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Cardiogenic shock

Daniel Osei-Kwame
Cardiogenic shock

- Definition
- Causes
- Pathophysiology
- Clinical presentation
- Management
A state of decreased Co with resultant inadequate tissue perfusion despite adequate or excessive circulating vol

Clinically defined as hypotension with evidence of impaired perfusion in the setting of AMI
Clinical signs result from impaired CO and hypoperfusion of tissues and evidence of fluid overload

Hemodynamic criteria;

- Sustained hypotension....BP <90mmHg or a drop of more than 80mmHg in systolic pressure in a known HTN
- Reduced cardiac index (<2.2L/min per m^2)
Elevated pulmonary artery occlusion pressure (>18mmHg)

Incidence 6–8%
causes

- Extensive AMI; pump failure mechanical complication; acute mitral regurg secondary to papillary muscle rupture VSD, free wall rupture
- Atherosclerosis
- Right Vent infarction
- Depression of cardiac contractility; sepsis, myocarditis, contusion
- Mechanical obstruction; aortic stenosis, HOCM, mitral stenosis, left atrial myxoma
- Regurg of left vent output Chordal rupture, acute aortic insufficiency
Risk factors

- Elderly
- Female
- Previous MI
- CHF
- DM
- Impaired ejection fraction
- Extensive infarct
pathophysiology

AMI (LV)---25% systolic contraction---acute HF
>40%----clinical cardiogenic shock
NB ;occult CS in decompensated CCF
Cellular dysfxn worsened by
  hypotension;apoptosis---inflammatory
  pathways, increase oxidative stress----
  ----disseminated areas of focal necrosis---loss
  of contractile fxn + hypotension----decline of
  coronary perfusion pressure----decreases
  myocardial oxygen delivery
  pulmonary edema---hypoxia and acidosis
  ---------irreversible shock
Compensatory mechanisms

- CO=Stroke vol xHR
- Tachycardia + hypotension—decreased coronary artery flow (coronary perfusion pressure and end diastolic filling time)
- AMI---neurohormonal mechanisms activated
- Sympathetic + RAA--------increase SVR + increase myocardial oxygen consumption
Clinical shock
Pain
Altered sensorium
Minimal signs of shock to stupor to cyanosis to pulmonary edema
murmur
- IV, oxygen, monitor
- History
- PE repeated
- Urinary catheter
- Ancillary studies
- Supportive care, reperfusion, prevention
- Early involvement of cardiology consultant
Chest x-ray
ECG
ABG’s
Bedside ECHO
CBC
Cardiac markers
electrolytes
• Supplementary oxygen against active airway mgt
• Maintenance of adequate BP; vol expansion vasopressor; dobutamine, dopamine vasodilators!!!
  avoid if possible furosemide and morphine
AMI—aspirin and heparin unless contraindicated
IABP
Hemopump
Early revascularization
Differential diagnosis

- PE
- Emphysema
- Pneumonia
- Aortic dissection (thoracic)
- Esophageal perforation
- pericarditis
- Drug overdose
- Other causes of shock
references

- Emergency medicine, a comprehensive study guide, 6th edition, Tintinalli
- Clinical practice of emergency medicine 3rd edition, Ann Harwood-Nuss