

x-ray chest

when we add a dye, we add the name of the dye to the x-ray film eg. X-ray with dye. Eg. When we want to have an X-ray for the stomach we give the patient barium and it'll be shown, and in case of colon we give enema , in case of brain we also give a stain.

In case of the heart we don't give a dye, we only position the film on one side and the imaging device on the other side of the patient. (the rays will pass through the lungs easily – because they're filled with air- and as soon as they penetrate the body they burn the film that's why it looks black. But in case of the heart, vessels and bones they absorb the rays so they will appear white on the film. Why? because the heart has a thick wall where it absorbs the rays and the blood in the vessels prevent the rays from penetrating. The white area is where the rays didn't get to the film and didn't burn it.

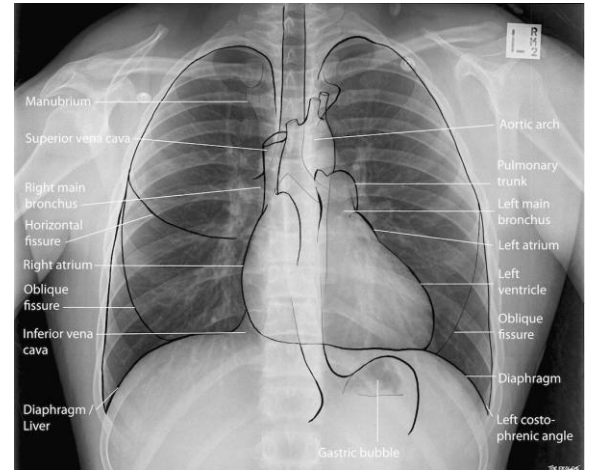
The mediastinal shadow is the shadow of the heart, large vessels, and arteries.

Right margin of the mediastinal shadow is the right atrium and SVC.

Left margin is Aortic arch(aortic knuckle)**, pulmonary trunk, left auricle and the apex of the left ventricle. Note/we can't distinguish between the Pulmonary trunk and the left auricle – ill defined-

The apex of the heart is located within the midclavicular line.

We can distinguish right and left dome of diaphragm.



In the X-ray image the shown ribs are the posterior part, why? because the anterior part is cartilage known as the costal cartilage.

How to know if the heart is in normal size or not? Approximately, the width of the heart is lesser than the half width of the thorax

Depending on the figure :

-the width of the heart is large, we call it enlargement of the heart, not hyperplasia because the heart enlargement included thickening or thinning of the walls.

-is this enlargement in the left or right ventricle? the enlargement is in the left ventricle.



In case of a myocardial infarction or weakening in the left ventricle the vascular markings of the lungs are congested.

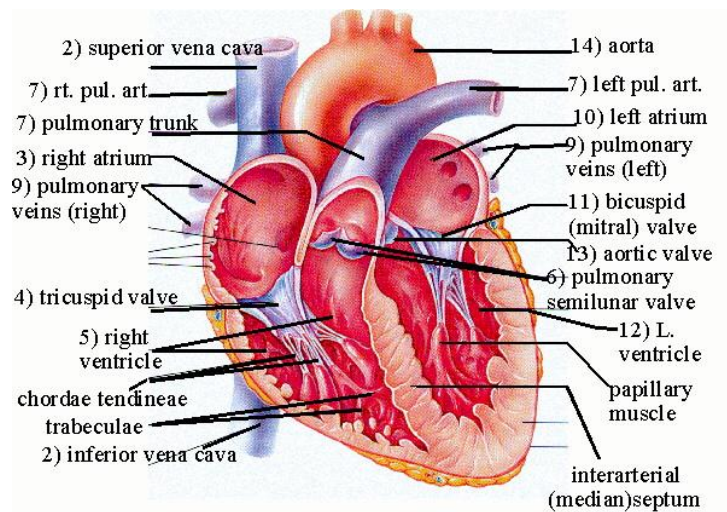
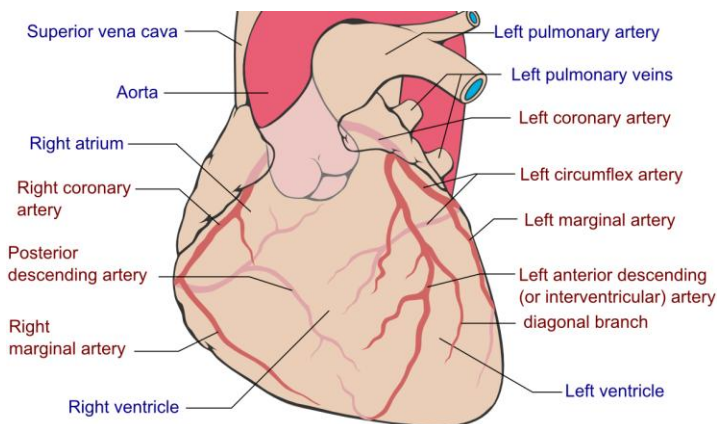
In case of an infarction when the myocardial cells die, they will be replaced by non contractile fibrous tissue, because cardiac muscle cells are unable to divide after birth, as a result the left ventricle will pump lesser amount of blood in comparison of received blood, which will cause accumulation of blood causing overstretching of it's fibers → low blood flow → low oxygen to the tissues → the patient will get fatigue.

And the excess blood will get back to the atrium then to the lungs causing congestion (dyspnea, orthopnea) → the blood will get back to the right atrium and causing weakening of the right atrium and getting the blood to right atrium and to systemic circulation and accumulation of blood in the liver.

* any problem in left ventricle it'll affect the right ventricle.

* in case of lung fibrosis it'll cause the right atrium to dysfunction first.

Coronary arteries:



(the doctor have mentioned the parts of the heart shown in the figure)

Right Coronary

It arise from the ascending aorta, and pass through the coronary groove and give one or more right marginal branch and continue in the groove to get to the posterior surface of the heart to anastomose with the left circumflex.

It supply the right and left ventricle and it also supply the SA node.

Left coronary

Arise form the left posterior sinus of the left aorta, as soon as it appears on the surface it divides into left circumflex and LAD (left anterior/ interventricular descending)

The left circumflex gives the left marginal branch and the LAD gives the diagonal branch.

Q: in case of ischemia which part of the ventricles walls will be affected more the deep or out layers? And on the right or left ?

The deep layer in the left ventricle, because in the isovolumetric contraction high pressure on the walls will cause the deep arteries to be blocked.

The blood flow differs in the left ventricle between systole (low) and diastole (high) on the other hand the blood flow wont differ whether systole or diastole.