Project: Ghana Emergency Medicine Collaborative

**Document Title:** Cardiogenic Shock

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# Cardiogenic shock

Daniel osei-kwame

# Cardiogenic shock

- Definition
- Causes
- Pathophysiology
- Clinical presentation
- management

# definition

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

# ctd

- 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)</p>

# ctd

#### 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 ofcoronary 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 Sympathethic + RAA-----increase SVR + increase myocardial oxygen consumption

### presentation

- Clinical shock
- Pain
- Altered sensorium
- Minimal signs of shock to stupor to cyanosis to pulmonary edema
- murmur

# mgt

- IV, oxygen ,monitor
- History
- PE repeated
- Urinary catheter
- Ancillary studies
- Supportive care, reperfusion, prevention
- Early involvement of cardiology consultant

# mgt

- Chest x-ray
- ECG
- ABG's
- Bedside ECHO
- CBC
- Cardiac markers
- electrolytes

# ctd

- Supplementary oxygen against active airway mgt
- Maintenance of adequate BP; vol expansion
  - vasopressor;dobutamine,dopamine vasodilators!!!

avoid if posible furosemide and morphine AMI—aspirin and heparin unless contraindicated

# mgt

- ► 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, 6<sup>th</sup> edition, Tintinalli
- Clinical practice of emergency medicine 3<sup>rd</sup> edition, Ann Harwood-Nuss