function
- Contrast dye from LHC could damage the new kidney
- Patient is anemic and DAPT may make increase bleeding risk

What happened?

- Medical therapy
- Aspirin load and daily
- No DAPT, no heparin
- Metoprolol to improve heart rate control and double product (HR x SBP)
- No ace inhibitor d/t elevated creatinine
- Statin initiated

What happened?

- PO day #4 went into Afib w RVR during walk in hallway, HR 140 – 160s
- ST elevation on telemetry and 12-ECG
- Substernal chest pain with SOB 10/10
- Metoprolol IV, Nitro SL, and morphine 2mg IV
- Urgently take for LHC and DES x1 to LAD placed
  - Dialysis post LHC
  - H&H monitored
- Kept in hospital until new kidney was functioning well

Mrs. Peters

- 78F w sepsis c/o chest discomfort
- ST depression on 12-ECG and troponin elevation
- ECHOcardiogram with reduced EF 40%
- PMH - HTN

Take for Left Heart Cath?

Pros

- Needs LHC to assess for blockage(s) for stent placement or may have multivessel disease and need CABG
- Needs LHC to treat blockage that could have caused abnormal EF on ECHOcardiogram

Cons

- Abnormal EF could be d/t sepsis
- Increased risk of complications d/t age and critical illness

Critical Decision Points

What is the best course of treatment?

1. Take for a LHC d/t ECG changes, troponin elevation, and reduced EF on ECHOcardiogram
2. Wait to take for a LHC until the patient's sepsis has resolved
3. Treat medically and never take for LHC d/t advanced age
4. Treat medically and discuss with patient/family the option of LHC when she has recovered

What happened?

- Treated medically and had no further episodes of CP during recovery
- Underwent stress testing prior to discharge to rehab
- Passed stress test (no ischemia) on optimal medical therapy and with controlled BP
- LHC not performed
- EF had returned to normal on repeat ECHOcardiogram

Questions?

References

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