Week 7 Lecture 1

Jared Brannan

October 13, 2021

1 Administrative drivel

- Exam will cover through the heart!

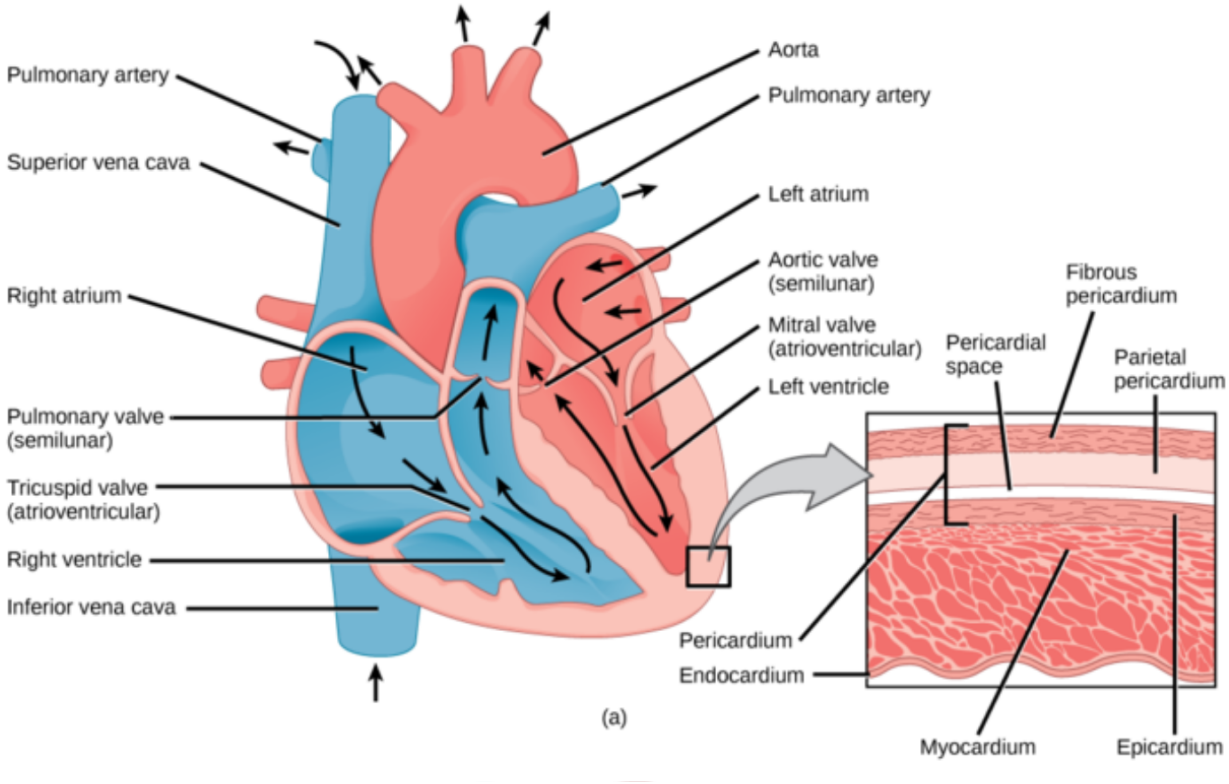
2 Anatomy and Physiology

2.1 Cardiovascular system continued...

2.1.1 Heart

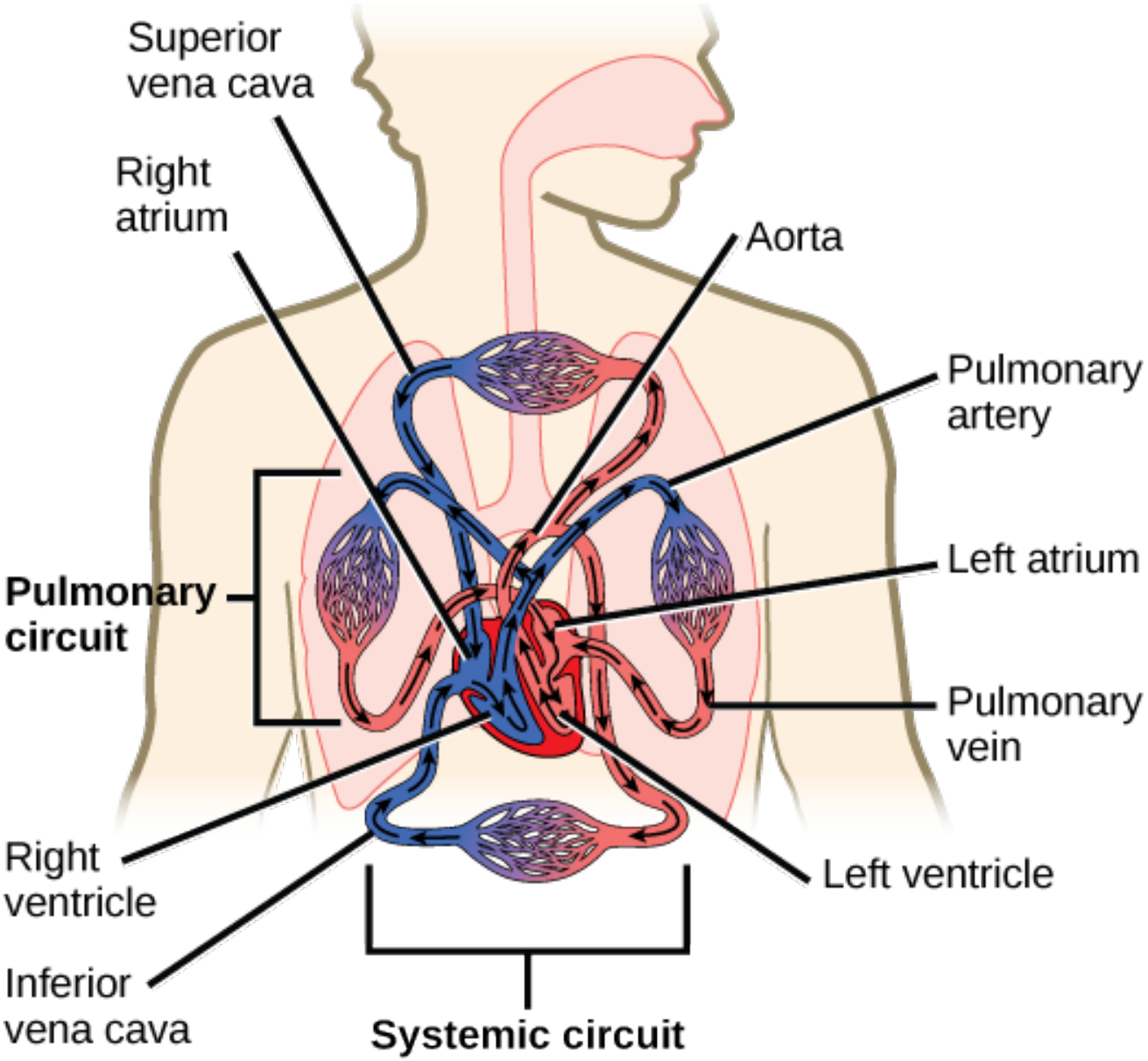
- Thick cardiac muscle to pump blood around the body, located at the bottom of the heart mostly
- two atria, two ventricles
- Contraction of the muscle decreases the volume forcing blood out
- Outside the hear muscle is a protective sack called the *pericardium*
  - There's a small pocket of fluid between the pericardium and the cardiac muscle called the Pericardial cavity
- Surrounding the cardiac muscle, there are layers of epithelial tissue on either side of the muscle called the endocardium and epicardium
  - These and the parecardium help smooth the movement of the heard
- cardiac muscle is called the *myocardium*
- There are internal soft connective tissues that prevent the heard from over expanding
- There are 4 musclular pumps spit into two halves:
  - One half pumps blood to the lungs (right)
    - bottom ones do the bulk of the work, called right ventrical
    - top ones (called right atrium) recieve blood comming back to the heart and pump the blood down into the ventricals so they're full when they contract
    - slightly thicker walls than left
    - collects blood from everywhere but the lungs, and pumps blood to the lungs
  - One half pumps blood to the body (left, pulminary)
    - bottom ones do the bulk of the work, called left ventrical
    - top ones (called left atrium) recieve blood comming back to the heart and pump the blood down into the ventricals so they're full when they contract
    - collects blood from the lungs, and pumps blood to the rest of the body
- Aorta is the bigest blood vessel in the body, and caries blood to all but the lungs

- the role of the atrium is to recieve blood from the body,
- the heart gives a more forceful action when it's full, than when partially full
- we don't need to know the specifics of the valves
  - Valves are one way, allowing things in through the atrium into the ventrical when the ventrical is relaxed, then when the ventrical contracts the valve closes, forcing blood out through the artery where there's a one way valve allowing blood out but not in through the artery
  - sometimes the valves fail, allowing backflow which makes the heart less efficient
  - these need to be repaired, but the surgery is much less invasive now
  - if a valve fails completely, you will die



- The above image has the "left" in red.
- The paricardium encases the entire heard and produces a fluid into the sac to reduce friction.
  - It has coranary arteries and cardiac veins all over it, supplying blood to the heart.
  - These are subject to getting clogs, starving the heart of oxygen, making it necessary to get bippass surgery
  - There are 4 coranary arteries, so to get all 4 fixed is calleed quadrupal bipass
  - they take an artery from the leg and replace the issue area in the coranary arteriese.
    - A small enough artery will be rebuilt after removal
- KNow the basic path: a figure 8
  - 1. Lungs - oxygenated blood

- left atrium
- left ventricle
- aorta – systemic cicuit – O_2 used up
- Right atarium
- right ventricle
- back to lungs



- the heart beat is intrinsic – it runs on its own
  - specialized areas of cells – Nootes (SA and AV) – coordinate the contraction/relaxation cycle, the big strong "push" is when the venticular muscle contracts just after the spike in the ECG)