



Cardiovascular Emergencies

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Scenario 1 Differential Diagnosis

Angina

AMI

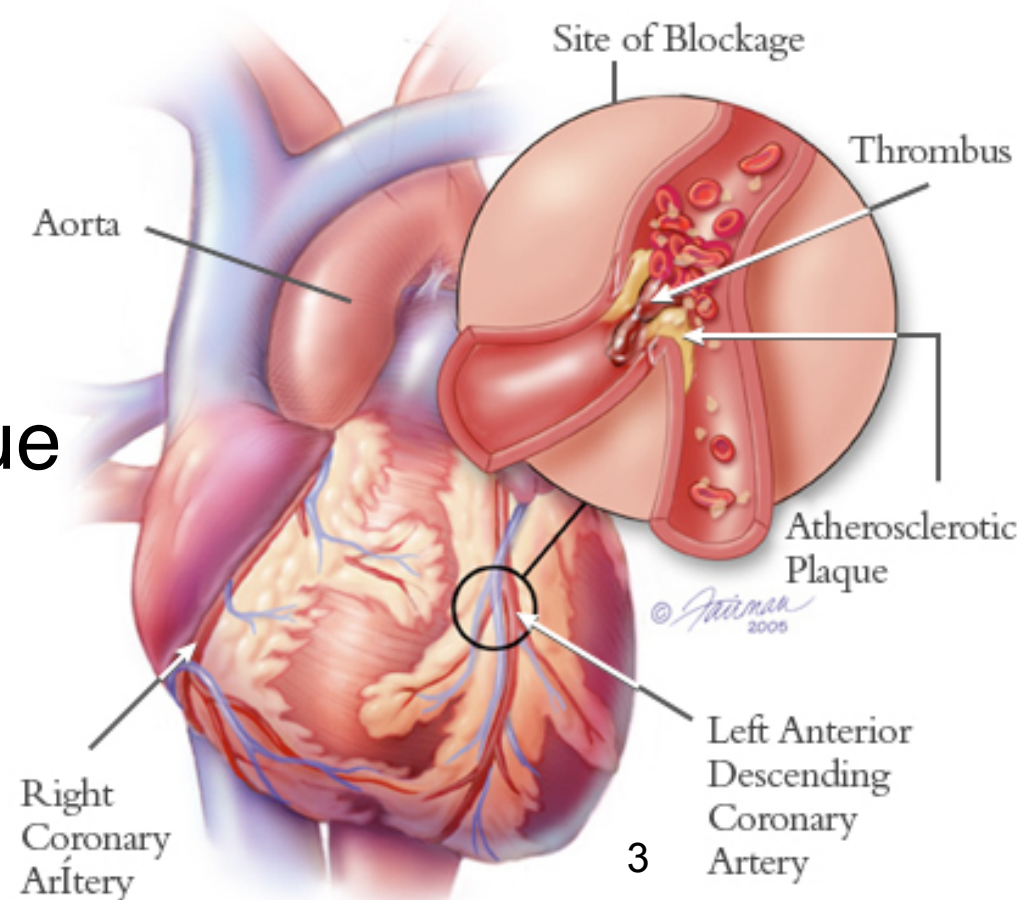
Heart Failure/CHF

Aortic Dissection

Hypertensive Emergency

Acute Myocardial Infarction

- Ischemia = hypoxic tissue
- Infarct = tissue death via obstruction of blood supply
- AMI
 - Acute = sudden
 - Myocardial = heart tissue
 - Infarction = death



Signs & Symptoms of AMI

- Men
 - chest pain, pressure, or discomfort
 - substernal
 - radiating to jaw, neck, shoulder, back, abdomen
 - non-reproducible
- Females
 - flu-like symptoms
 - weakness
 - nausea/vomiting



Additional S&S of AMI

- Nausea/Vomiting
- Difficulty breathing
- Pale, cool, and diaphoretic skin

Atypical Symptoms



Females



Diabetics



Elderly



Tear in artery wall

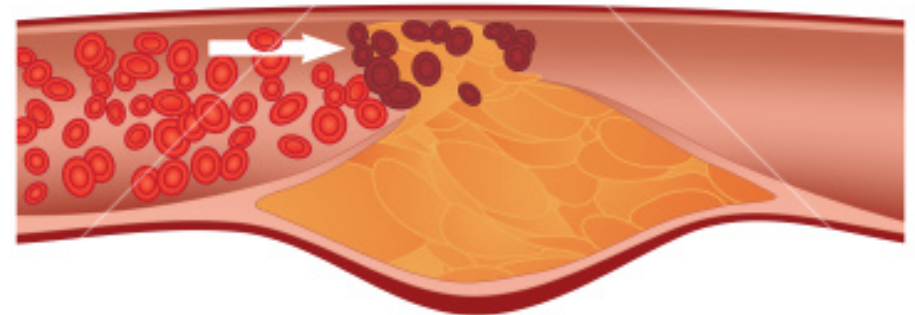
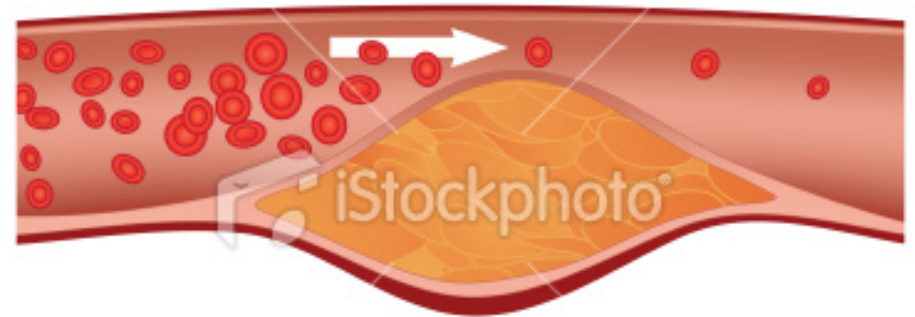
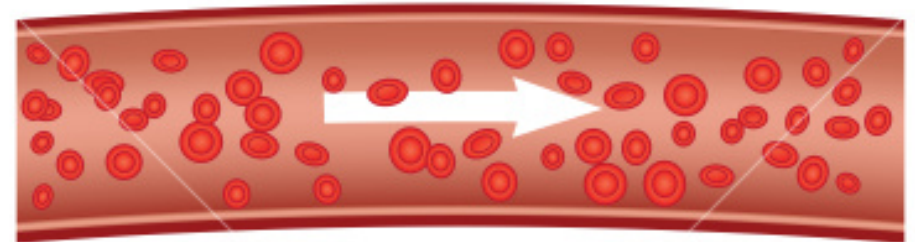
Macrophage cell

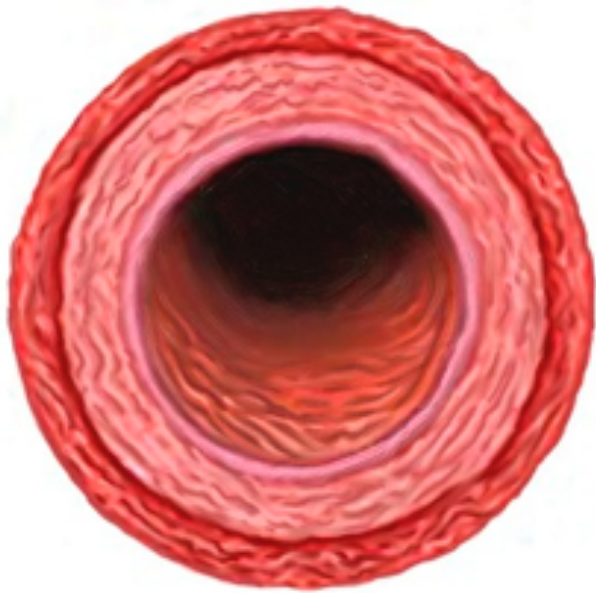
Cholesterol deposits

Red blood cell

Macrophage foam cell

Fat deposits





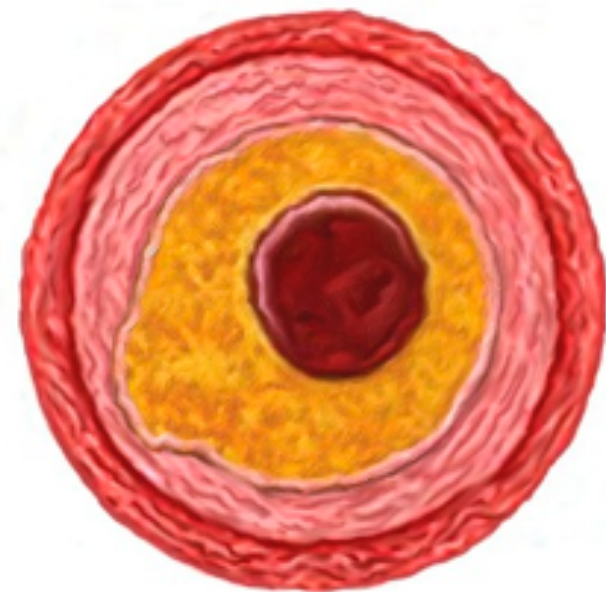
A. Normal Artery



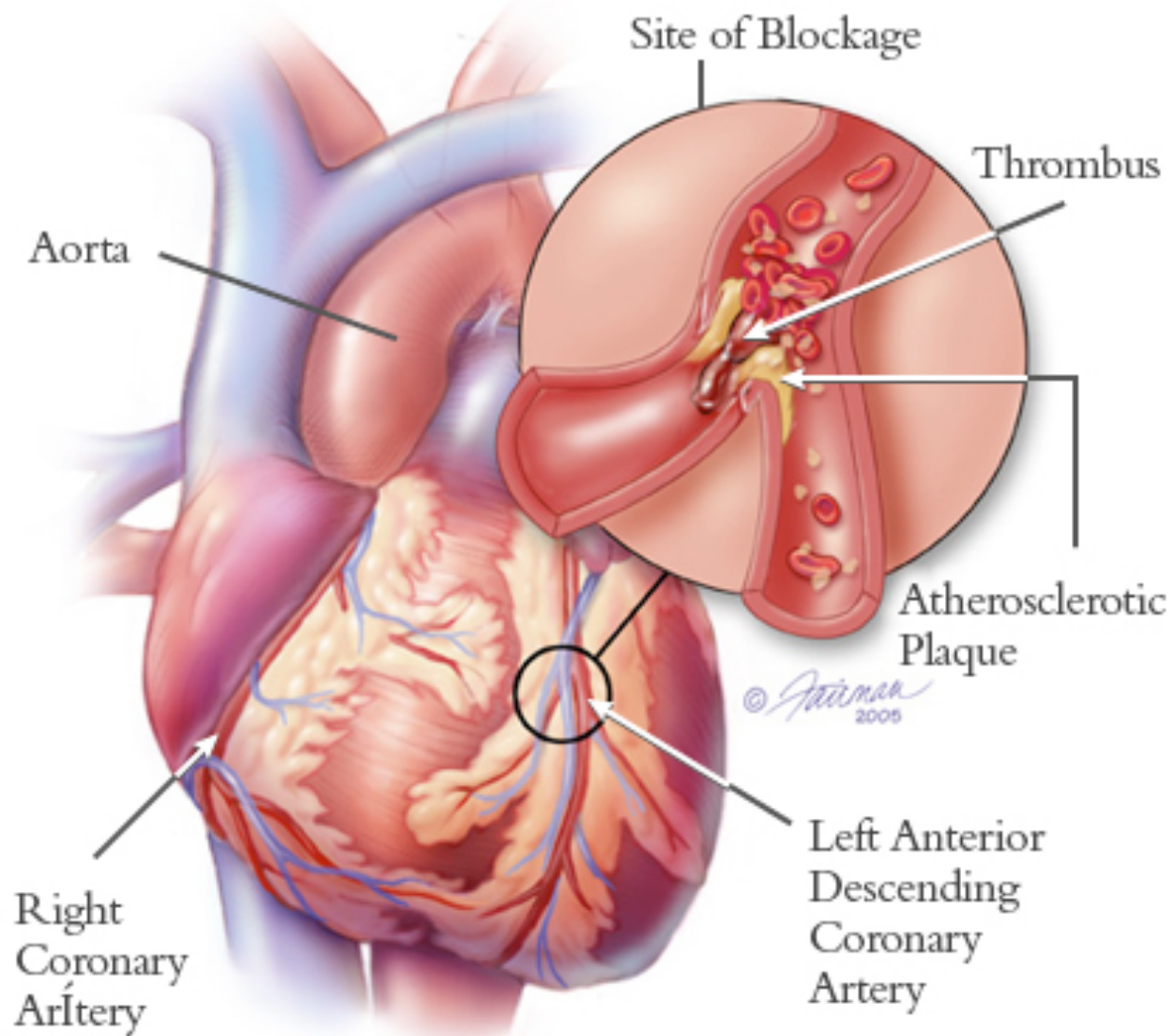
B. Artery showing minor plaque

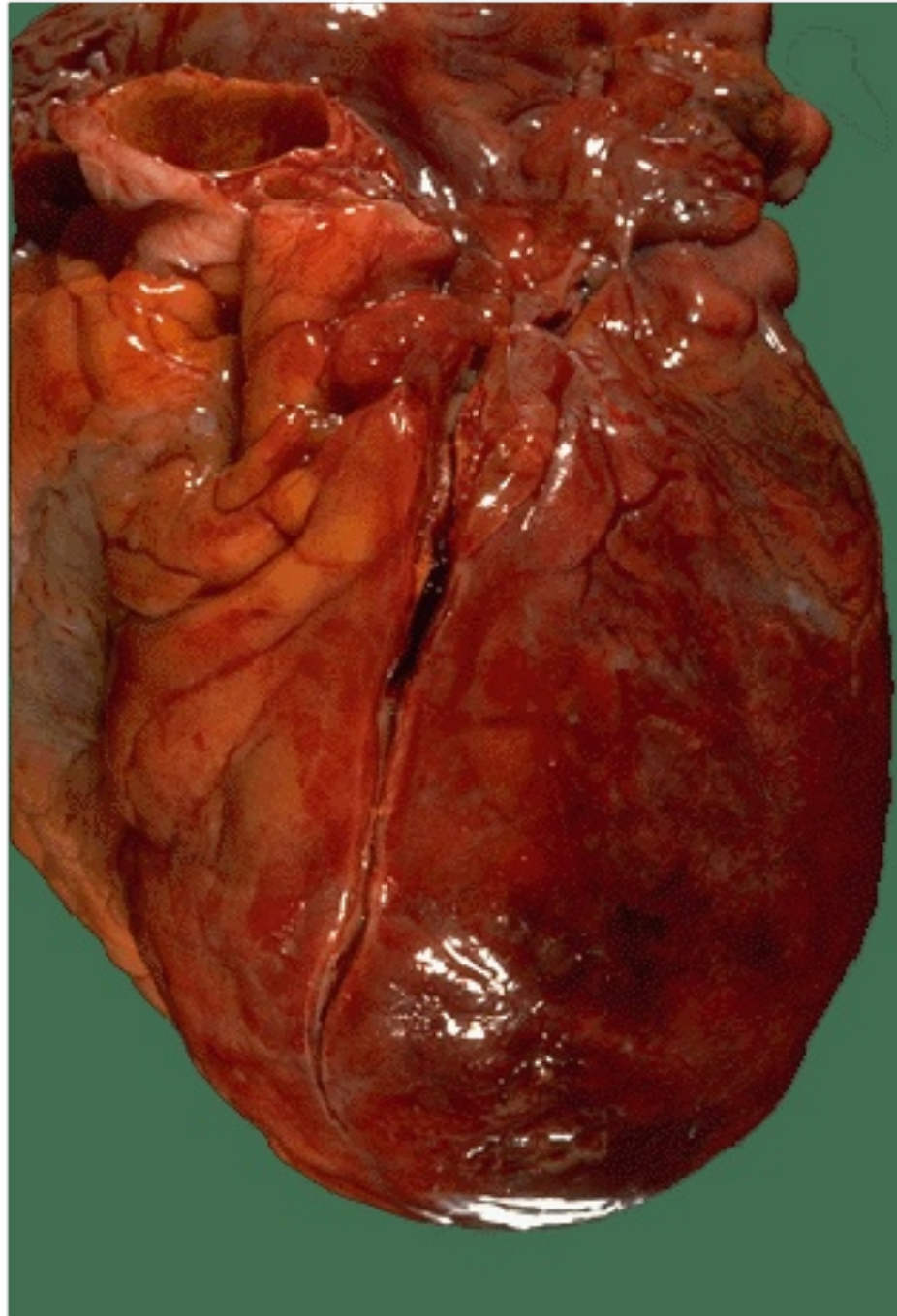


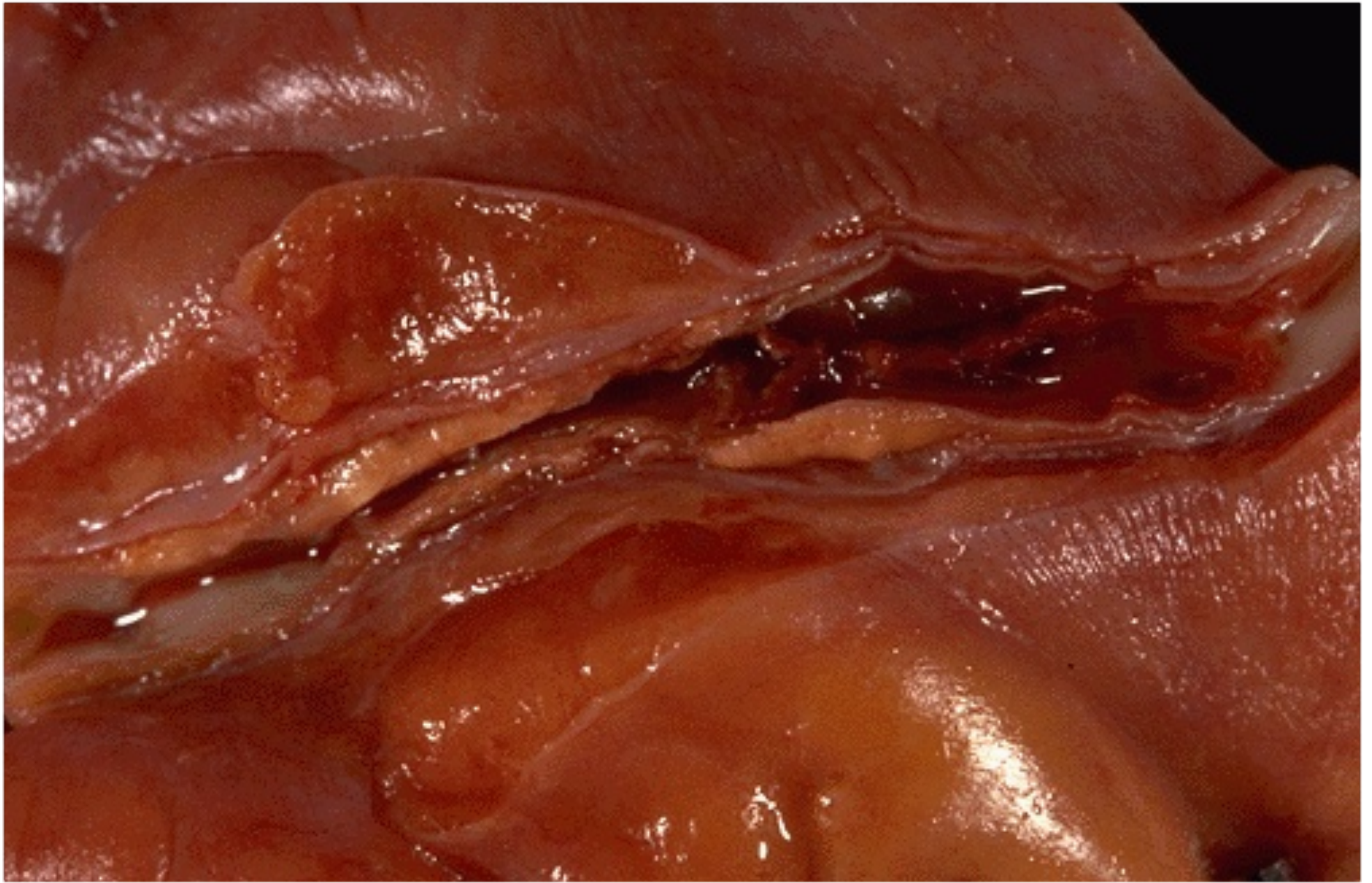
C. Artery showing concentric plaque build up resulting in significant narrowing of artery

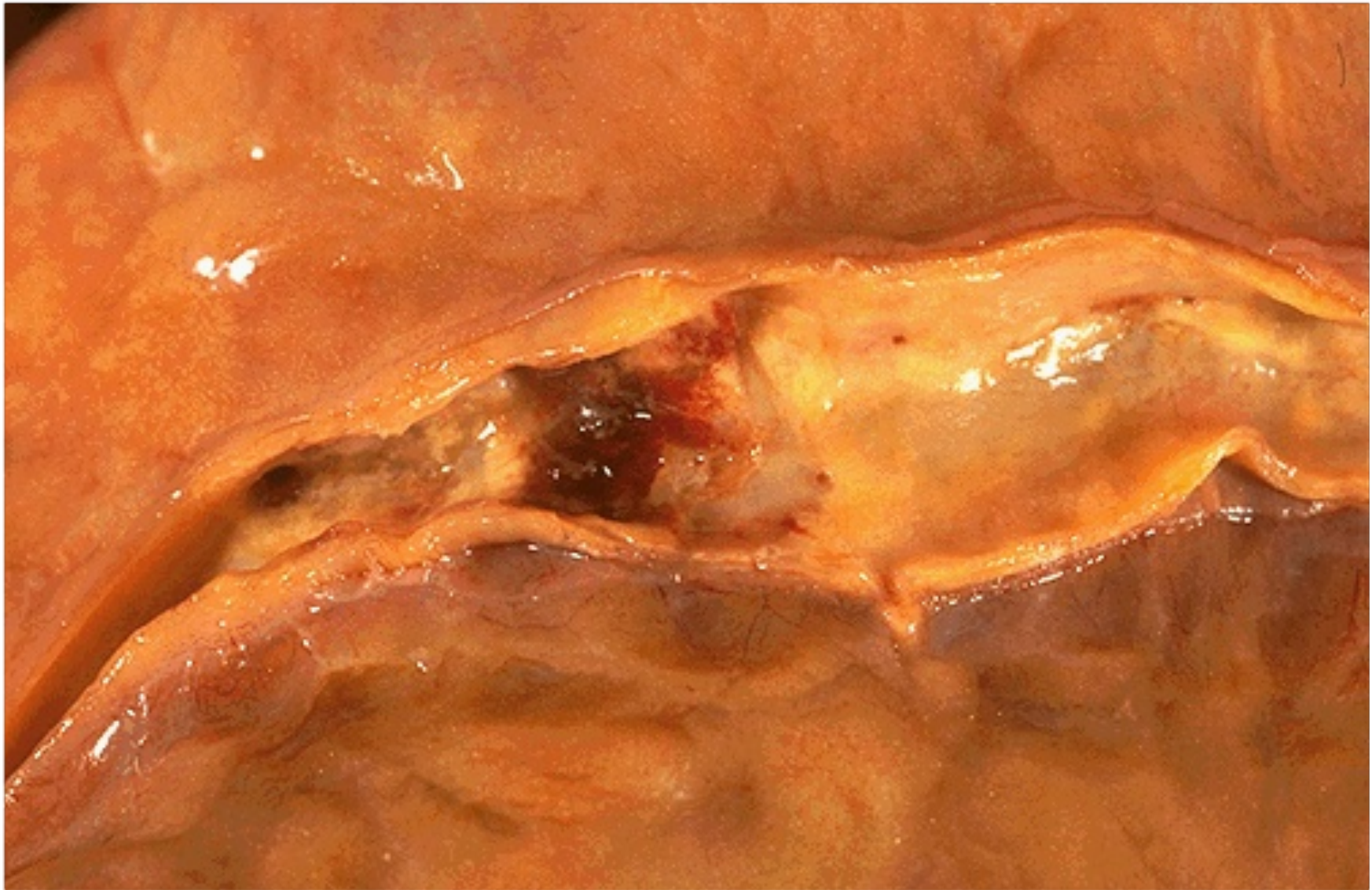


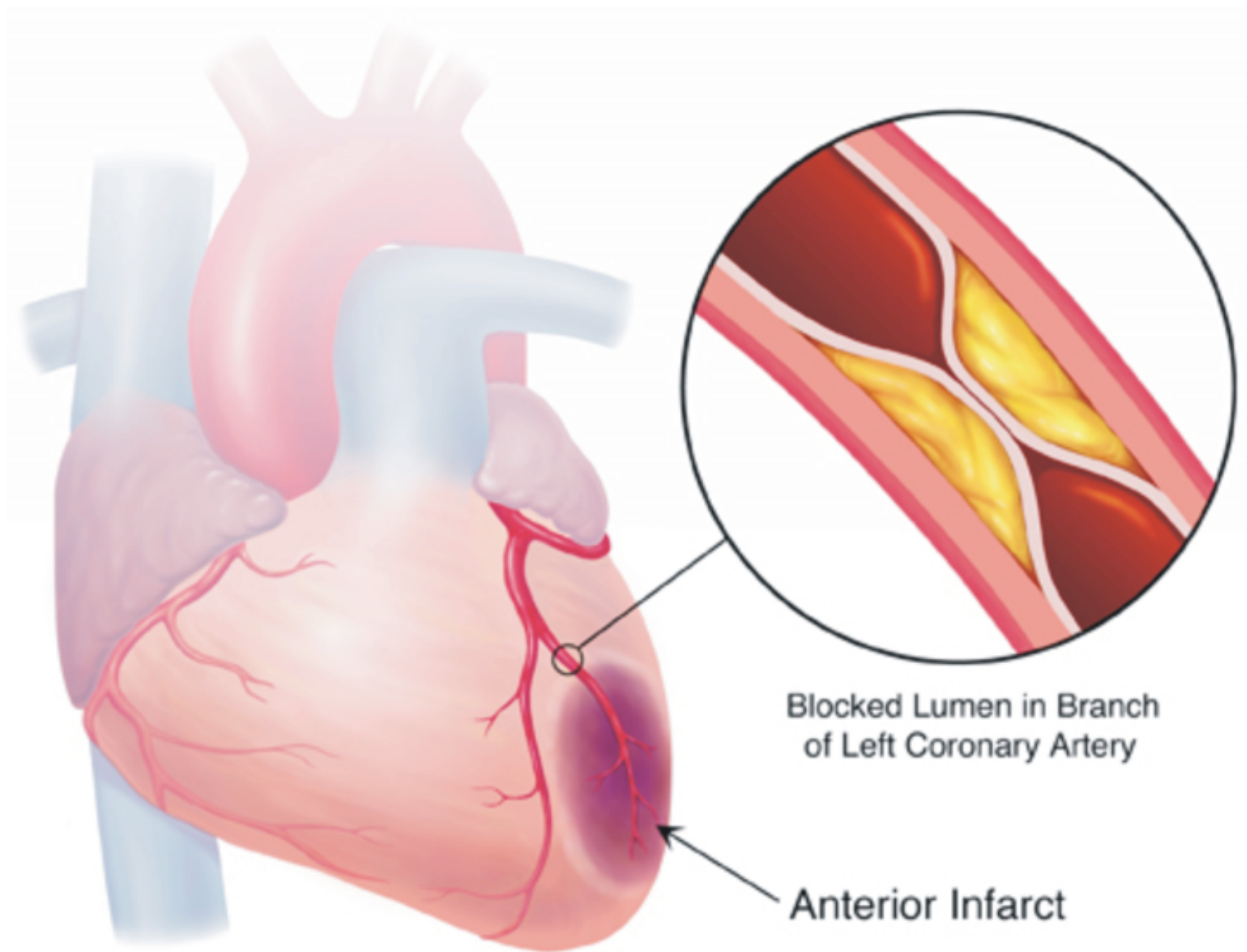
D. Artery showing ruptured plaque with superimposed blood clot (thrombus)





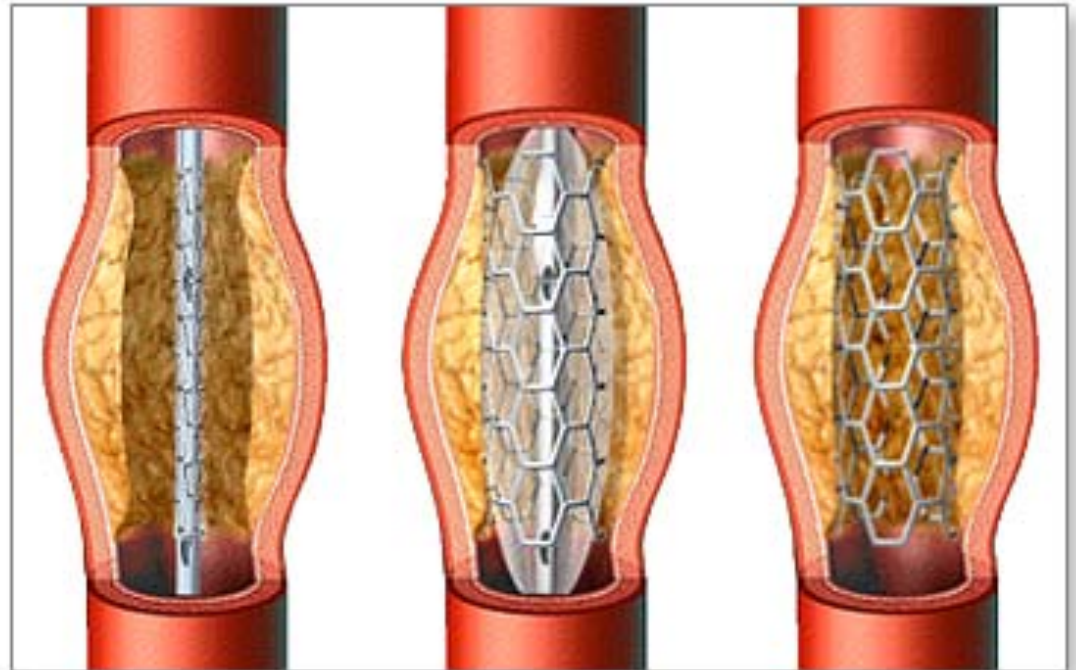






AMI

Insufficient blood flow to the heart muscle from narrowing of coronary artery may cause chest pain



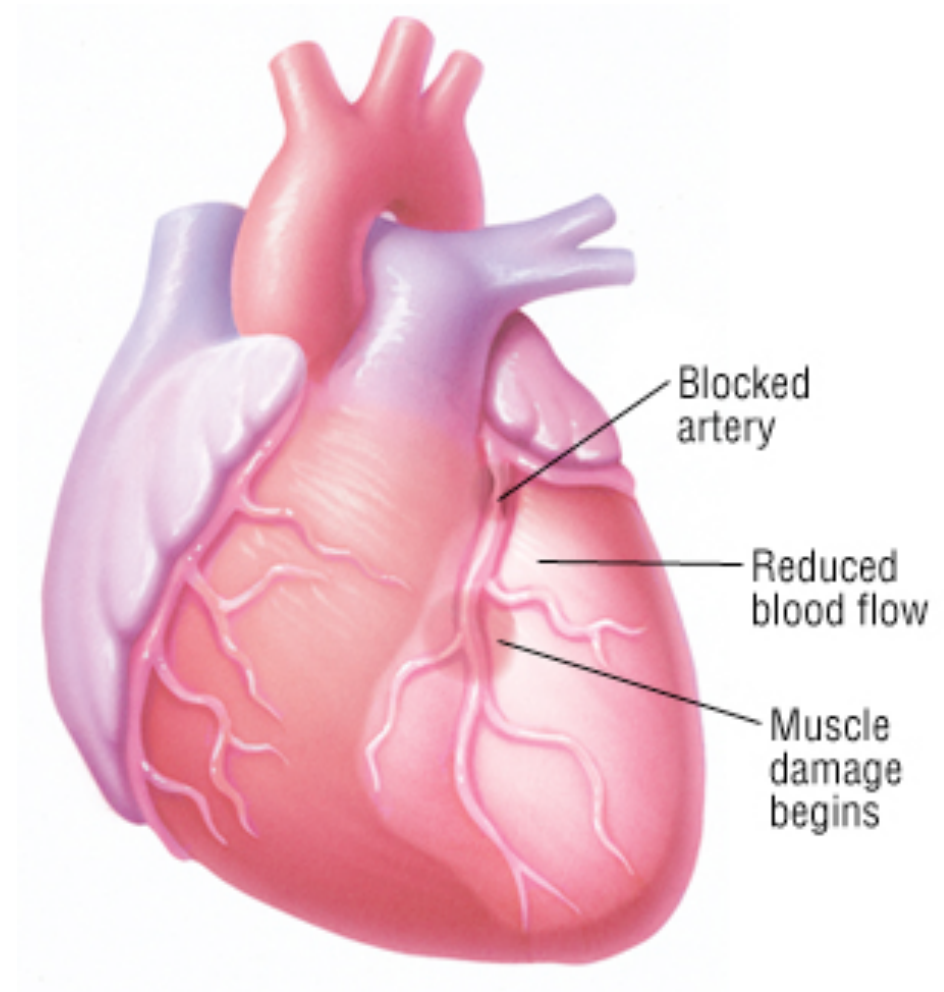
Stent
insertion

Stent
expansion

Stent remains in
coronary artery

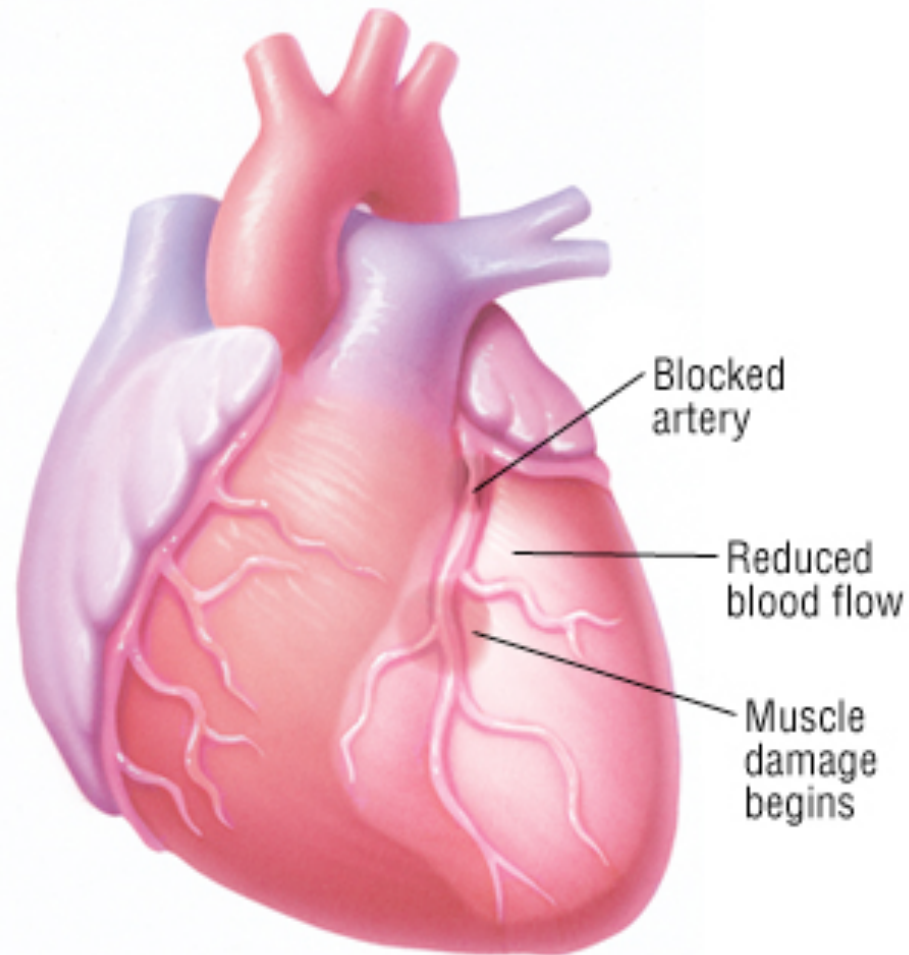
AMI versus Angina

- What's the difference?
 - Angina goes away with rest or NTG
 - Stable -v- unstable angina
 - AMI results in tissue death, angina does not



AMI & Angina = ACS

Acute Myocardial Infarction = Acute Coronary Syndrome
Angina Pectoris (ACS)



Treatment: ACS

- Call ALS
- 100% O₂ via NC @ 2-4 lpm
 - only if SpO₂ < 94%
- Decrease anxiety
- ASA 160-325 mg chewed
- Assist pt with NTG
 - Systolic BP > 90
 - No recent use of ED meds
 - q 3-5 min
- Rapid transport

Quick-Case 2

Angina

AMI

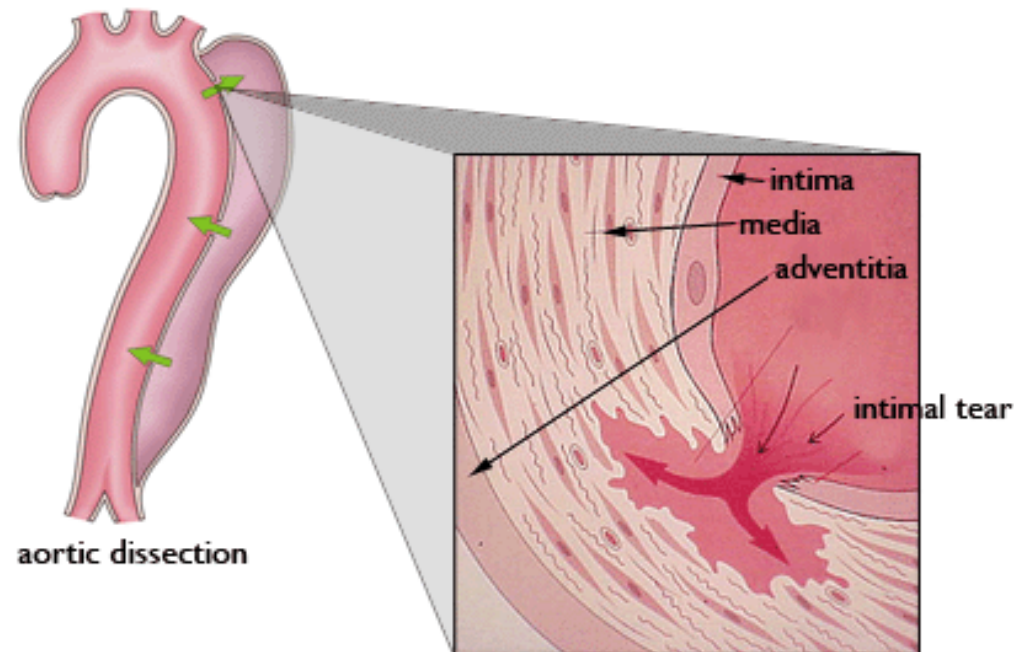
Aortic Dissection

Aortic Aneurysm

Hypertensive Crisis

Aortic Dissection

- Dissection = bad
 - real bad!
- Tear in tunica intima allows blood to force way into wall of aorta
- Dissects down length of aorta

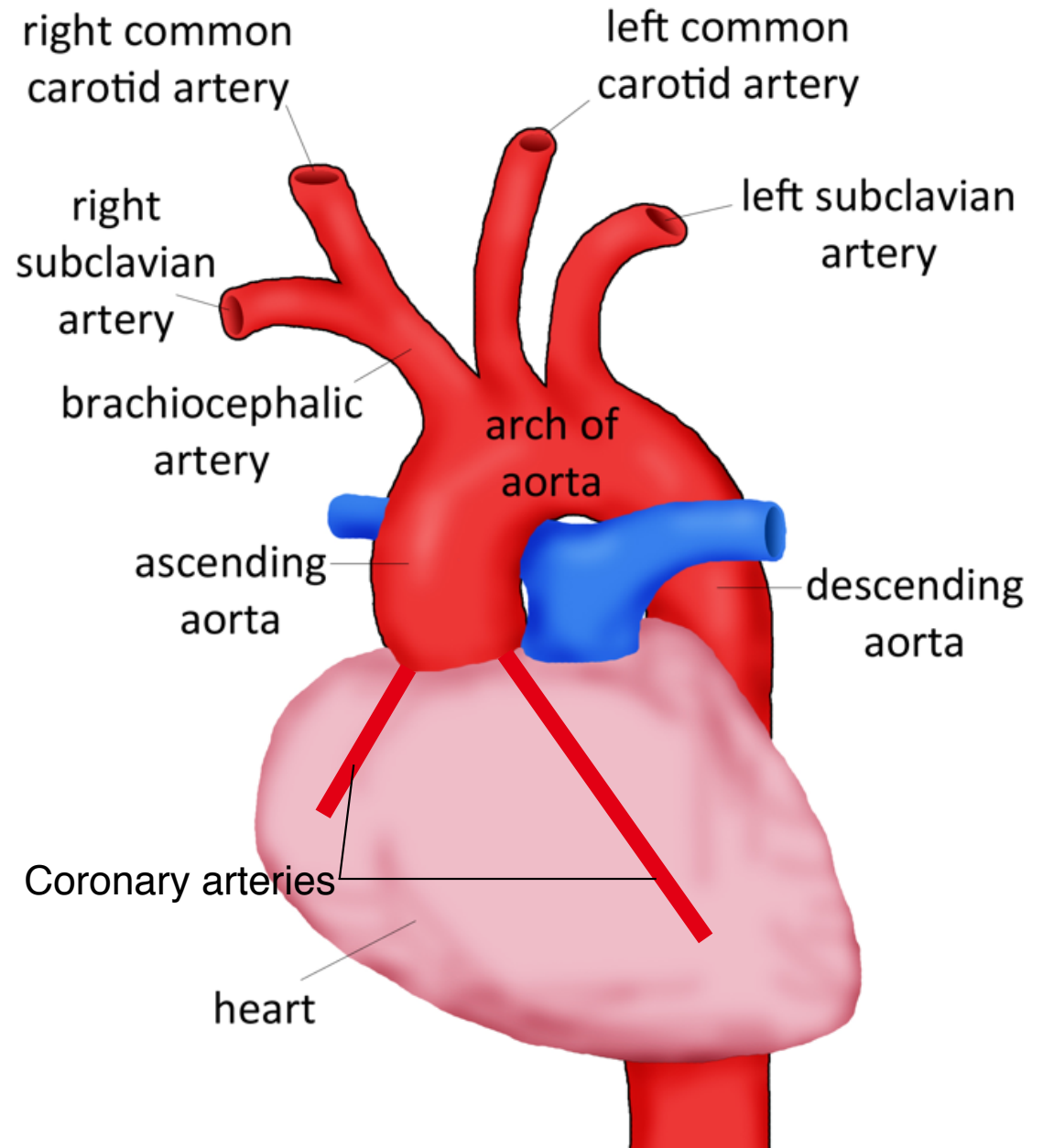


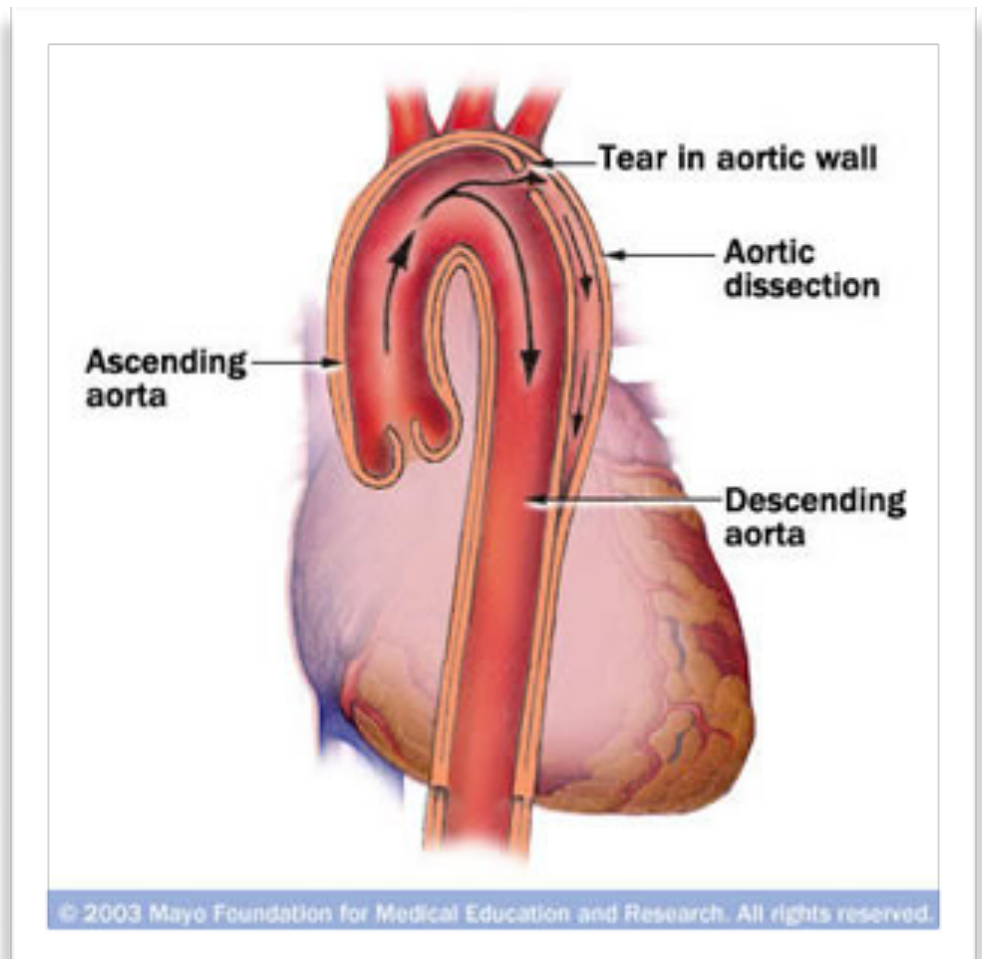
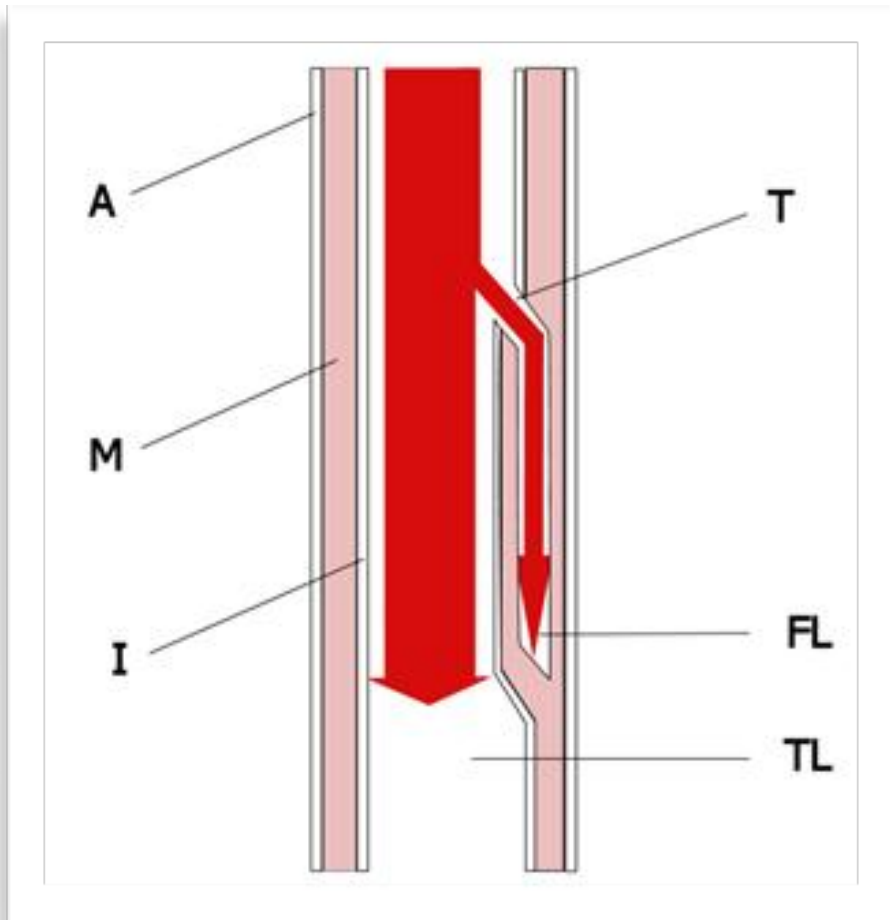
S/S of Dissection

- Acute onset of tearing or ripping chest pain
 - worse pain ever felt
 - radiates to back
- Blood pressure differences between arms
- HTN more common than hypotension

S/S of Dissection

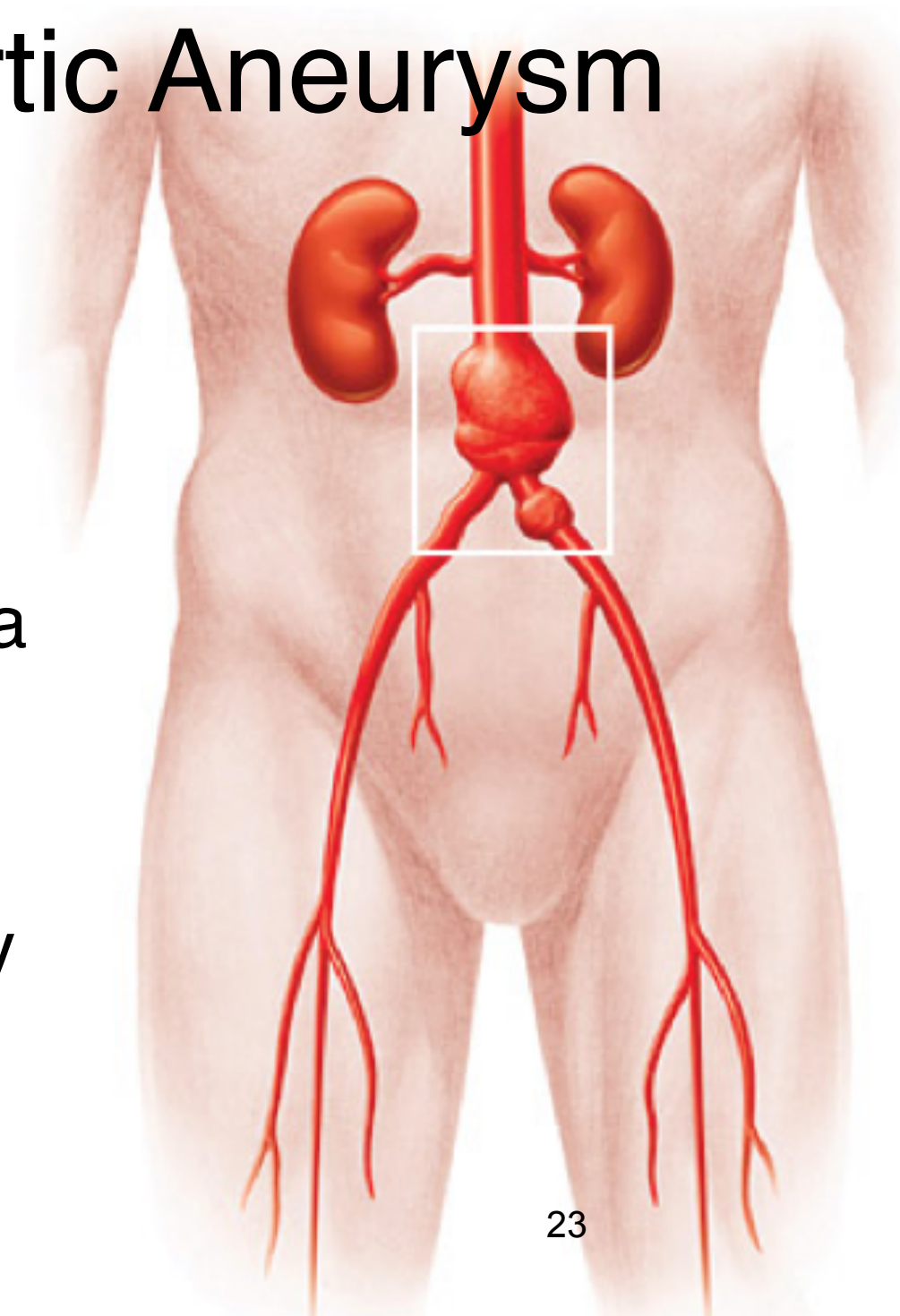
- Stroke, AMI
 - if carotid, coronary arteries involved





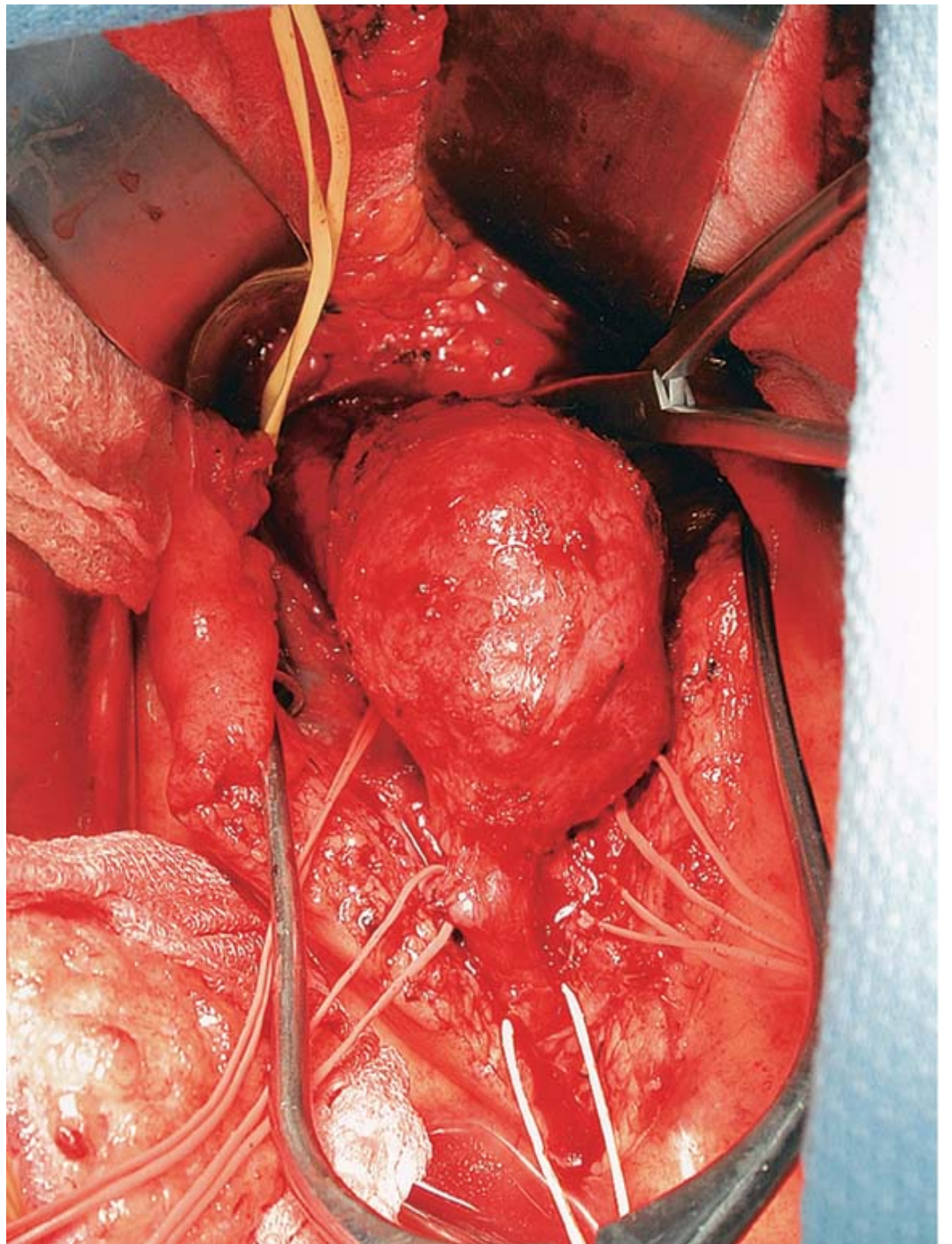
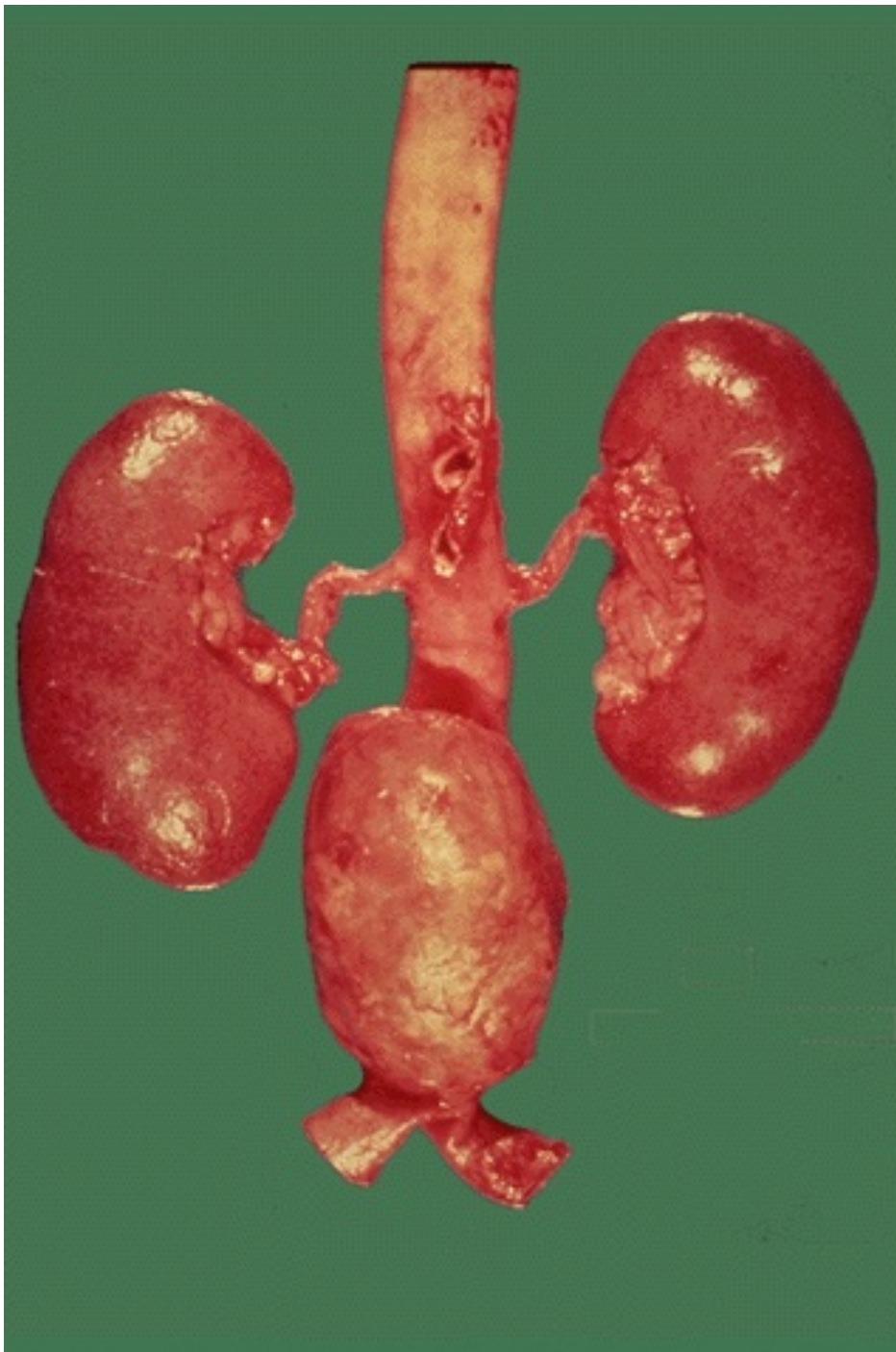
Abdominal Aortic Aneurysm

- Ballooning of a weakened arterial wall
 - in this case, the aorta
- Not life threatening, unless it bursts
 - then, you're probably gonna die



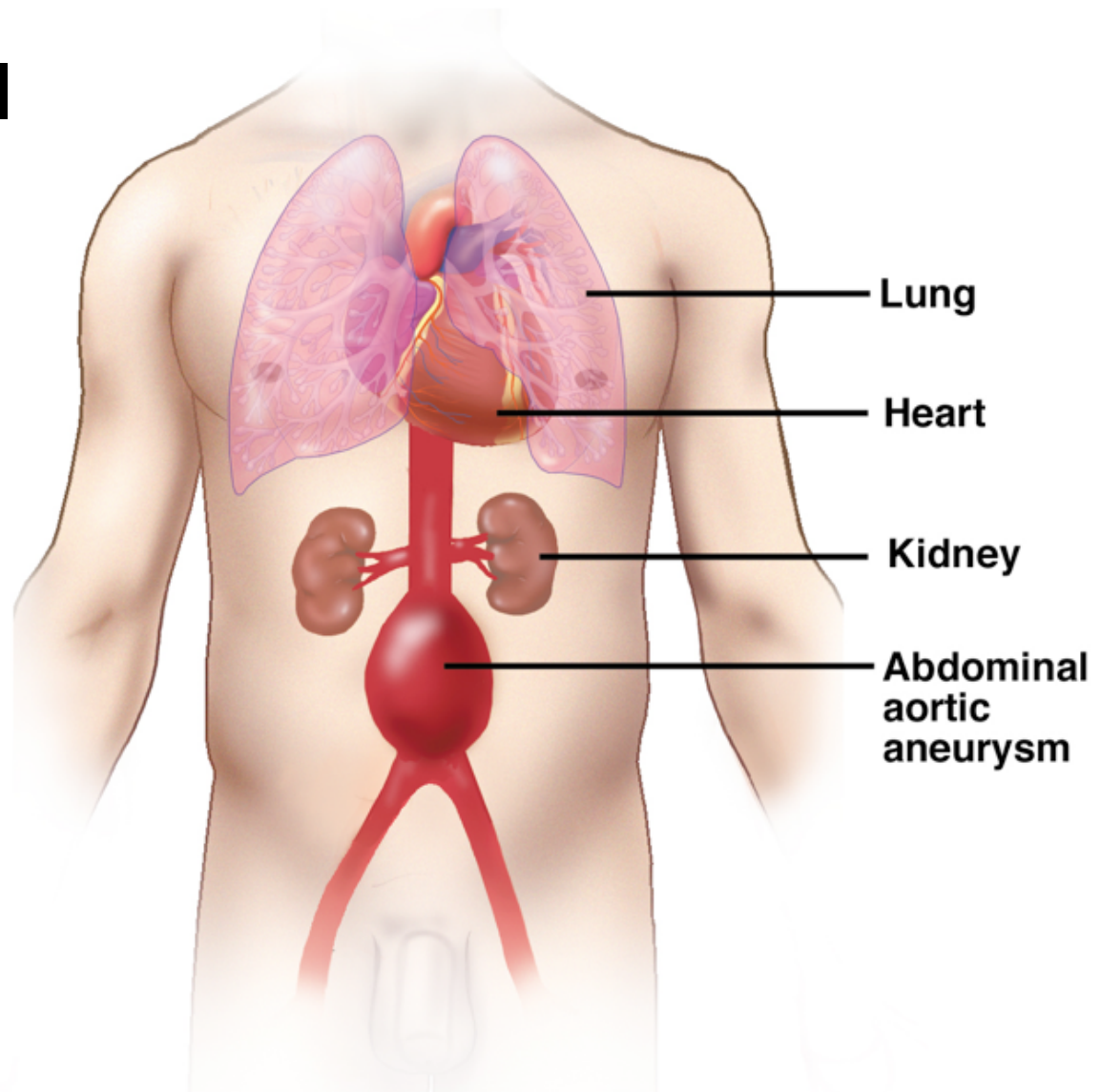
Treatment of Aortic Dissection

- Call ALS
- 100% O₂ via NRM 15 lpm
- Position of comfort
- Rapid transport



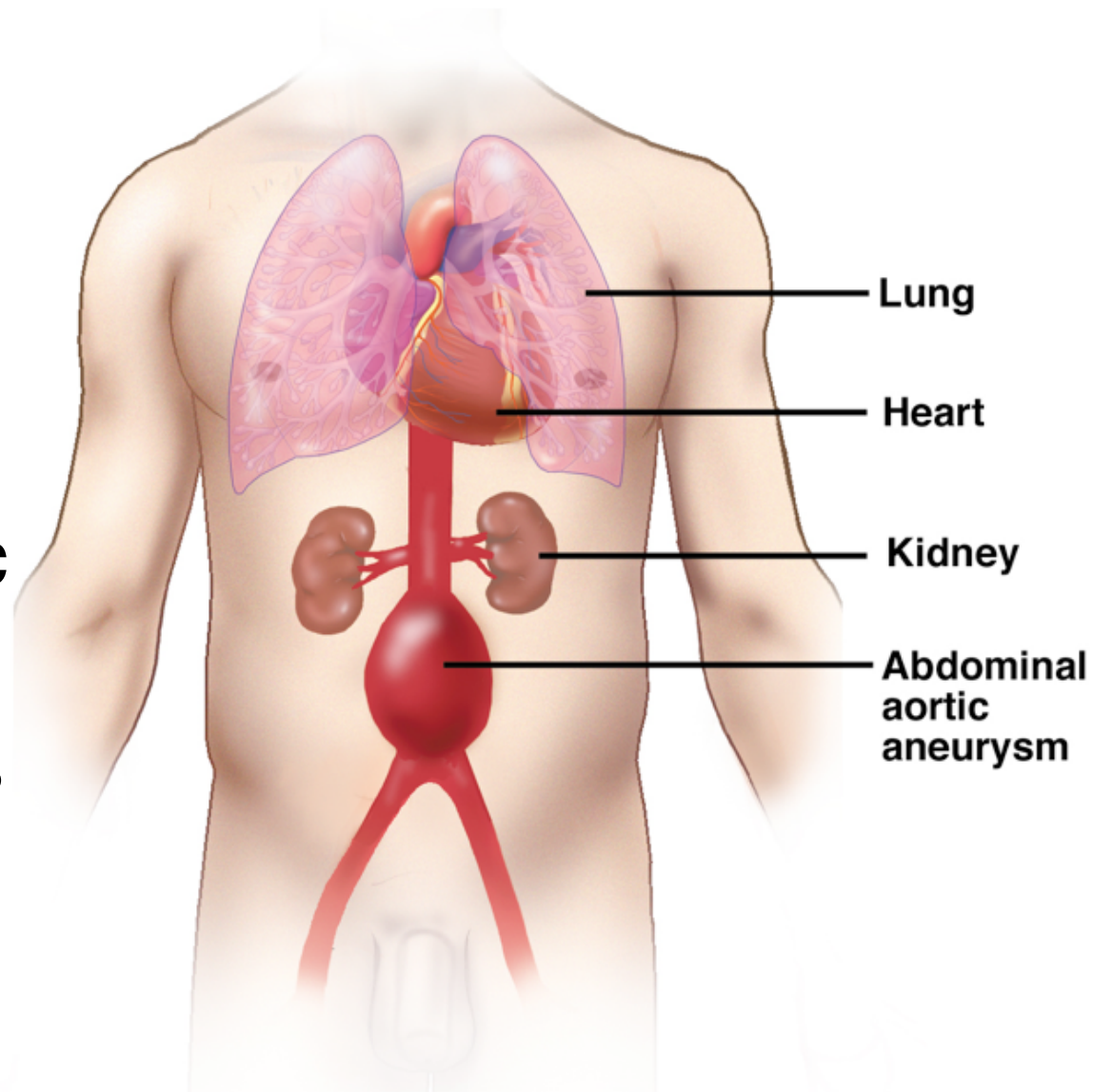
S/S of AAA

- If intact:
 - pulsatile abdominal mass
 - flank, back, or abdominal pain
- If ruptures:
 - s/s of hemorrhagic shock



Treatment of AAA

- If intact:
 - supportive care
 - be gentle!
- If ruptures:
 - treat for hemorrhagic shock
 - CPR when pulseless



Quick-Case 3

Angina

AMI

Aortic Dissection

Aortic Aneurysm

Hypertensive Crisis

Hypertensive Crisis

- Uncontrolled HTN is bad
 - Chronic
 - Acute
- Neurologic symptoms
- Supportive treatment only
- NTG to lower blood pressure?
 - NO!

Scenario 2 Differential Diagnosis

Angina

AMI

Heart Failure

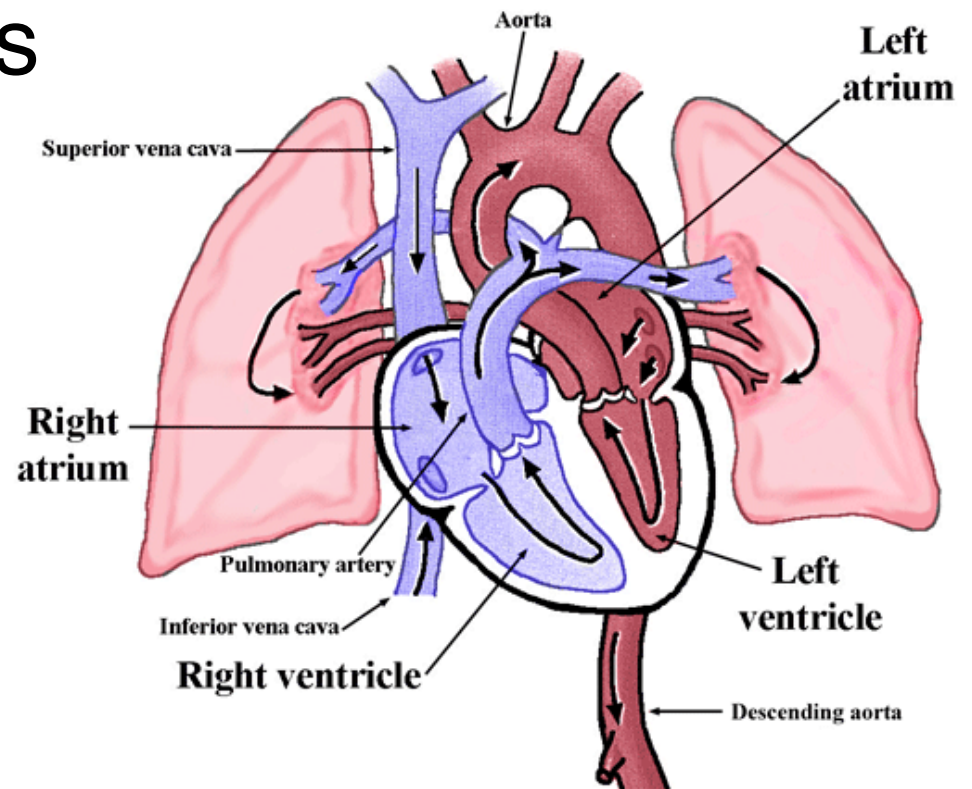
Aortic Dissection

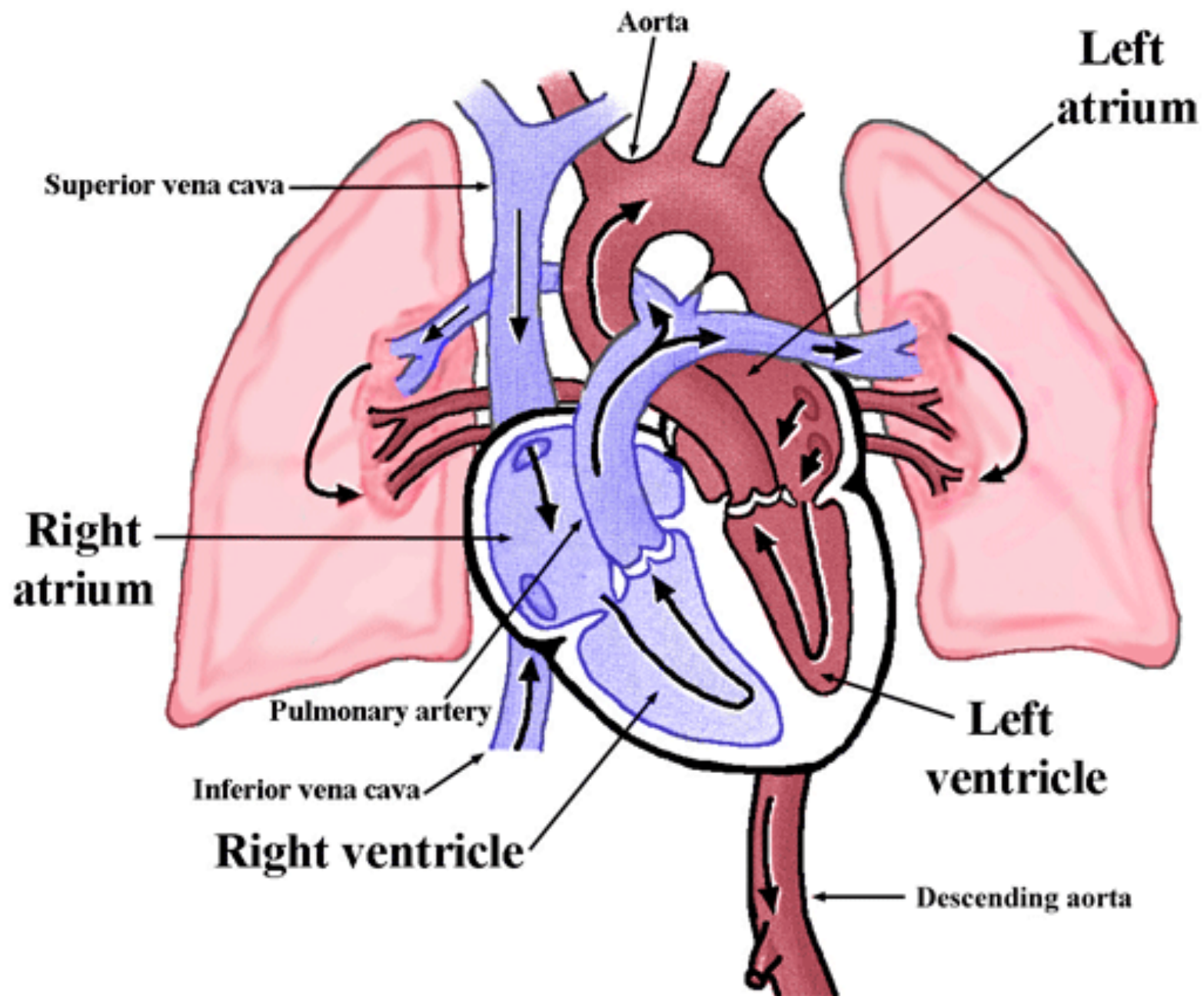
Aortic Aneurysm

Hypertensive Crisis

Heart Failure

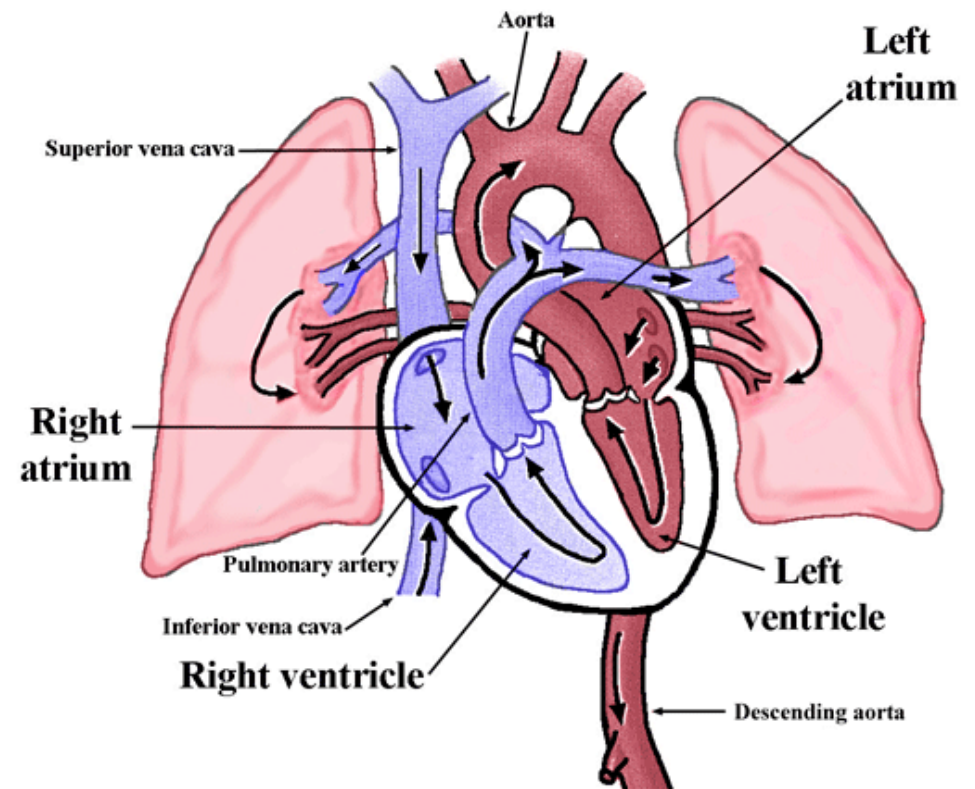
- Myocardium damaged, heart no longer acts as effective pump
 - Left heart failure
 - blood backs up into lungs
 - Right heart failure
 - blood backs up into venous circulation
- Cardiogenic shock

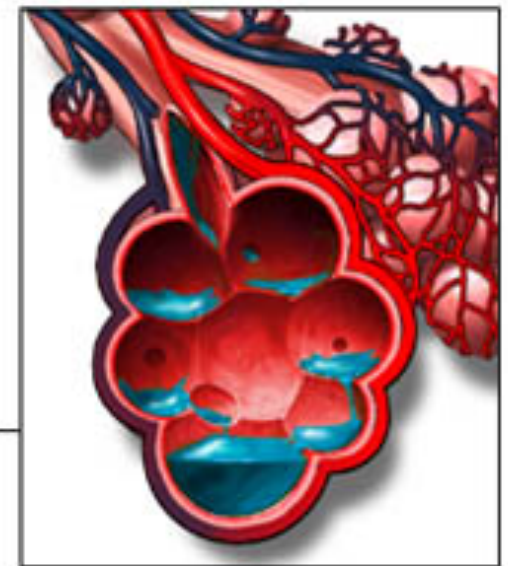
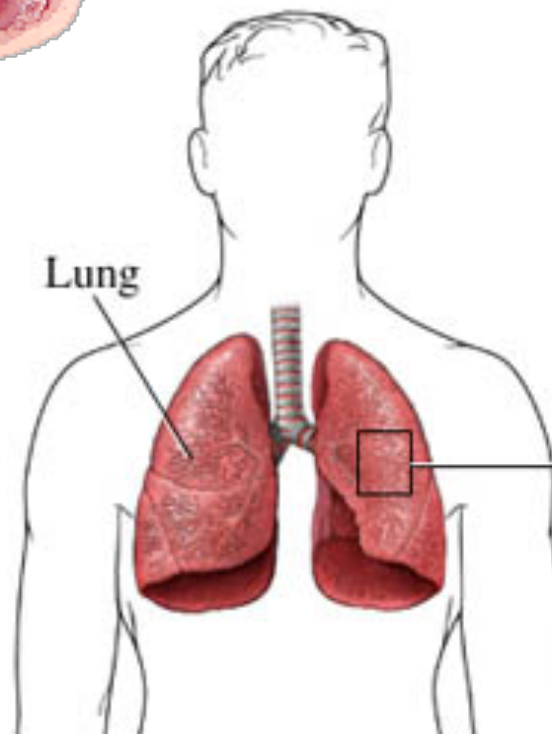
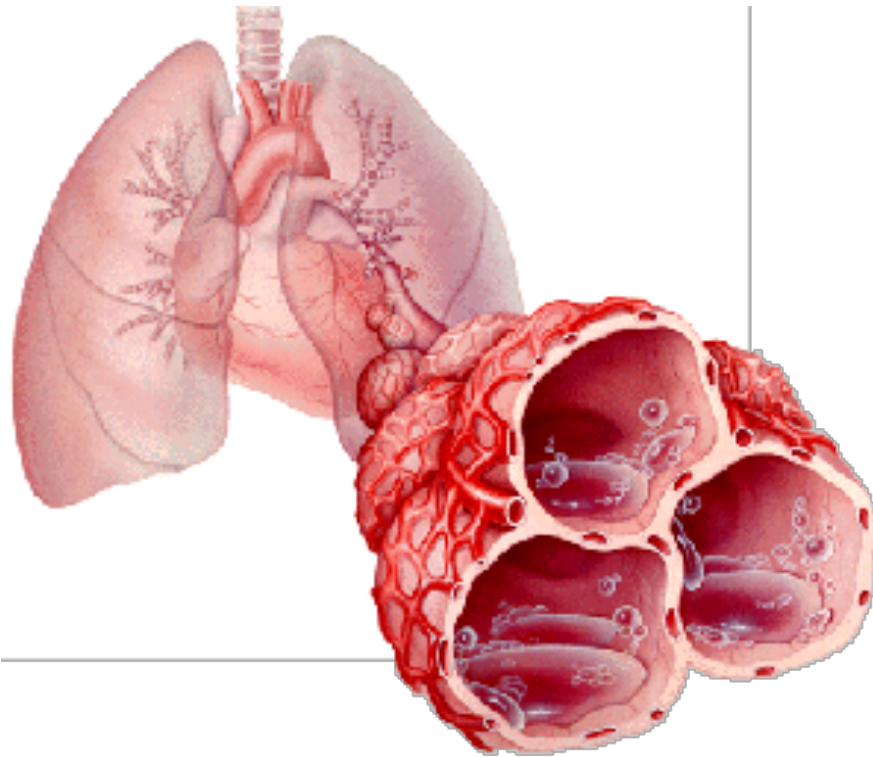




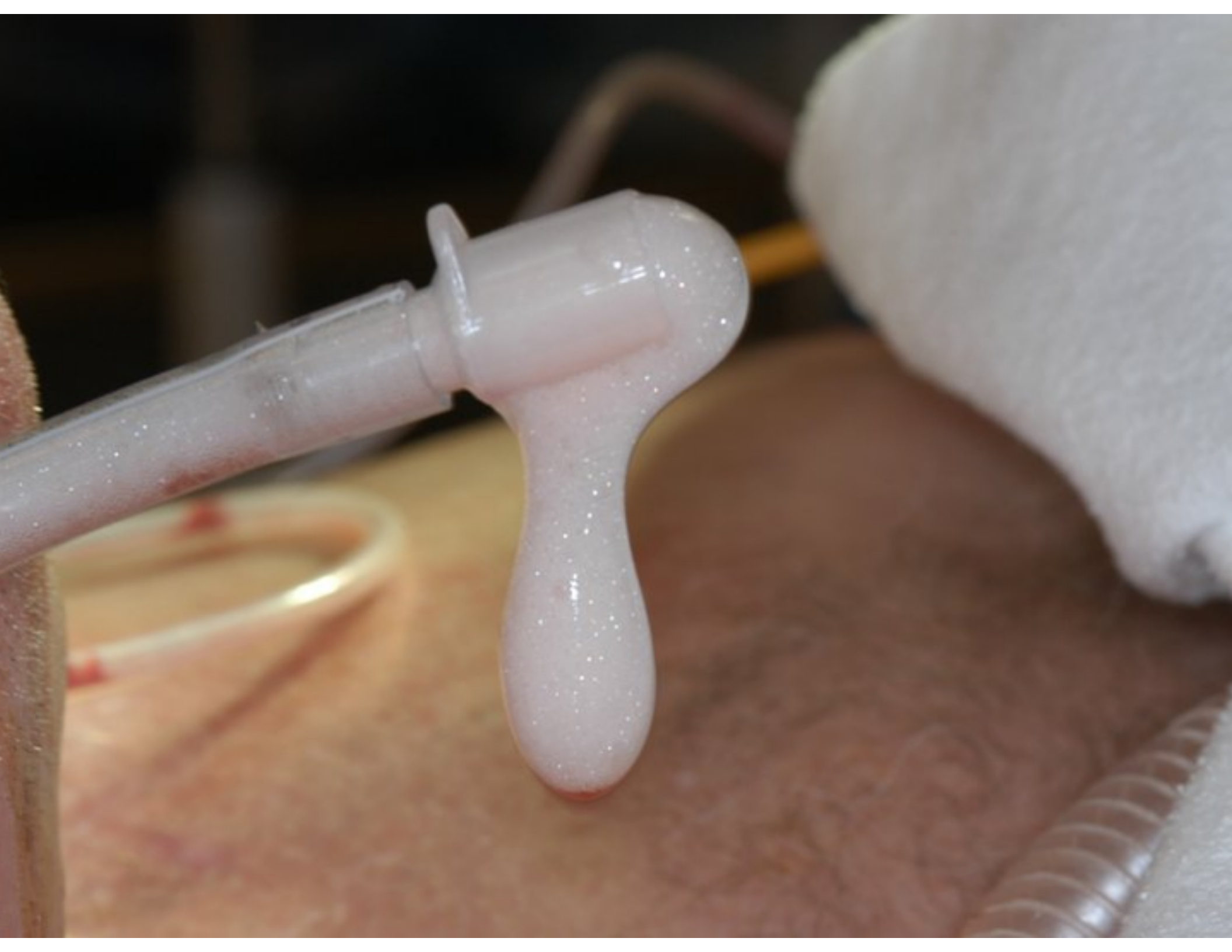
S/S of Left Heart Failure

- Pulmonary edema
 - rales (crackles)
- Difficulty breathing
- Pink, frothy sputum
- S/S of shock
 - cardiogenic



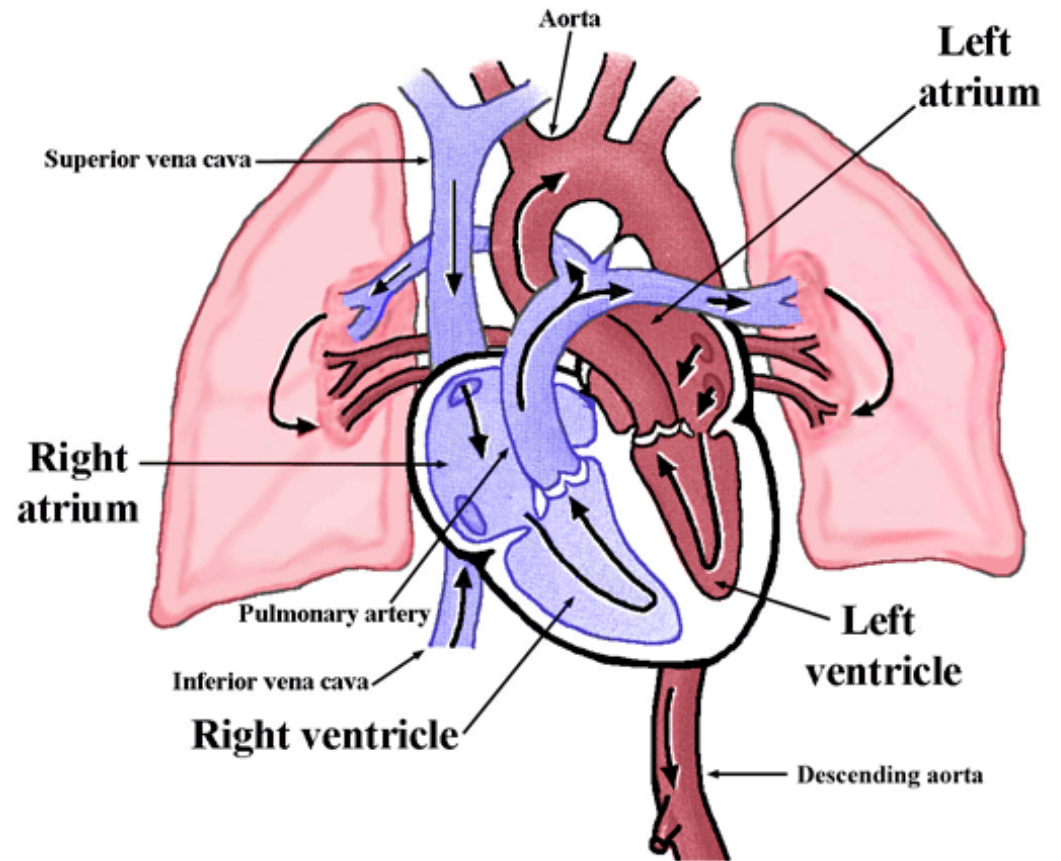


Accumulation of fluid in the air sacs (alveoli) in the lungs



S/S of Right Heart Failure

- JVD
- Pedal edema



Pt sitting up
at 45°





Treatment of Cardiogenic Shock

- Call ALS
- Administer oxygen via appropriate delivery device
 - CPAP for pulmonary edema
- Treat for shock
- Rapid transport

Extra Cases

Quick-Case 1

- 54 y/o M presents CAO in NAD sitting on chair c/o CP.

Primary Exam

- Airway: open
- Breathing: normal rate and TV
- Circulation: radial pulse normal rate and strong, skin warm, dry, and pink

HPI

- Pt states acute onset of pn after walking up a flight of stairs.
- Sitting down made the pain go away.
- Crushing pn under sternum...
- ... radiates to left arm and neck.
- Was a 7, now gone.
- Pn lasted about 2 minutes total.

Additional Information

- Pt denies:
 - Difficulty breathing
 - N/V
 - Dizz
 - Weakness
 - Syncope
 - Abd or back pn

Additional Information

- PMH
 - Angina
 - Diabetes
- Meds
 - NTG
 - Glyburide
- NKDA
- Last meal 2 hrs ago

Vital Signs

- Skin cool, dry, normal color
- HR = 90, regular
- RR = 12, normal
- BP = 132/84
- SpO₂ = 98%

Physical Exam

- PEARL
- \emptyset JVD
- LS clear/= \perp
- \emptyset sacral or pedal edema
- \emptyset chest surgeries

Waddya Think?

- Angina pectoris
 - Stable or unstable?
- Does the pt need to go to the hospital?

Treatment

- 100% O₂ via NC 4 lpm
- POC
- Reassess frequently for return of pn
- Assist with NTG if pn returns
- ALS
- Transport

Case 3

- 49 y/o female presents sitting on couch c/o a “stomach ache”.

Primary Exam

- Airway: open
- Breathing: normal rate and TV
- Circulation: radial pulse slightly fast, skin C/P/D

HPI

- Acute onset while watching TV about 30 minutes ago.
- Nothing makes it better or worse.
- Dull ache over epigastrium.
- Ø radiation.
- 5 on 1-10 scale.

Additional Information

- Pt also experiencing:
 - Nausea
 - Dizz
- Pt denies:
 - CP
 - Vomiting
 - Difficulty breathing
 - Weakness
 - Syncope

Additional Information

- PMH
 - Diabetes
- Meds
 - Insulin
- NKDA
- Last meal 1 hr ago, took insulin as usual

Vital Signs

- Skin pale, cold, diaphoretic
- HR = 102, regular
- RR = 14, normal
- BP = 118/72
- SpO₂ = 98%

Physical Exam

- PEARL
- \emptyset JVD
- LS clear/= \perp
- \emptyset sacral or pedal edema
- \emptyset chest surgeries

Waddya Think?

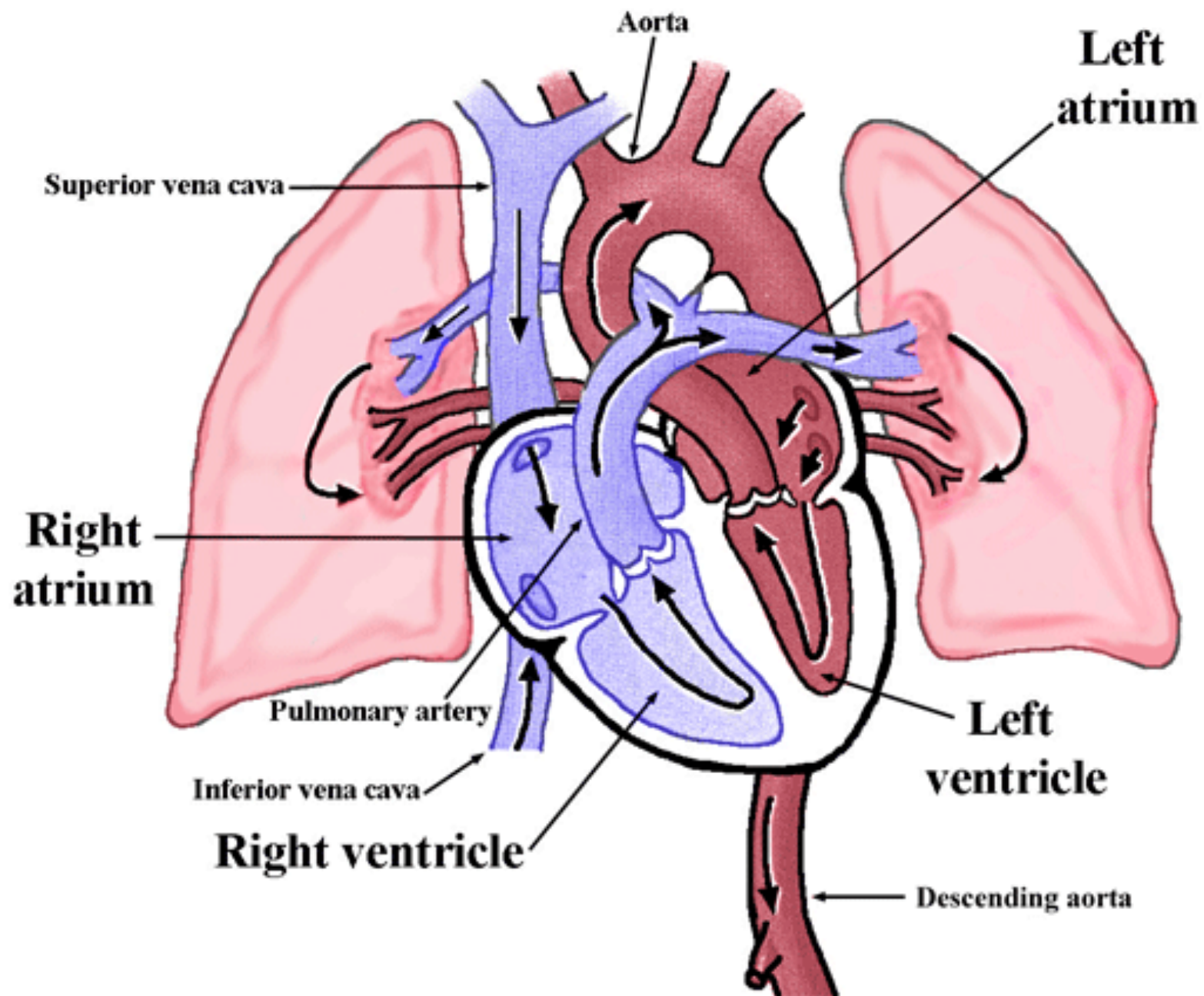
- AMI
- This is the “typical” atypical presentation!
 - Female
 - Diabetic
 - General-illness-type complaints

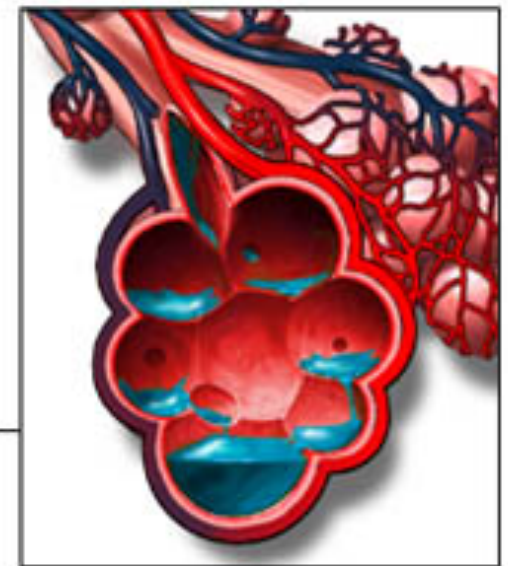
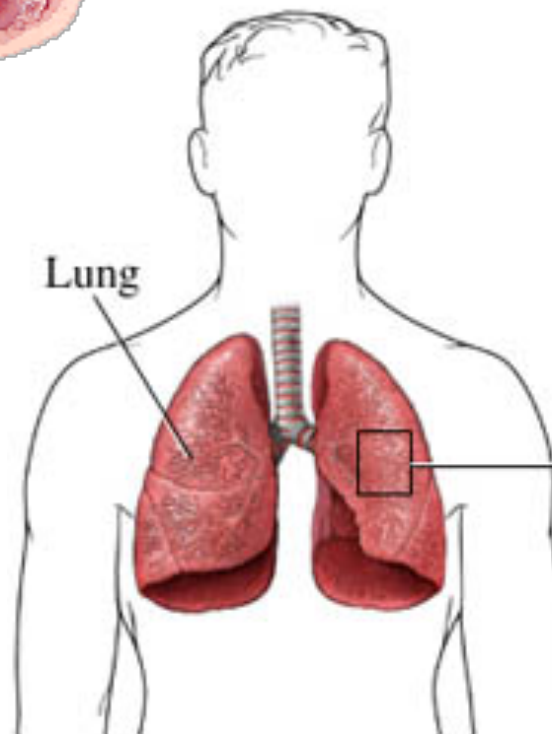
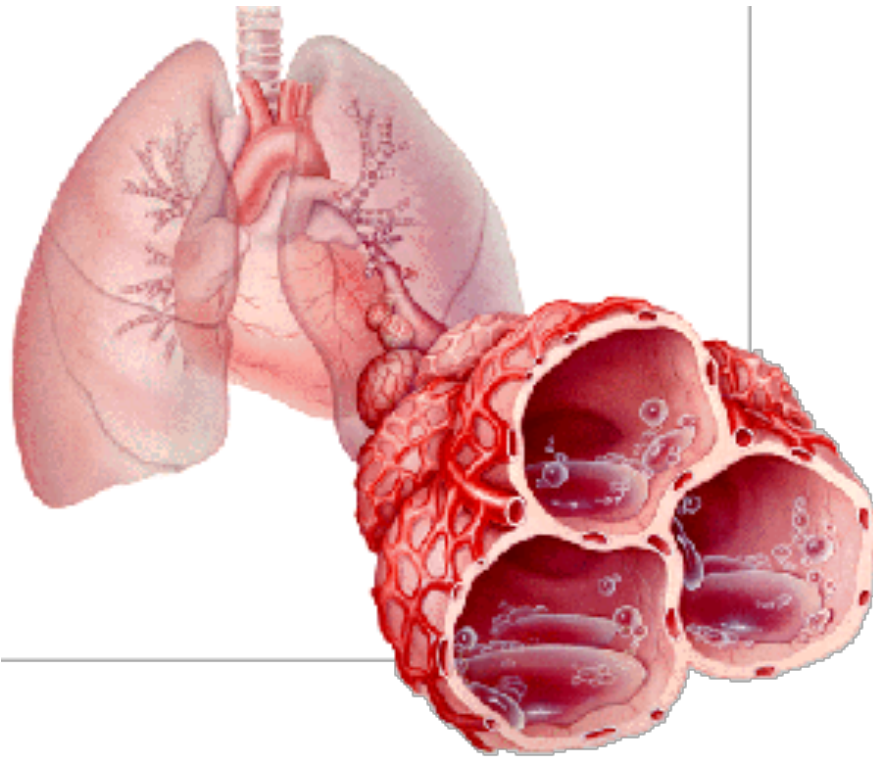
Treatment

- 100% O₂ via NC 4 lpm
- POC
- Reassess frequently for return of pn
- ALS
- Transport

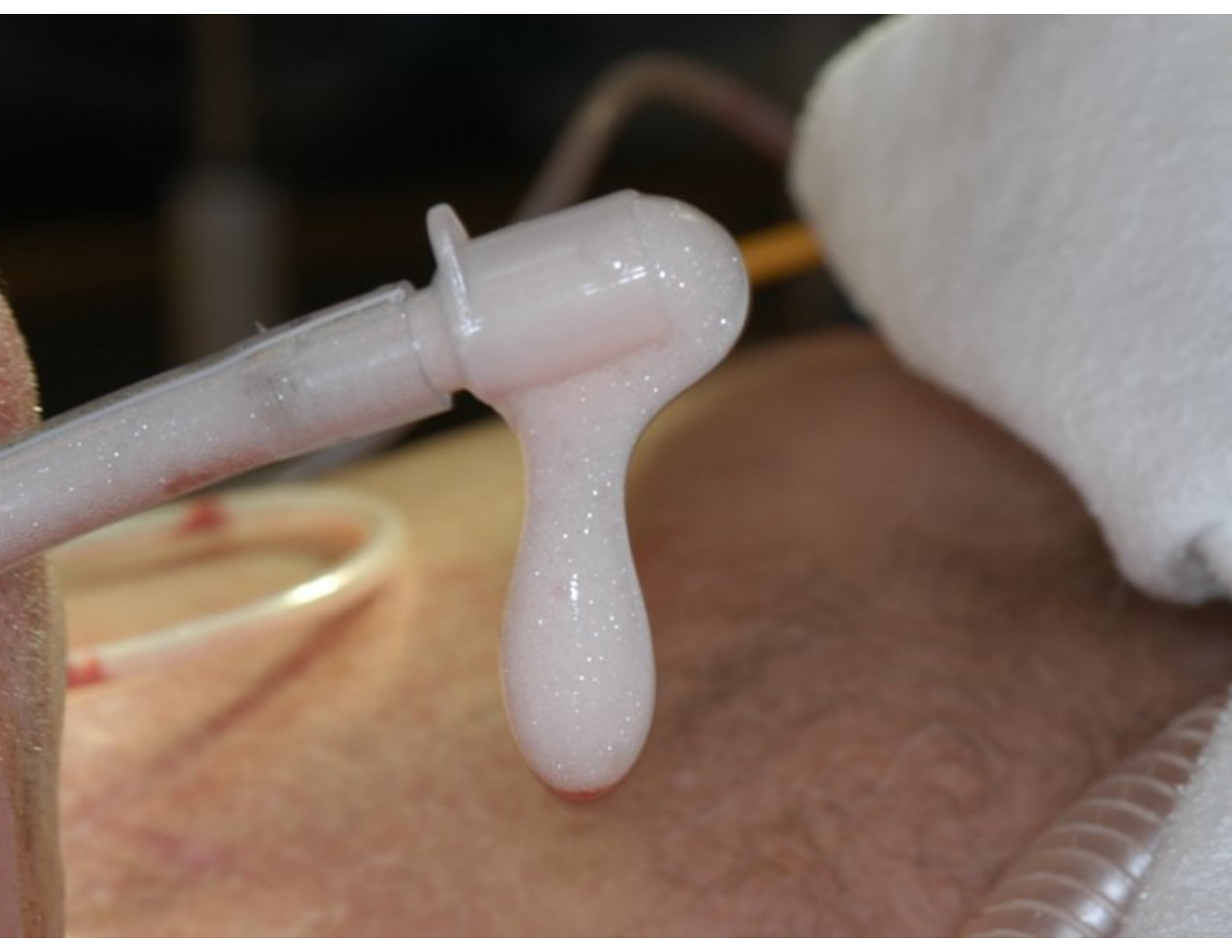
Case 4

- Complete the small-group case





Accumulation of fluid in the air sacs (alveoli) in the lungs



Treatment

- 100% O₂ via NRM 15 lpm
 - Be prepared to provide PPV \bar{c} BVM
- Sit upright in POC
- Assist \bar{c} NTG?
- ALS
- Rapid transport

Case 5

- 54 y/o M presents CAO in obvious excruciating pain, sitting on a couch, stating “I have this unbelievable pain in my back!”

HPI

- Pt states acute onset of pn after walking up a flight of stairs.
- Nothing makes the pn better or worse.
- Ripping sensation, between shoulder blades.
- Ø radiation.
- 11 on a scale of 0-10
- Pn started 15 minutes ago.

Additional Information

- Pt states that he is also:
 - Weak
 - Dizzy
- Pt denies:
 - Difficulty breathing
 - N/V
 - Syncope

Additional Information

- PMH
 - Angina
 - Diabetes
- Meds
 - NTG prn
 - Insulin
- NKDA
- Last meal 3 hrs ago

Vital Signs

- Skin cool, diaphoretic, pale
- HR = 110, regular
- RR = 26, normal TV
- BP = 140/96
- SpO₂ = 98% on RA

Physical Exam

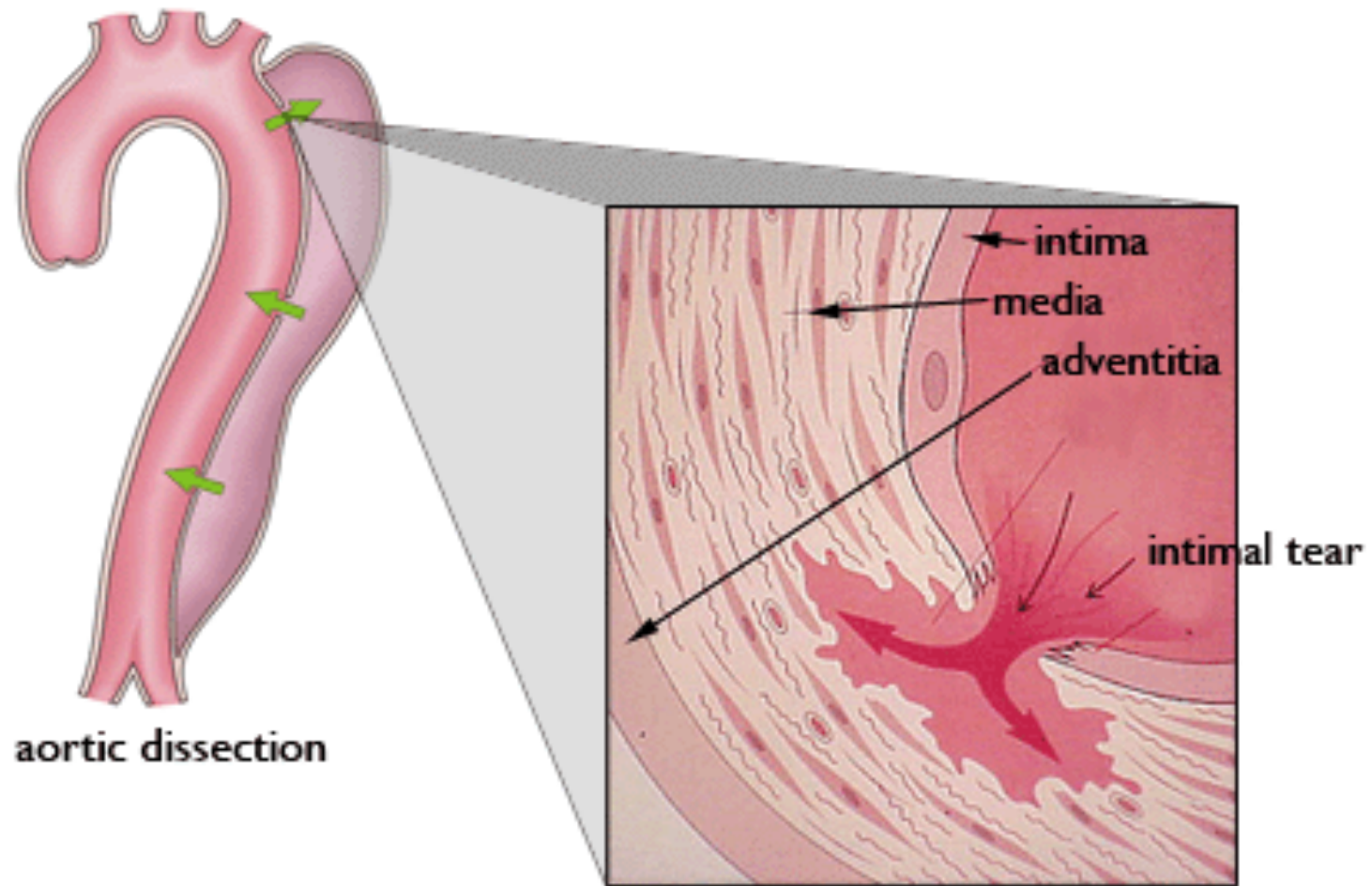
- PEARL
- \emptyset JVD
- LS clear/= \perp
- \emptyset sacral or pedal edema
- \emptyset chest surgeries

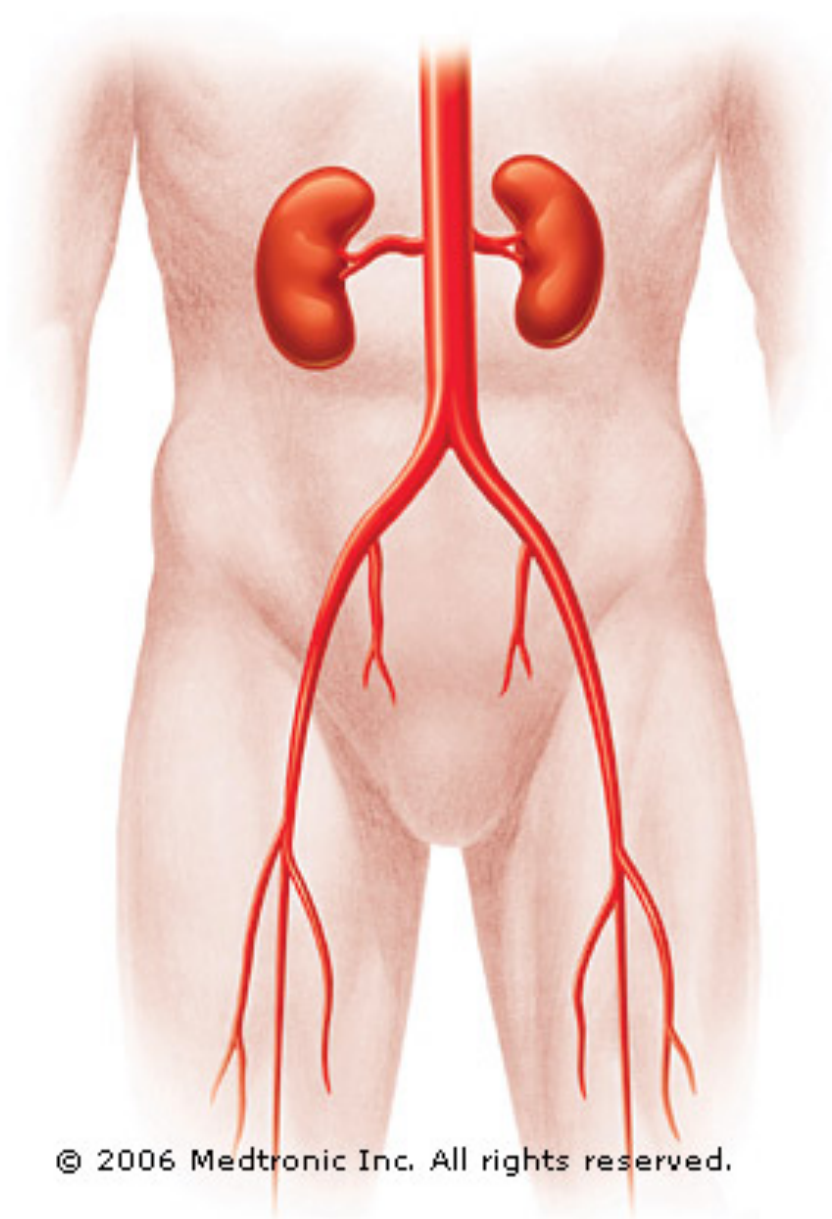
Waddya Think?

- Angina pectoris?
- AMI?
- Aortic dissection?
- Aortic aneurysm?

Treatment

- 100% O₂ via NRM 15 lpm
- POC
- Reassess frequently for return of pn
- Assist with NTG?
- ALS
- Transport





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