



Radiology of Cardiovascular system

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- Modified by Lujain Ahmad.

X ray



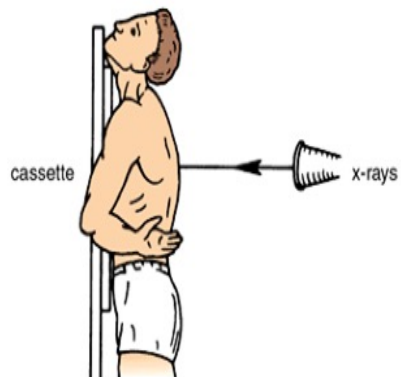


- The patient is standing up, the X-ray comes from his back and penetrates his thoracic wall and reflected in front of the film (Anterior to the patient).

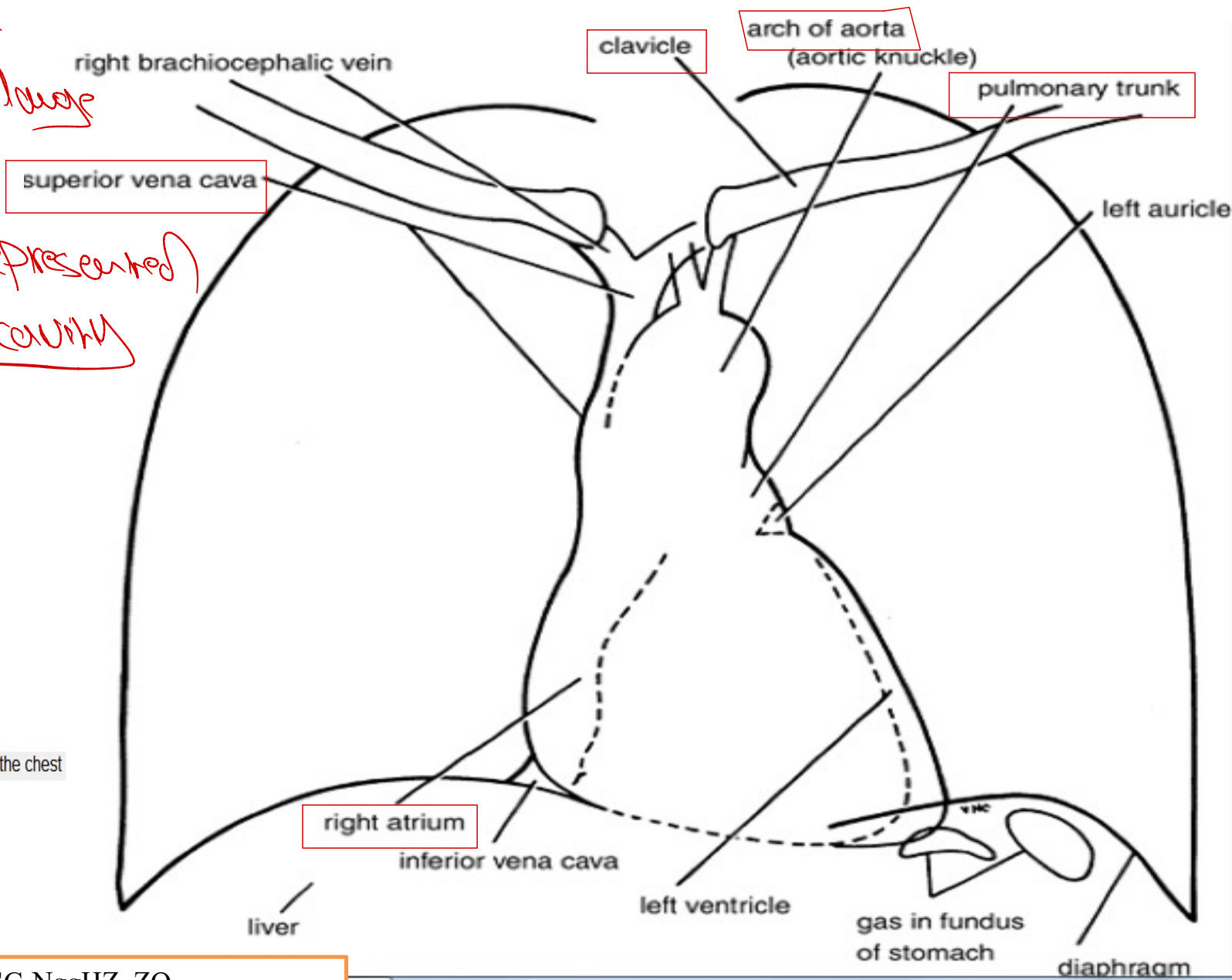
- Arch of the aorta represented by the large

Concavity

- pulmonary trunk represented by the small Concavity



Main features observable in the posteroanterior radiograph of the chest



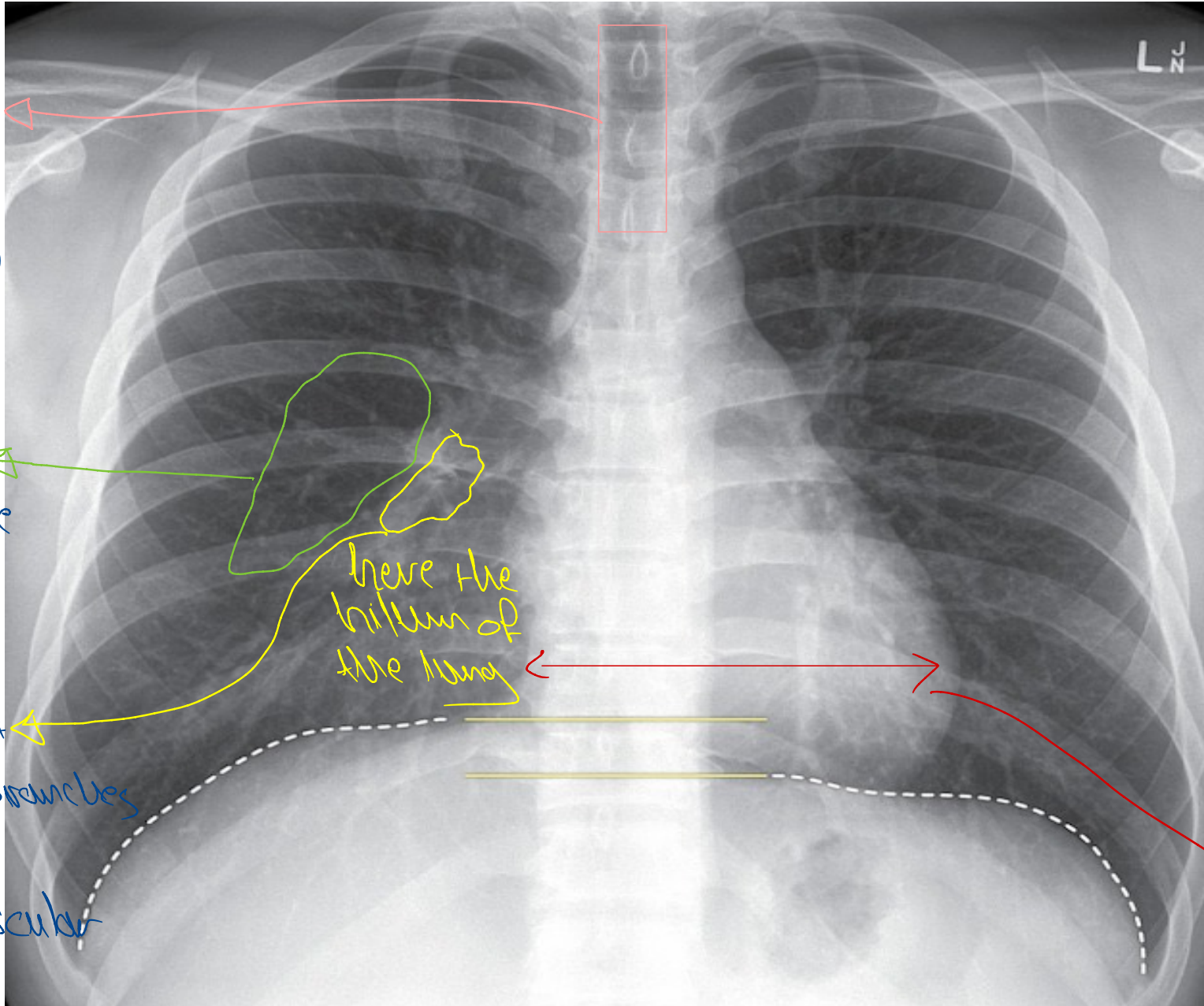
https://www.youtube.com/watch?v=SC-NggHZ_ZQ

The black area here (trachea)

The black color inside the lung

Quite spots or quite branches called bronchovascular markings

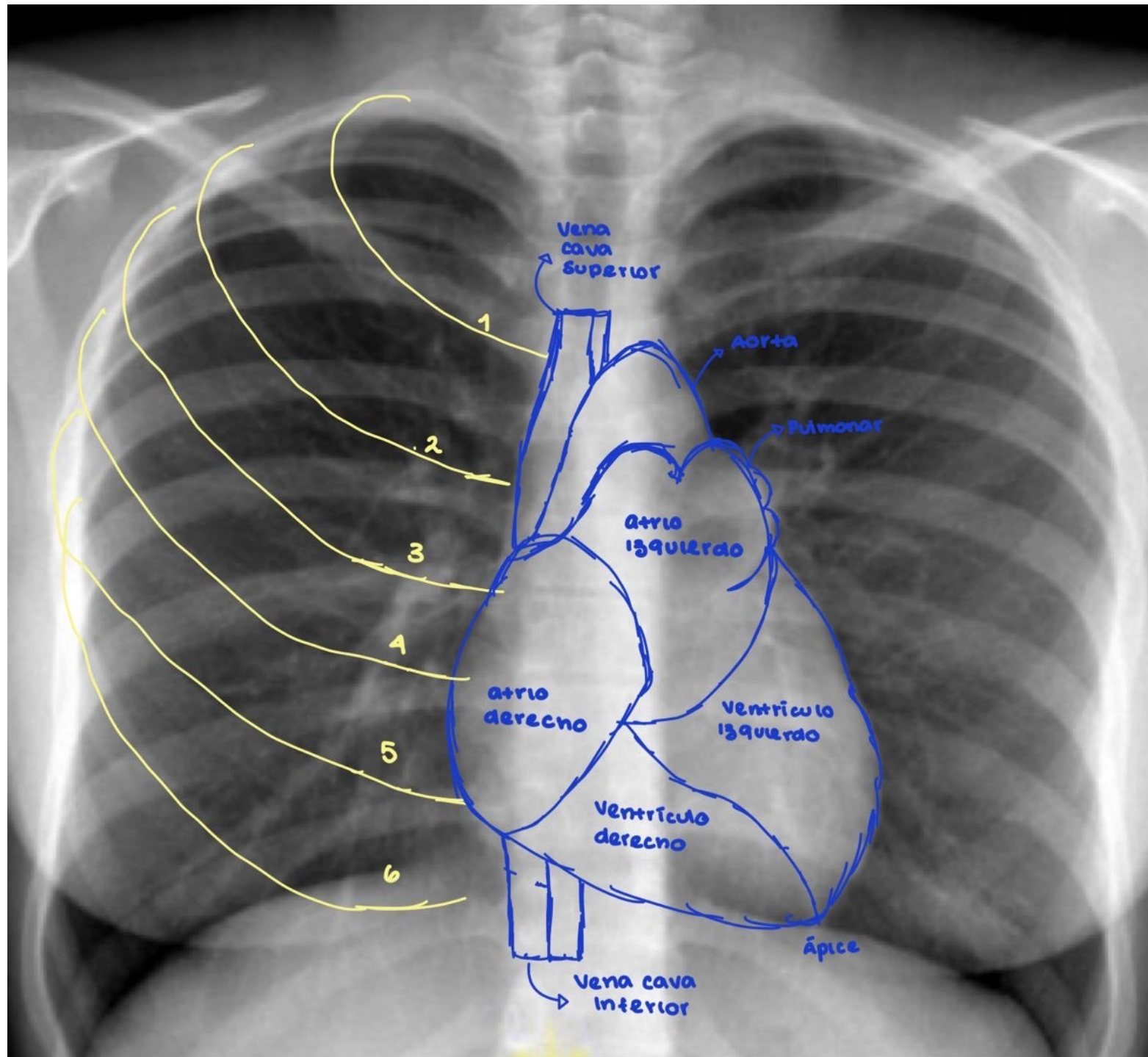
and if they increase they indicate inflammation or infection of the lung



The black color indicate air and the white indicate blood.

The normal view of the X-Ray is posterior - anterior

Cardiac area



THE RIGHT CONTOUR OF THE CARDIAC X-RAY

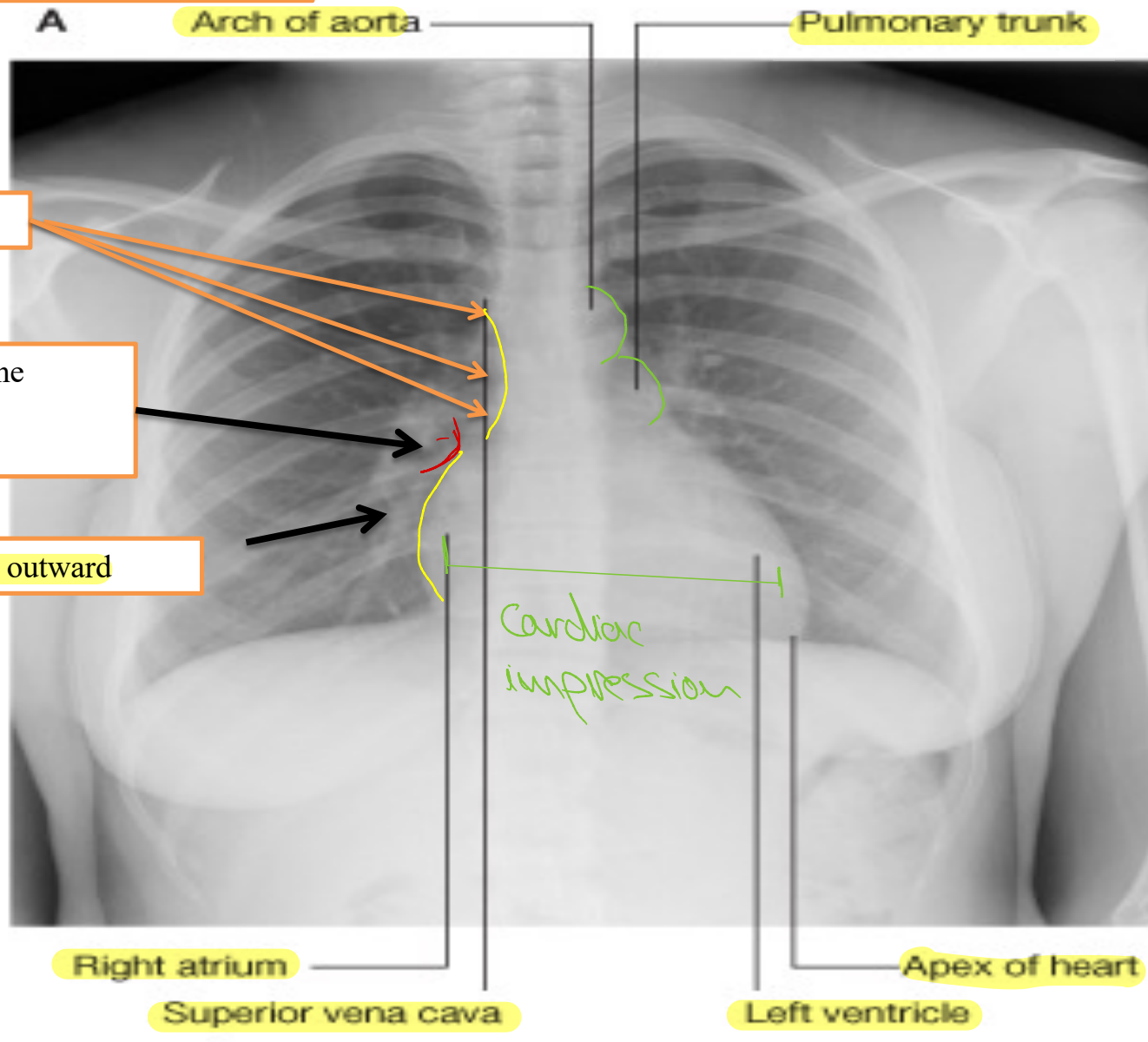
The upper half of the right contour is formed by the superior vena cava (SVC)

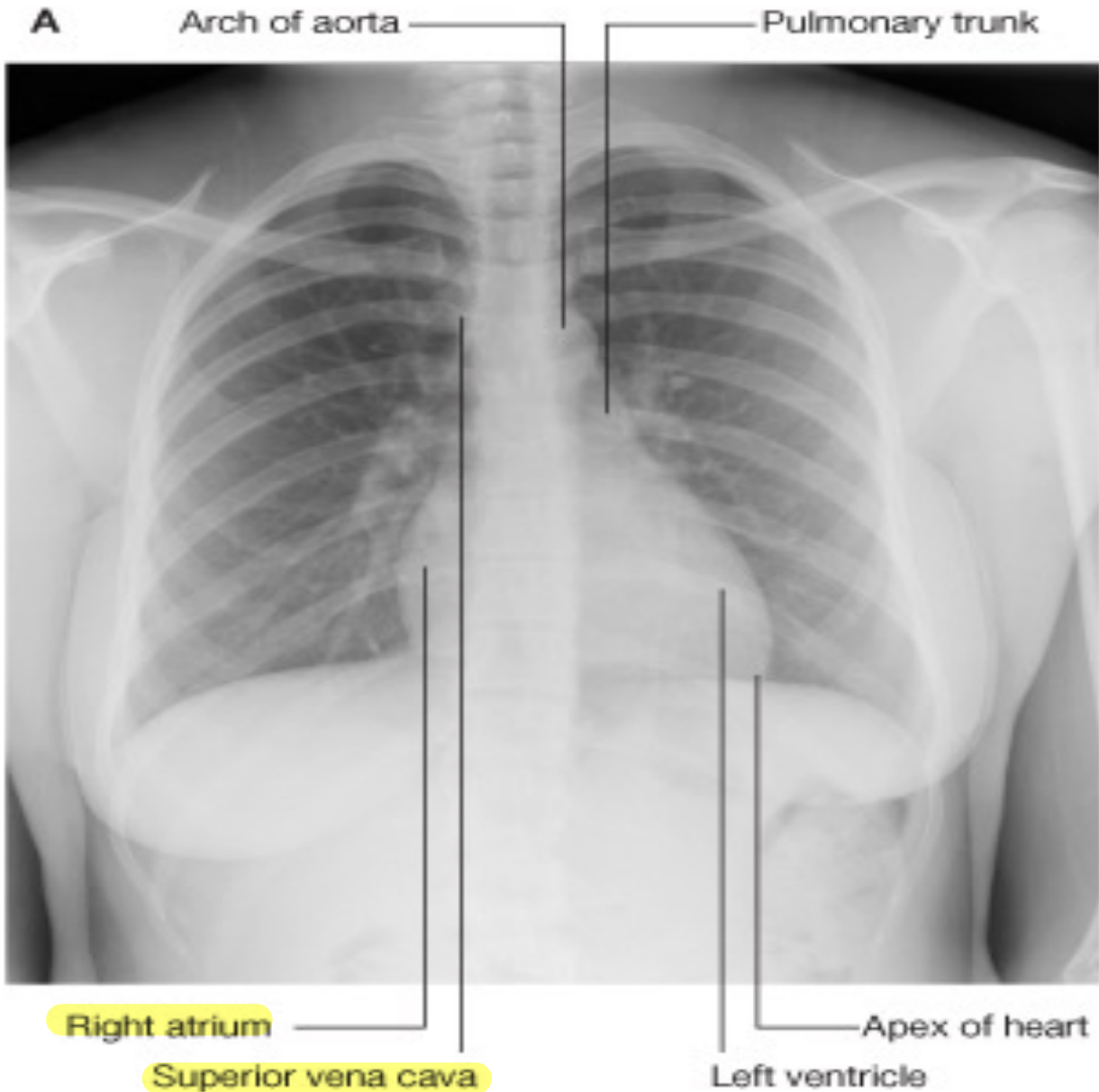
is straight

The angle between these two contours represents the superior aspect of the right atrium

the lower half by the lateral wall of the right atrium

bulges outward





On the left side, the uppermost part of the cardiovascular is formed by the distal arch of the aorta as it curves posteriorly and inferiorly to become the descending thoracic aorta.

Immediately below the aortic bulge, the main pulmonary trunk and left main pulmonary artery are border forming.

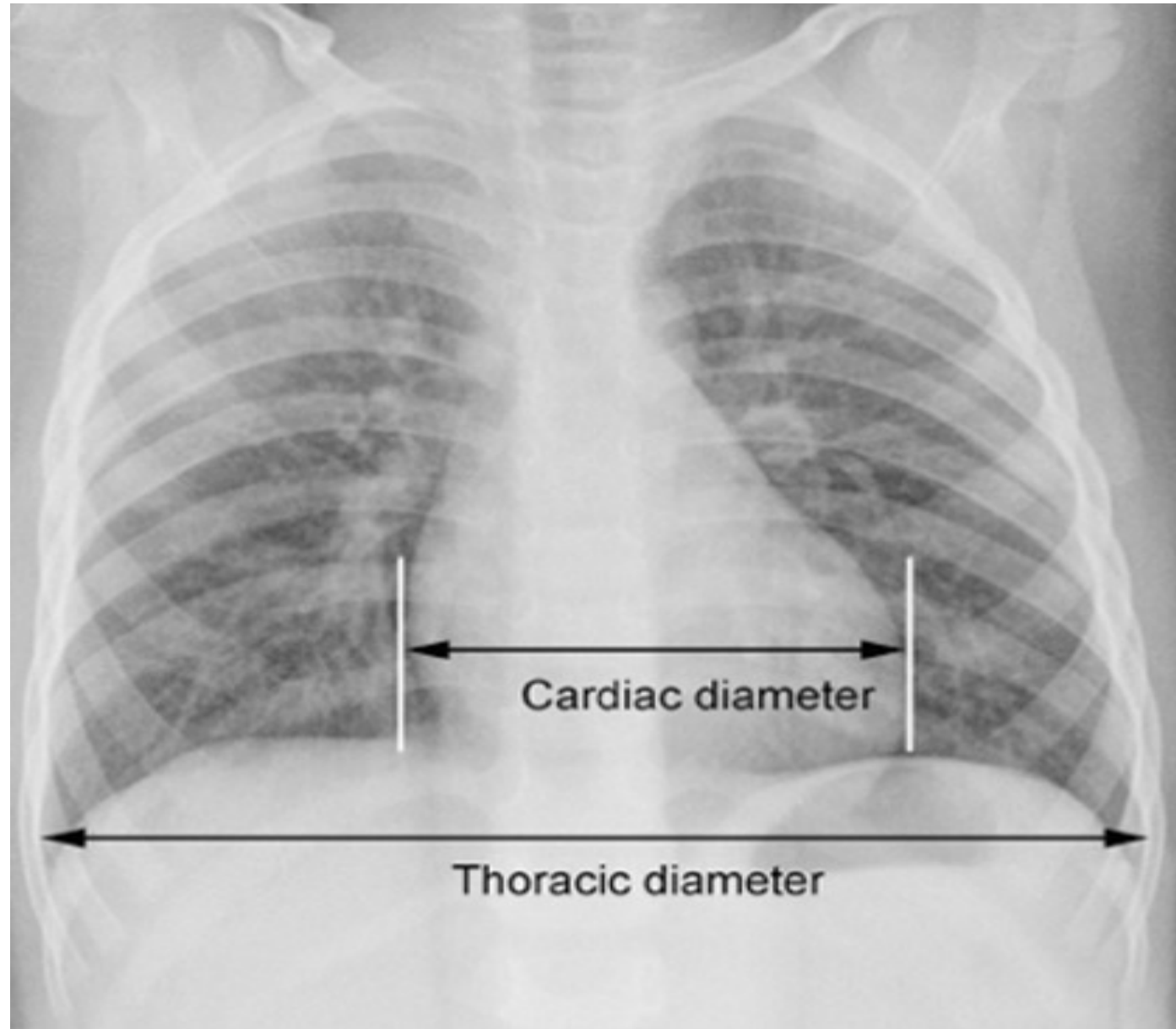
A small segment of the left cardiac silhouette below the pulmonary artery is formed by the left atrial appendage. This segment normally is flat or slightly convex and is continuous with the curve of the left ventricle, which forms the largest part of the left border of the cardiac contour.

— How we can know if the patients have cardiomegaly or not

The cardiothoracic ratio (CTR) aids in the detection of enlargement of the heart which is most commonly from cardiomegaly but can be due to other processes such as Pericardial effusion

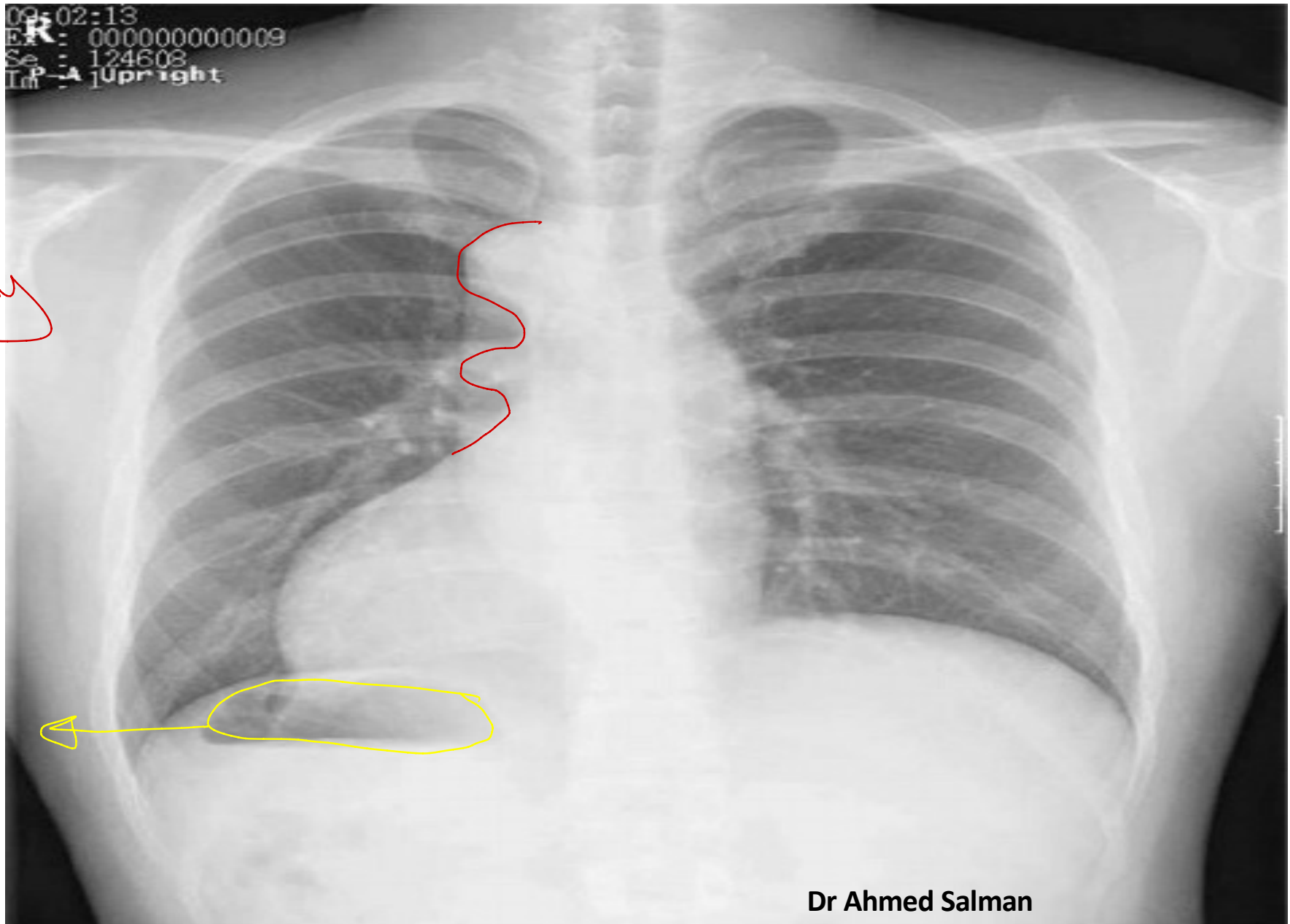
is the ratio of maximal horizontal cardiac diameter to maximal horizontal thoracic diameter (inner edge of ribs / edge of pleura). A normal measurement should be <0.5 .

⇒ $\frac{\text{Cardiac diameter}}{\text{Thoracic diameter}}$



- The heart here is found on the RT side of this X-ray

The gases of the stomach
Dextrocardia

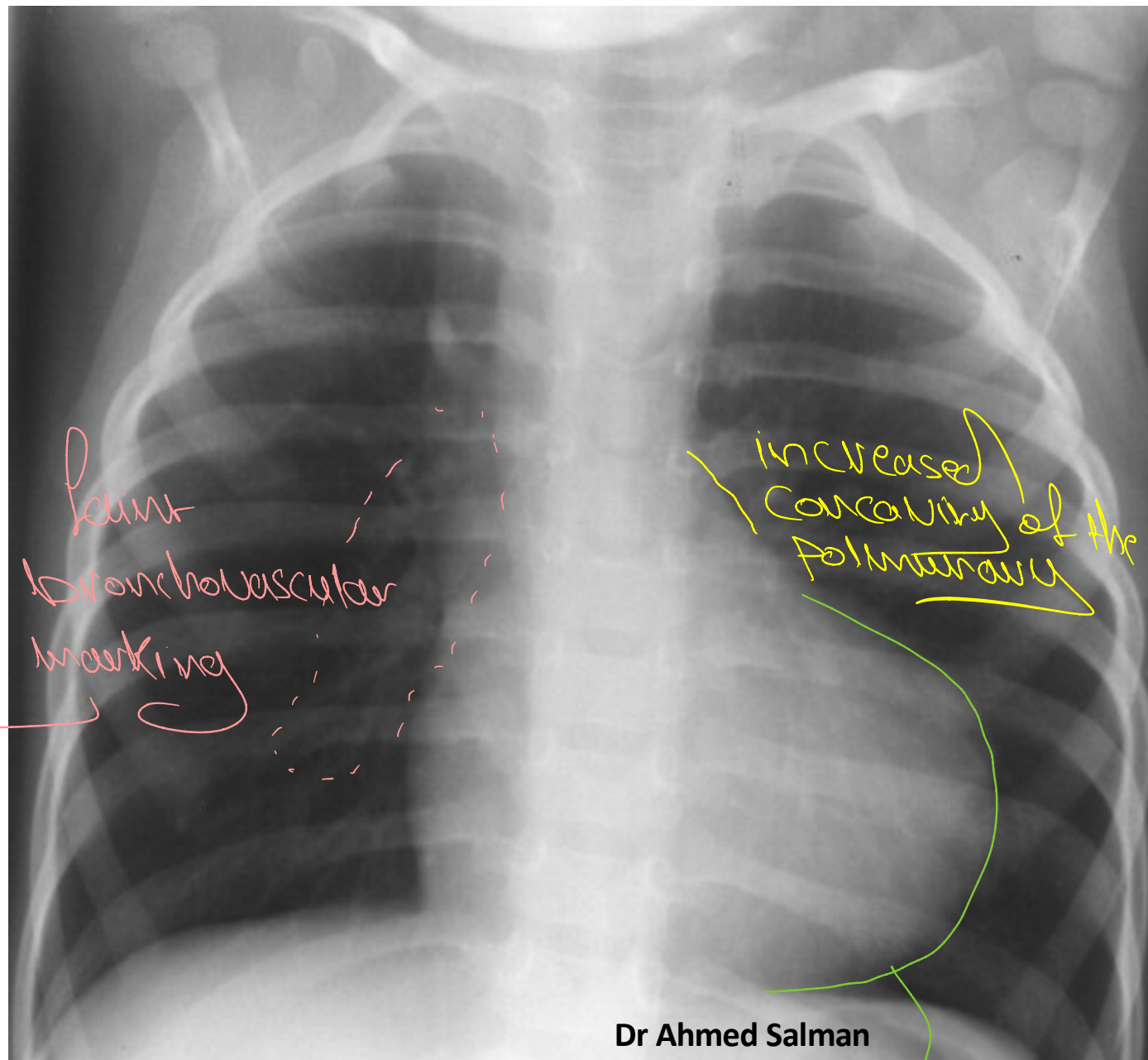


- Complete body inversion

Tetralogy of Fallot

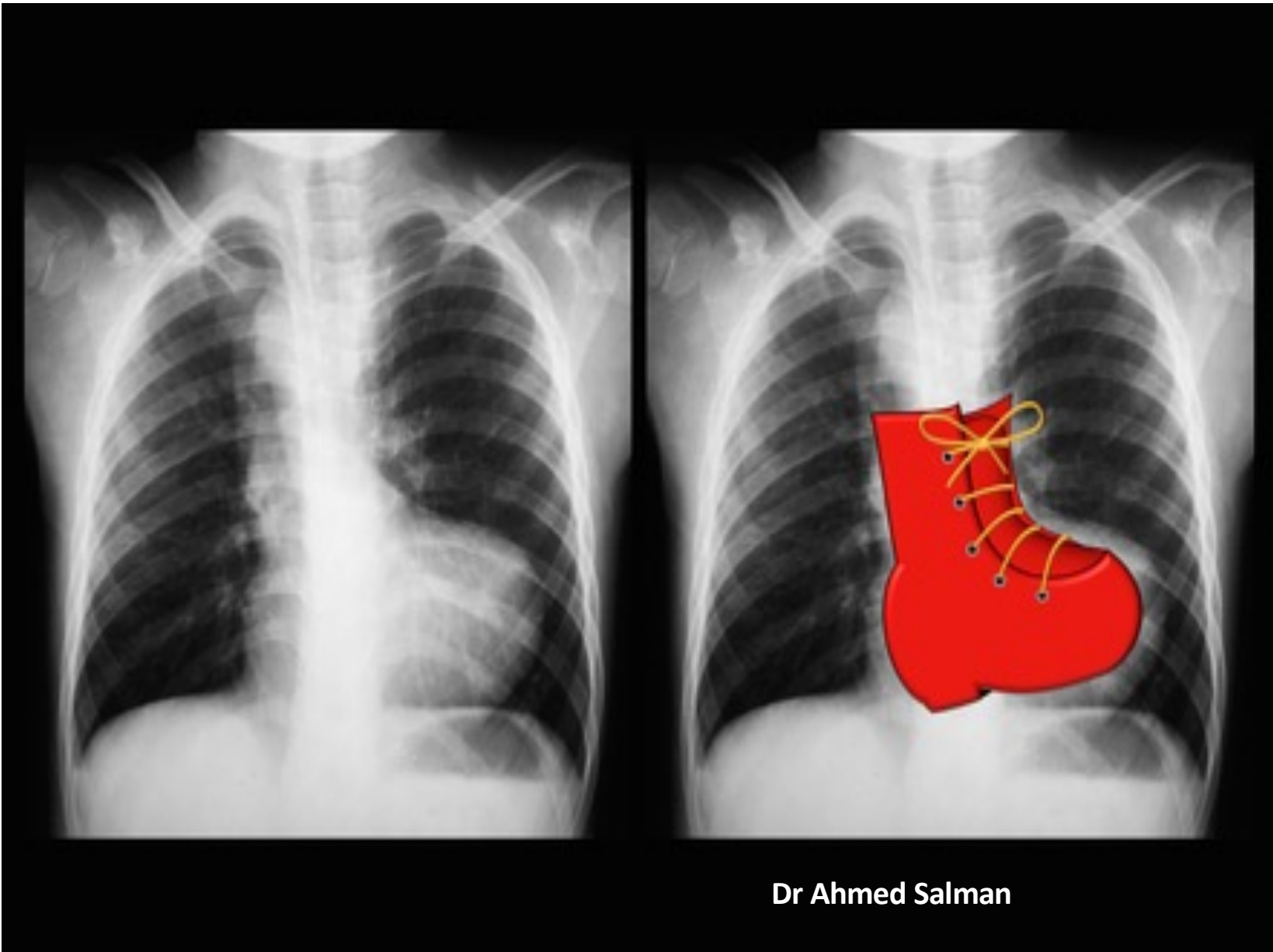
- Boot-shaped heart with an upturned cardiac apex due to right ventricular hypertrophy
- Concave pulmonary arterial segment.
- Pulmonary oligaemia occurs due to decreased pulmonary arterial flow.

- cur of ↓
blood flow

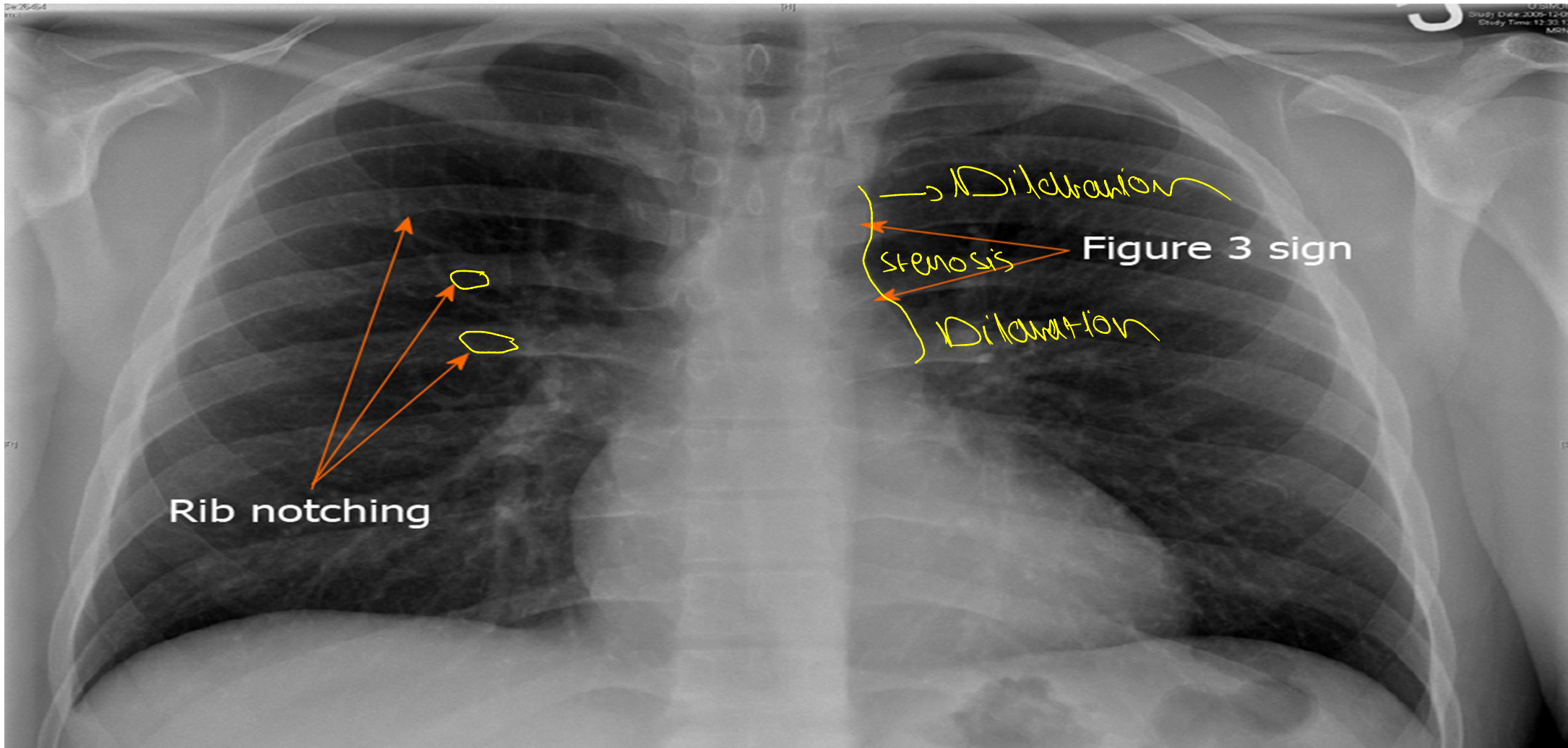


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- enlargement of
the left ventricle.



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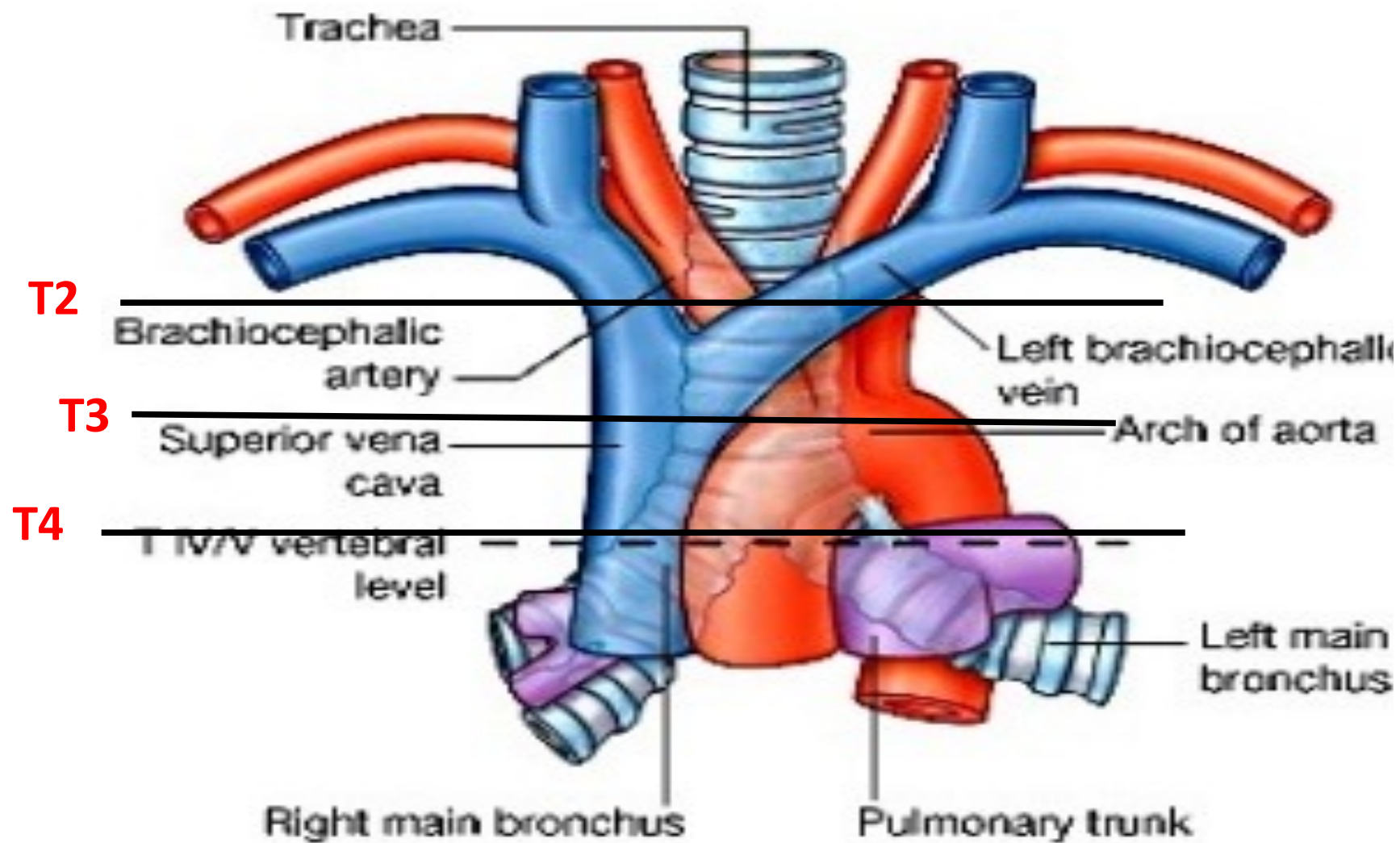
Coarctation of Aorta .Chest radiograph may show a normal cardiac contour or can be mildly enlarged. A characteristic finding of beneath the aortic notch suggests the narrowing of the descending aorta at the level of coarctation and dilatation pre and post coarctation . Bilateral inferior rib notching may also be seen in the third to eighth ribs suggesting the presence of dilated intercostal collateral arteries

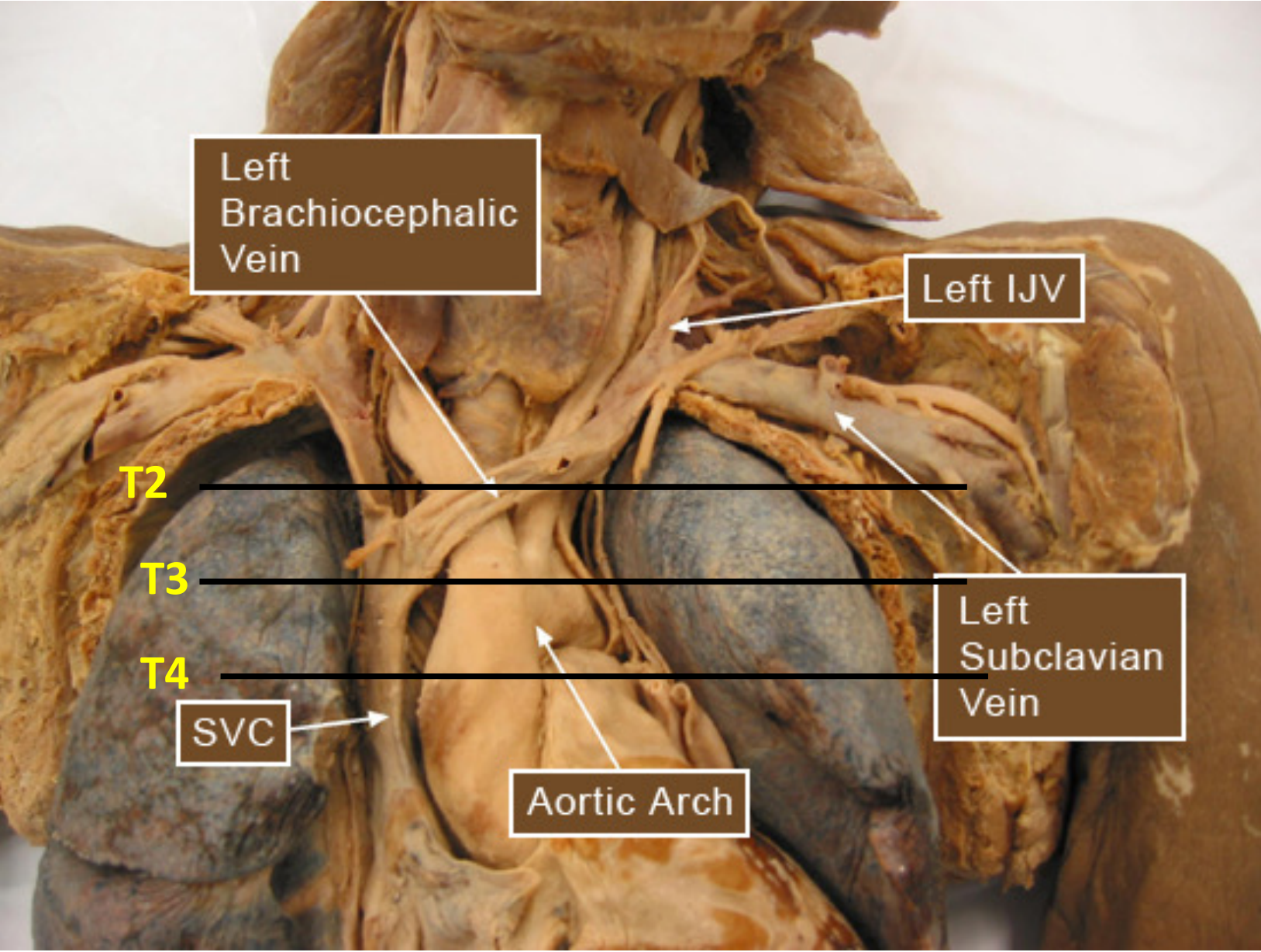
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-This notching occur because of the dilatation of the pos. intercostal arteries to compensate this stenosis.

ON the CT scans

You should appreciate the fact that we are evaluating the inferior part of the section (not the superior), therefore, it should be noted right side will be actually on the left side on the scan and vice versa.





Handwritten notes at the top of the page, including "Right of left" and "SECTION" with arrows pointing to the right and left sides of the CT scan.

T2 LEVEL

Rt.

The most Ant. structure is the left brachiocephalic vein

3 branches of aorta
 RT brachiocephalic V.

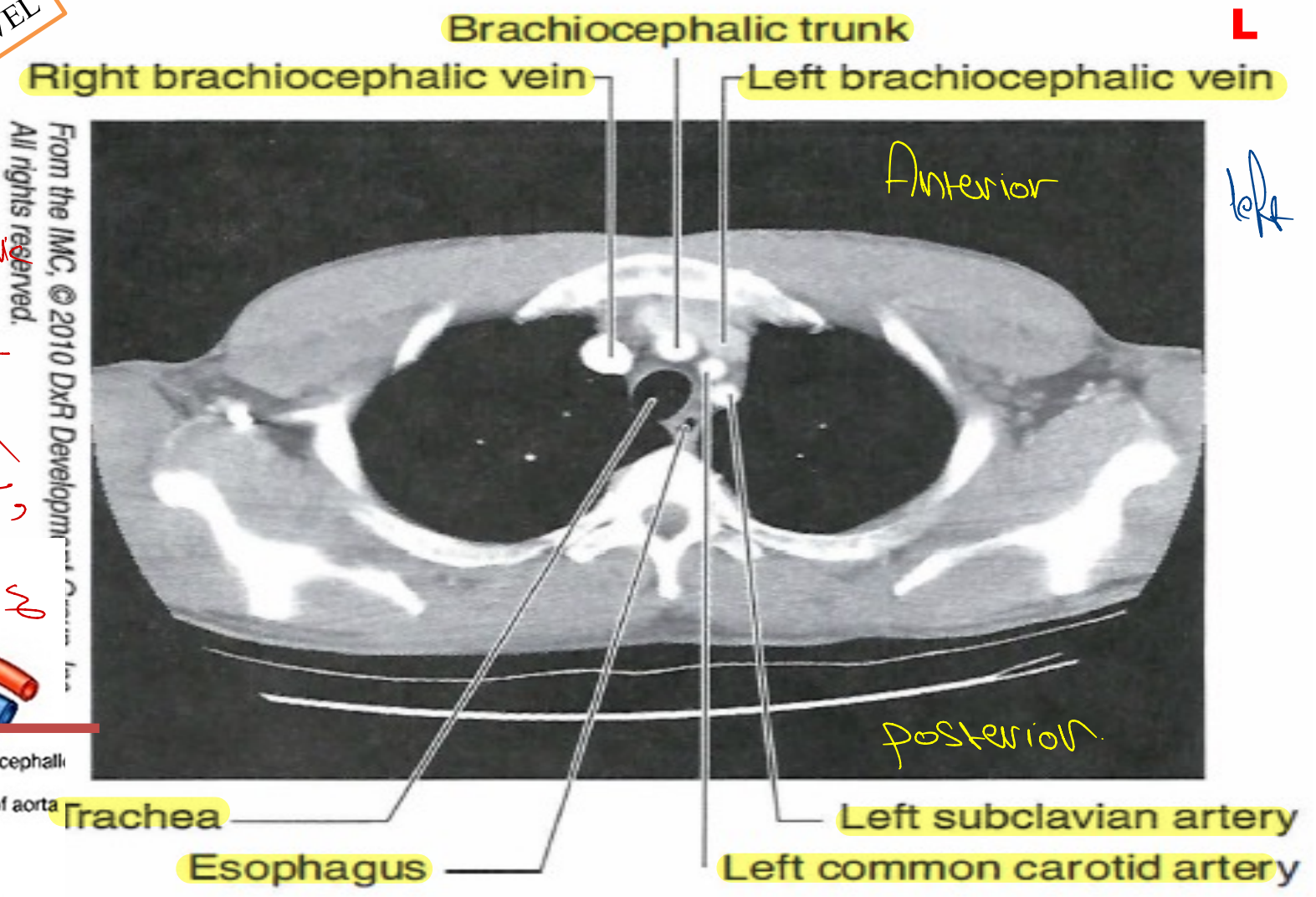
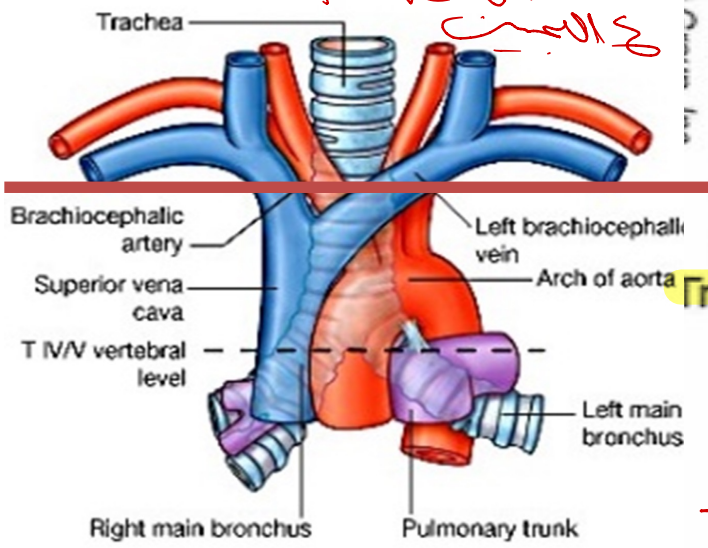


Figure III-2-39. Chest: CT, T2

-posteriorly you will find large and small black circles the small is the esophagus and the large is the trachea (esophagus is collapsed).

- The large curved structure on the left side is the arch of the aorta

- The smaller one on the right side is SVC

T3 LEVEL

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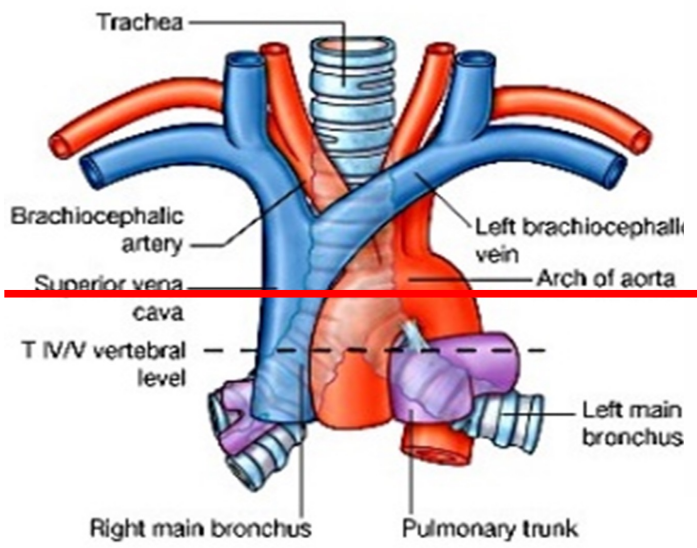
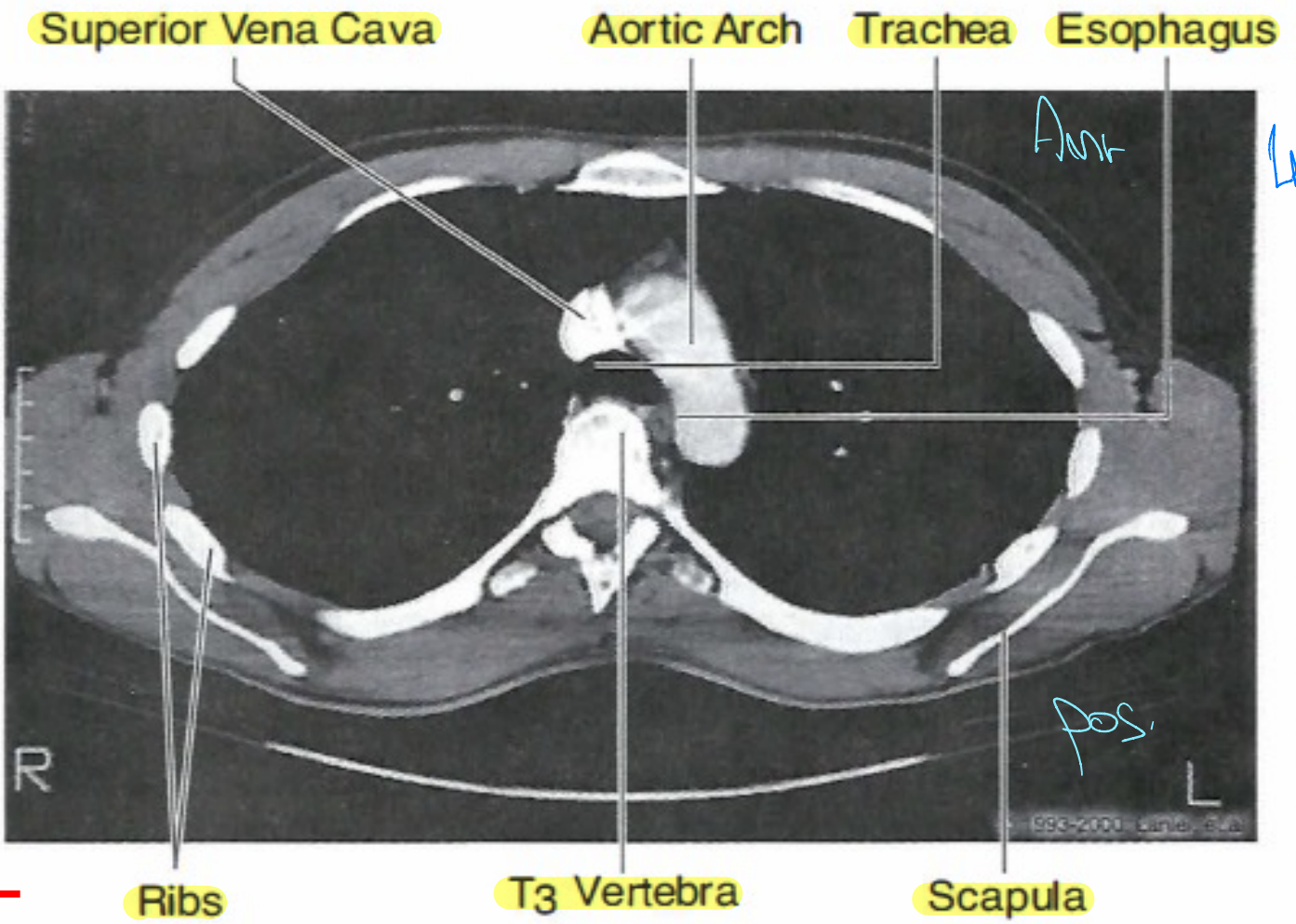


Figure III-2-40. Chest: CT, T3

- At the level of T4 \Rightarrow is the beginning of descending aorta and termination of ascending aorta.

T4 LEVEL

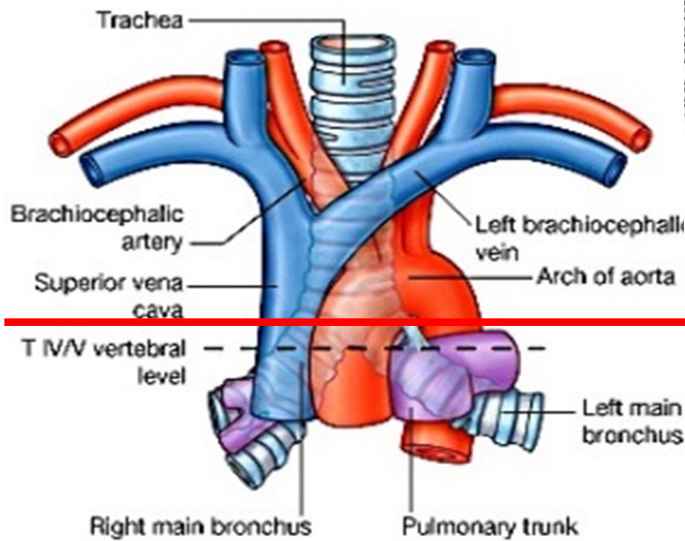
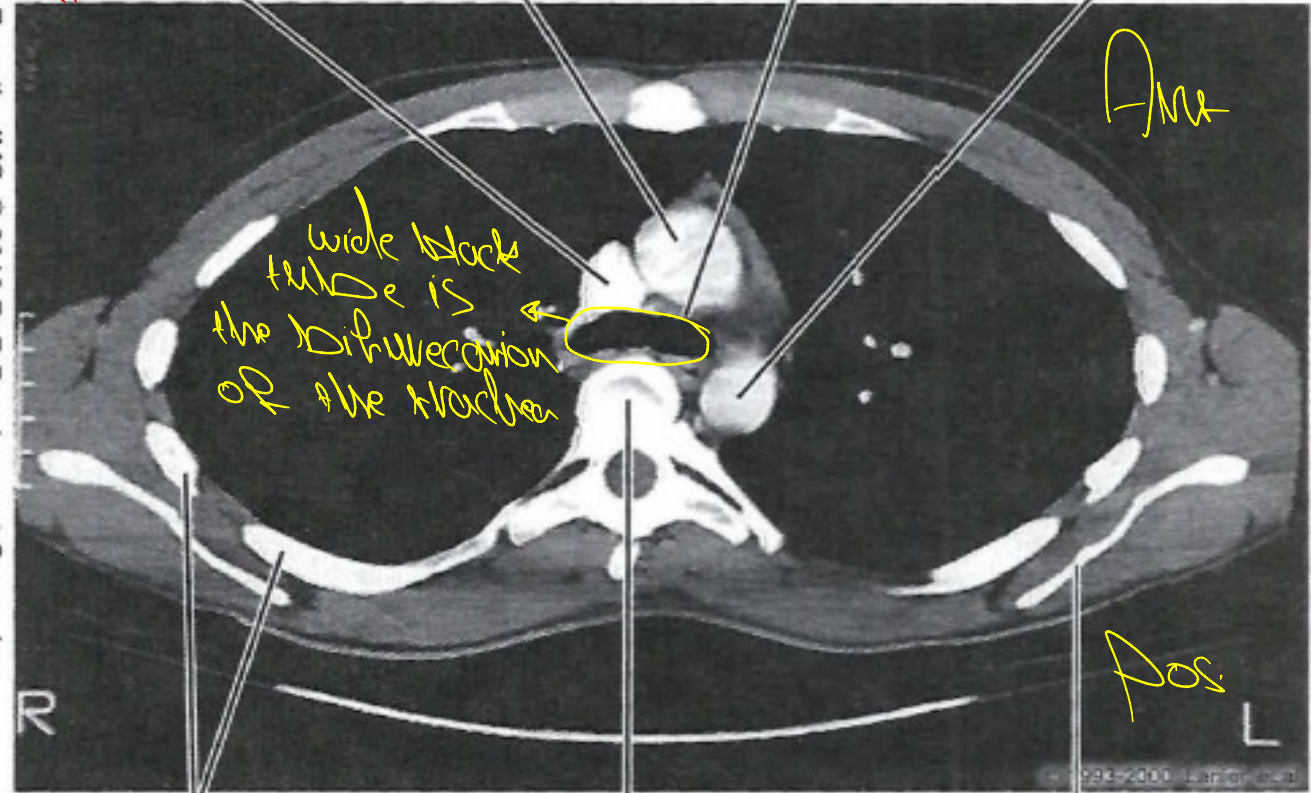
Superior Vena Cava

Ascending Aorta

Bifurcation of Trachea

Descending Aorta

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Ribs

T4 Vertebra

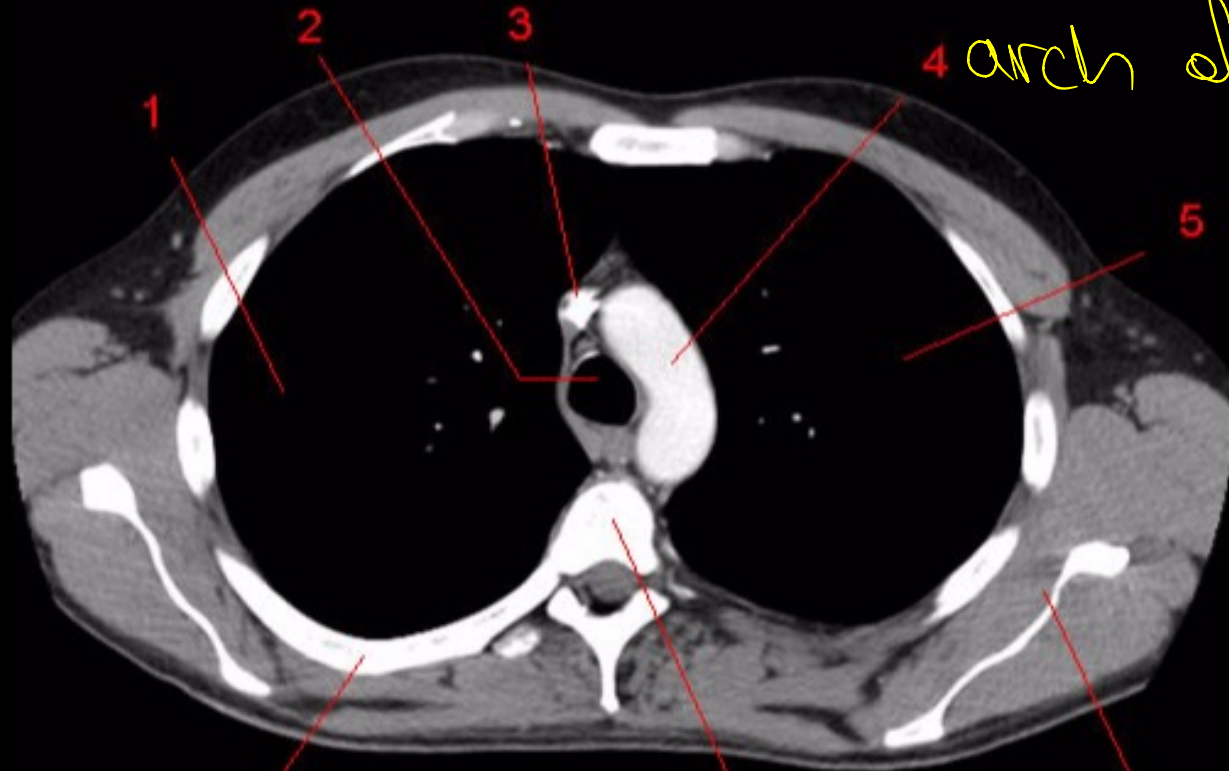
Scapula

Figure III-2-41. Chest: CT, T4

— the cut here
as the level of

Anterior.

Aortic arch SVC



4 arch of aorta

classical

vertebrae

Posterior

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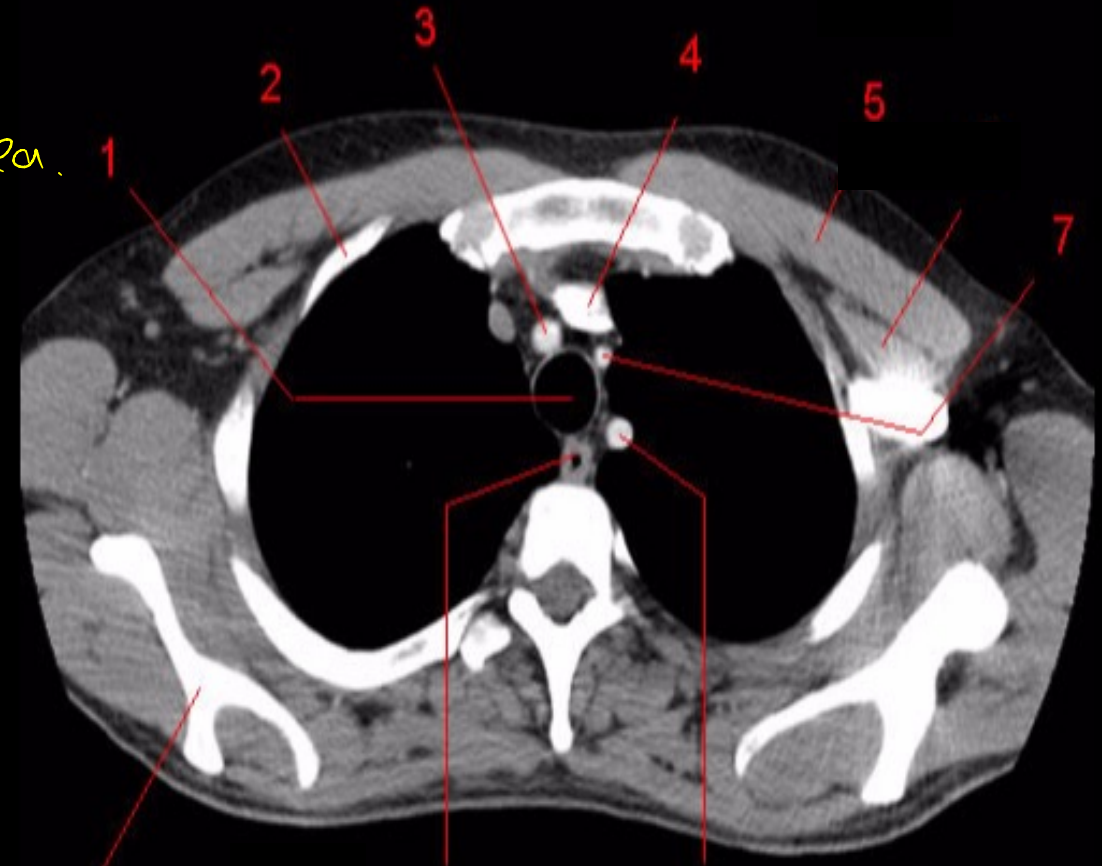
the cut at the level of T2

Ant.

brachio. trunk

trachea.

left CC



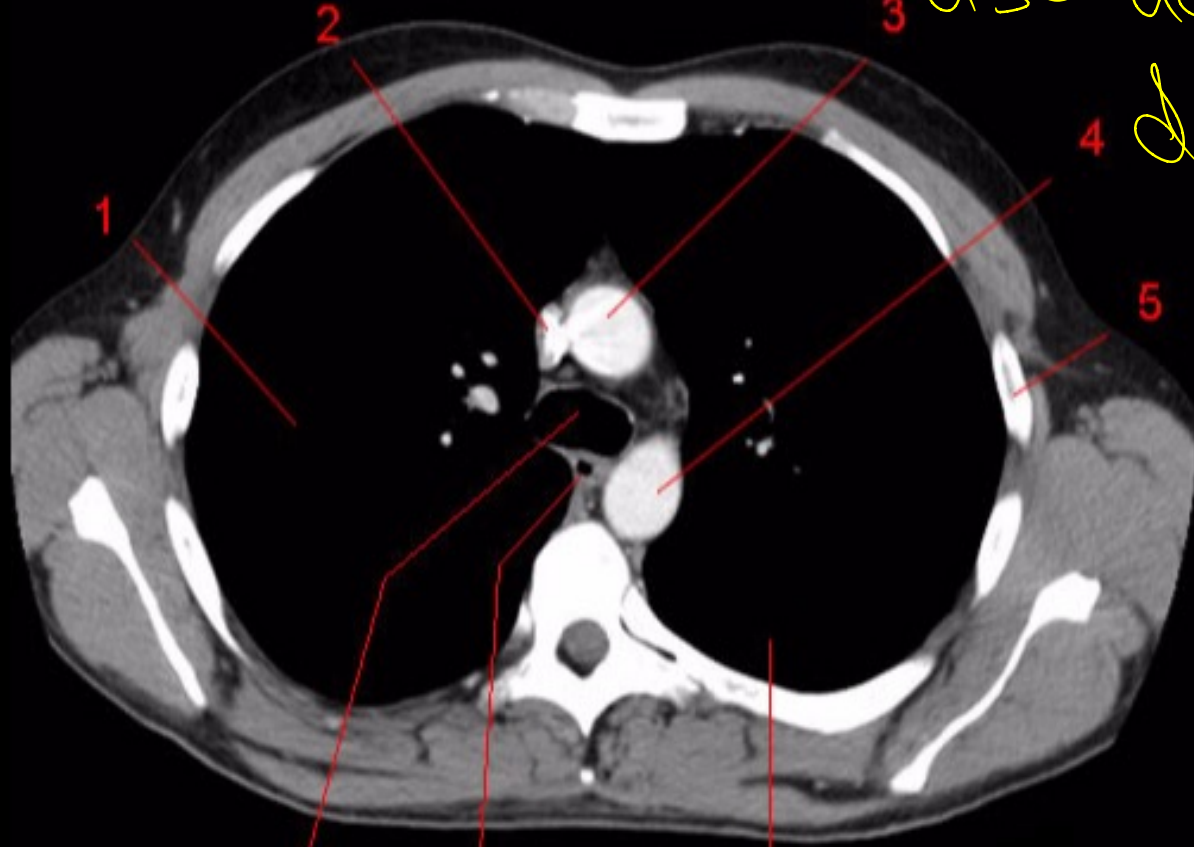
8 / subclavian

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The cur on the level of T4

Ant.

SVC.



3 asc. aorta

4 desc. aorta

8 trachea
7 esophagus

Pos.

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**Great Thanks to Professor Amjad Shatarat
for his permission to use some of his slides**

THANK YOU