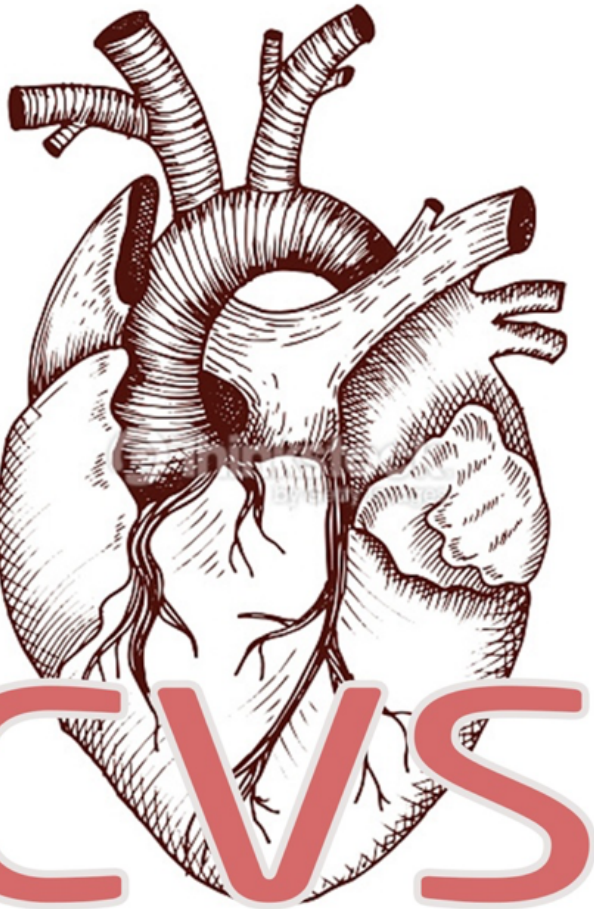


CVS

Anatomy

Slide

Sheet

THE INFERIOR MEDIASTINUM

Objectives

To explain the main divisions of the inferior mediastinum and its boundareis

To characterize the main contents of each mediastinum

To describe the vascular structures within the posterior mediastinum
Azygos system
Descending aorta

To know the main none vascular organs within the posterior mediastinum

1-THE MIDDLE MEDIASTINUM

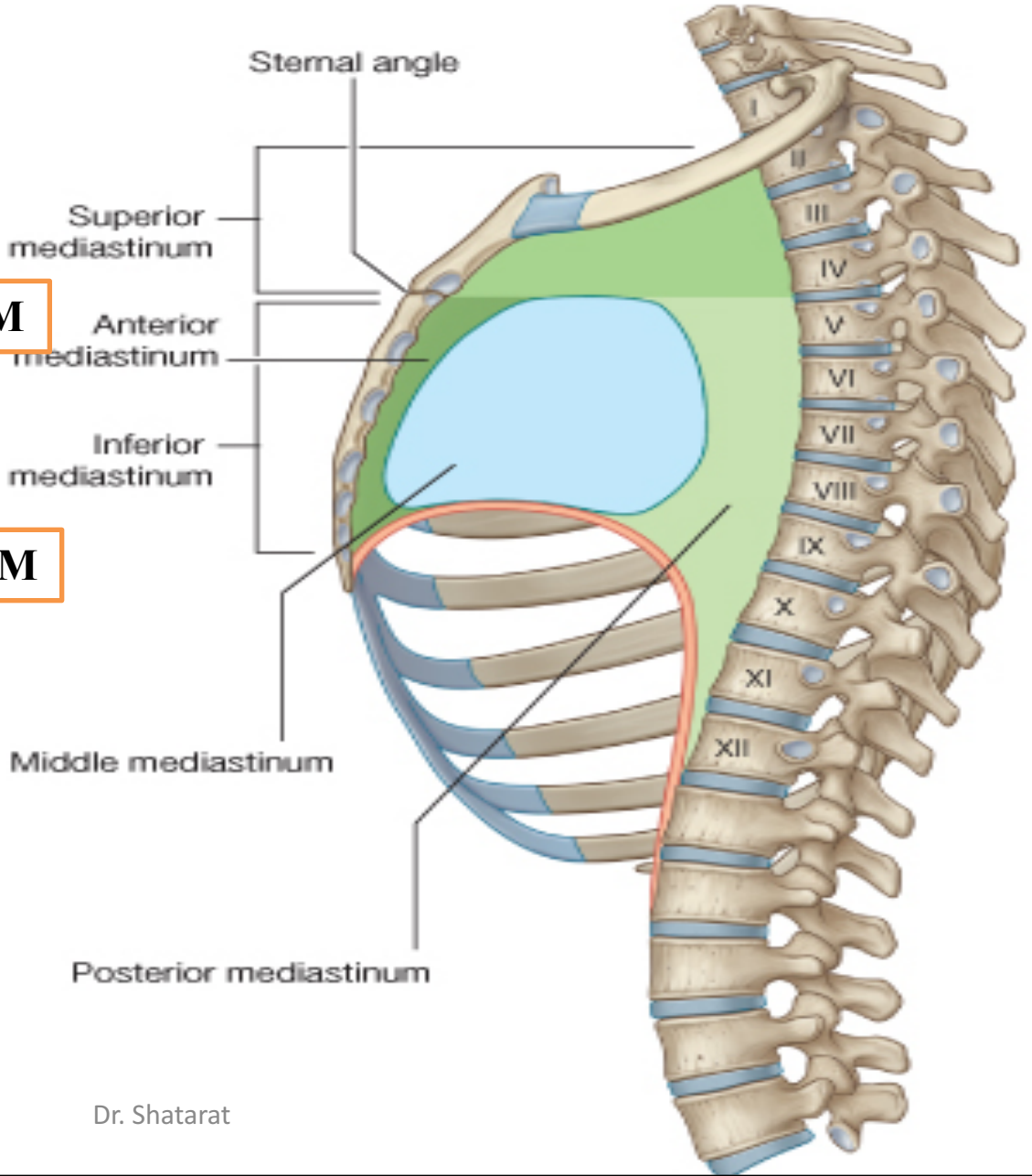
consists of
the pericardium and heart

2-THE ANTERIOR MEDIASTINUM

is a space between the
pericardium and the sternum

3-THE POSTERIOR MEDIASTINUM

lies between
THE PERICARDIUM
And
THE VERTEBRAL COLUMN



THE ANTERIOR MEDIASTINUM

Contains

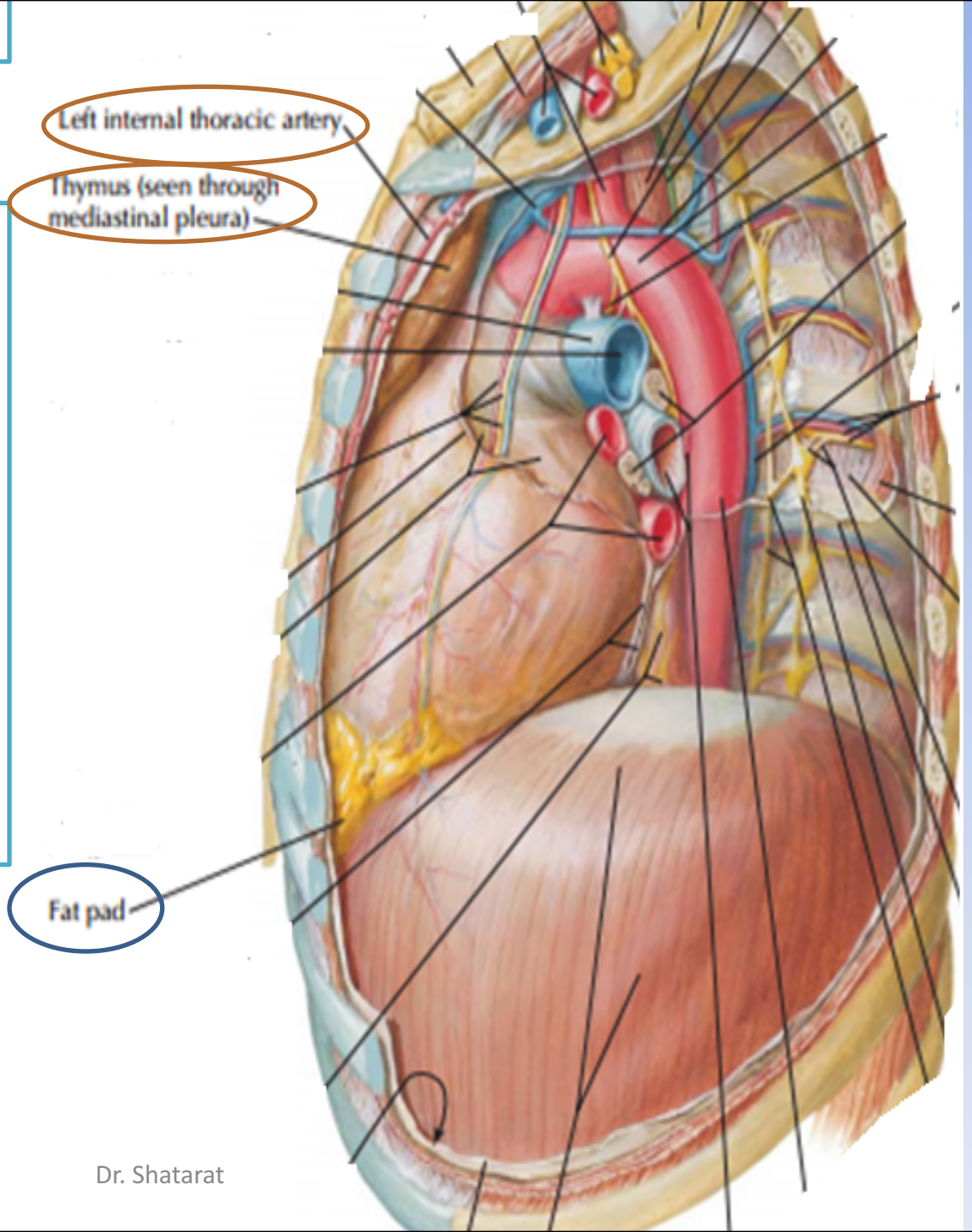
1- Loose connective tissue

2-The sternopericardial ligaments

3-A few lymph nodes

4-The mediastinal branches of the internal thoracic artery.

5-sometimes contains part of the thymus gland or its degenerated remains.



THE MIDDLE MEDIASTINUM

It contains

1-The pericardium

2-The heart

3-The ascending aorta

4-The lower half of the superior vena cava

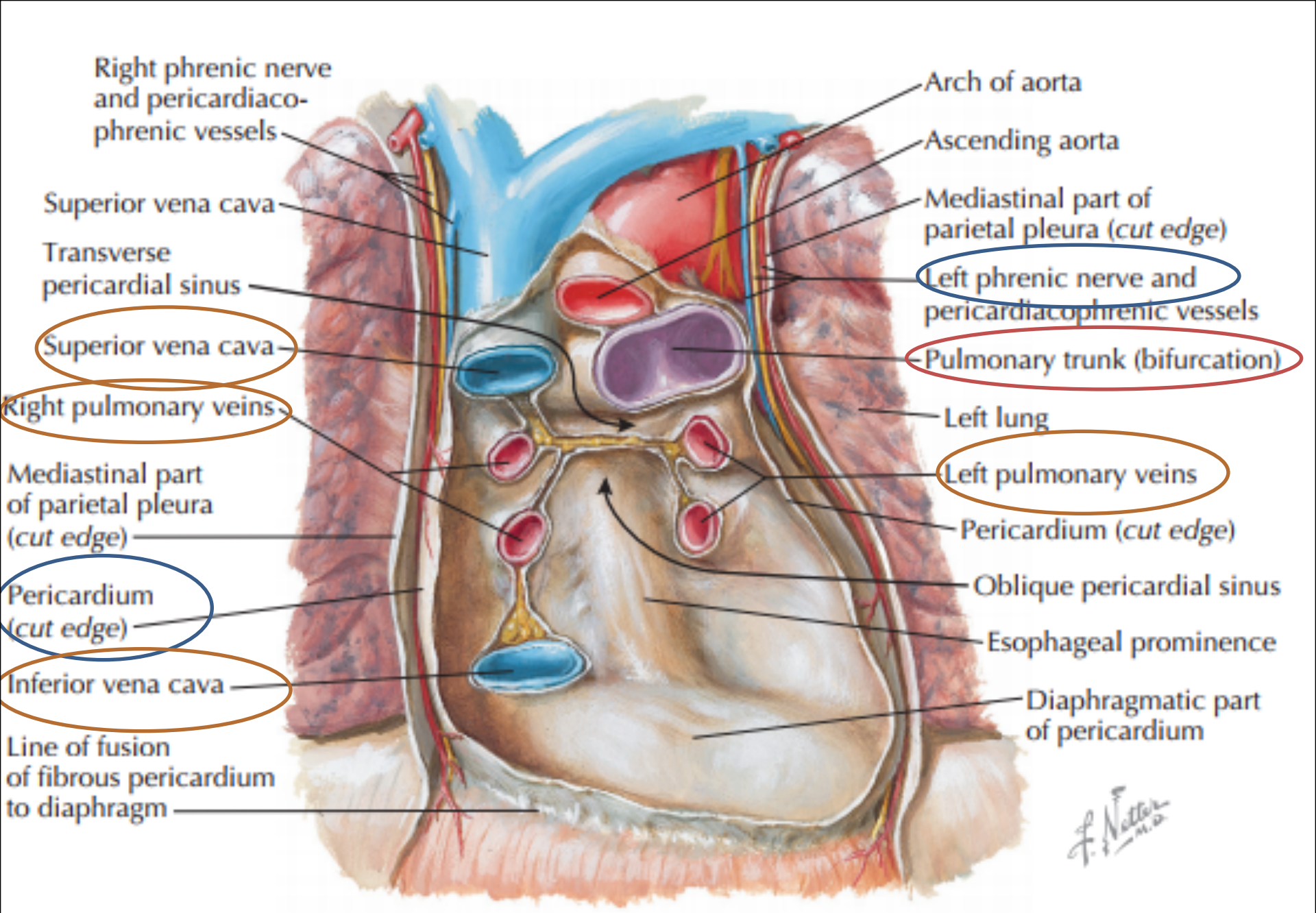
5-The tracheal bifurcation and both main bronchi

6-The pulmonary trunk and right and left pulmonary arteries and veins

7-The right and left phrenic nerves

8-The deep part of the cardiac plexus

9-The tracheobronchial lymph nodes.



Pericardial sac with heart removed: anterior view

THE POSTERIOR MEDIASTINUM

THE POSTERIOR MEDIASTINUM

1-The descending thoracic aorta

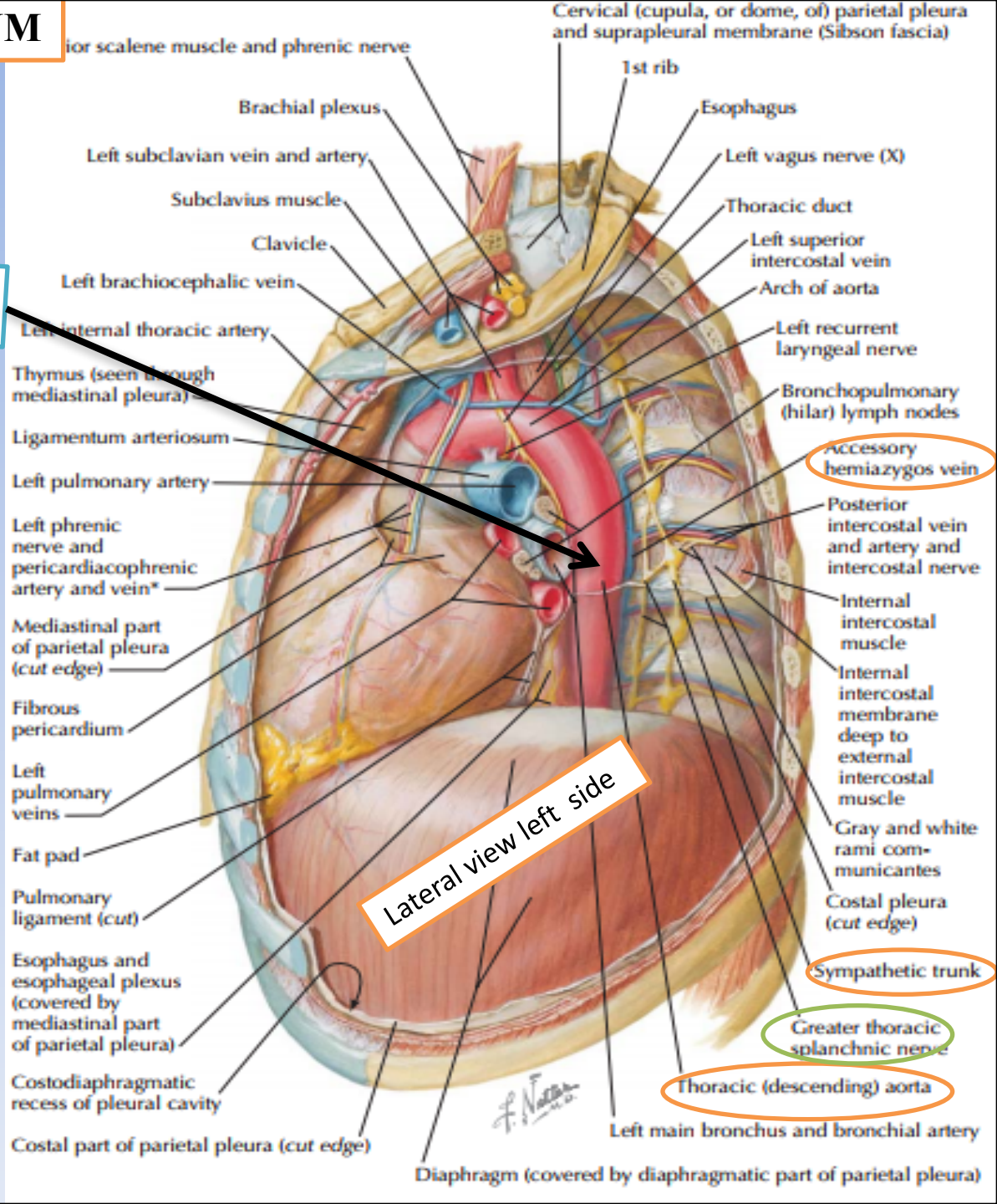
2-Hemiazygos

3-Accessory azygos veins

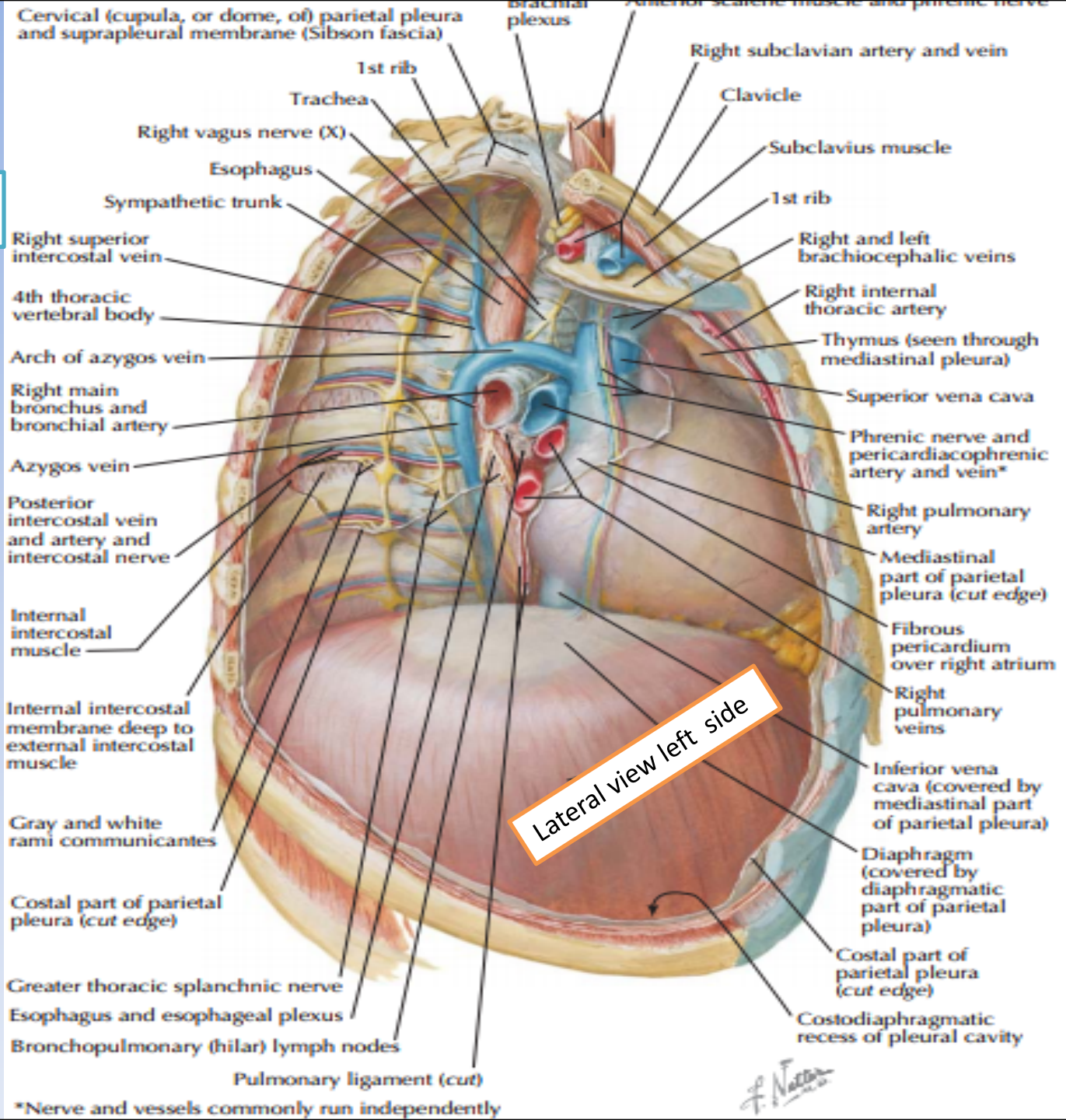
4-sympathetic chains

5-splanchnic nerves

6-Vagus nerves



7-The azygos

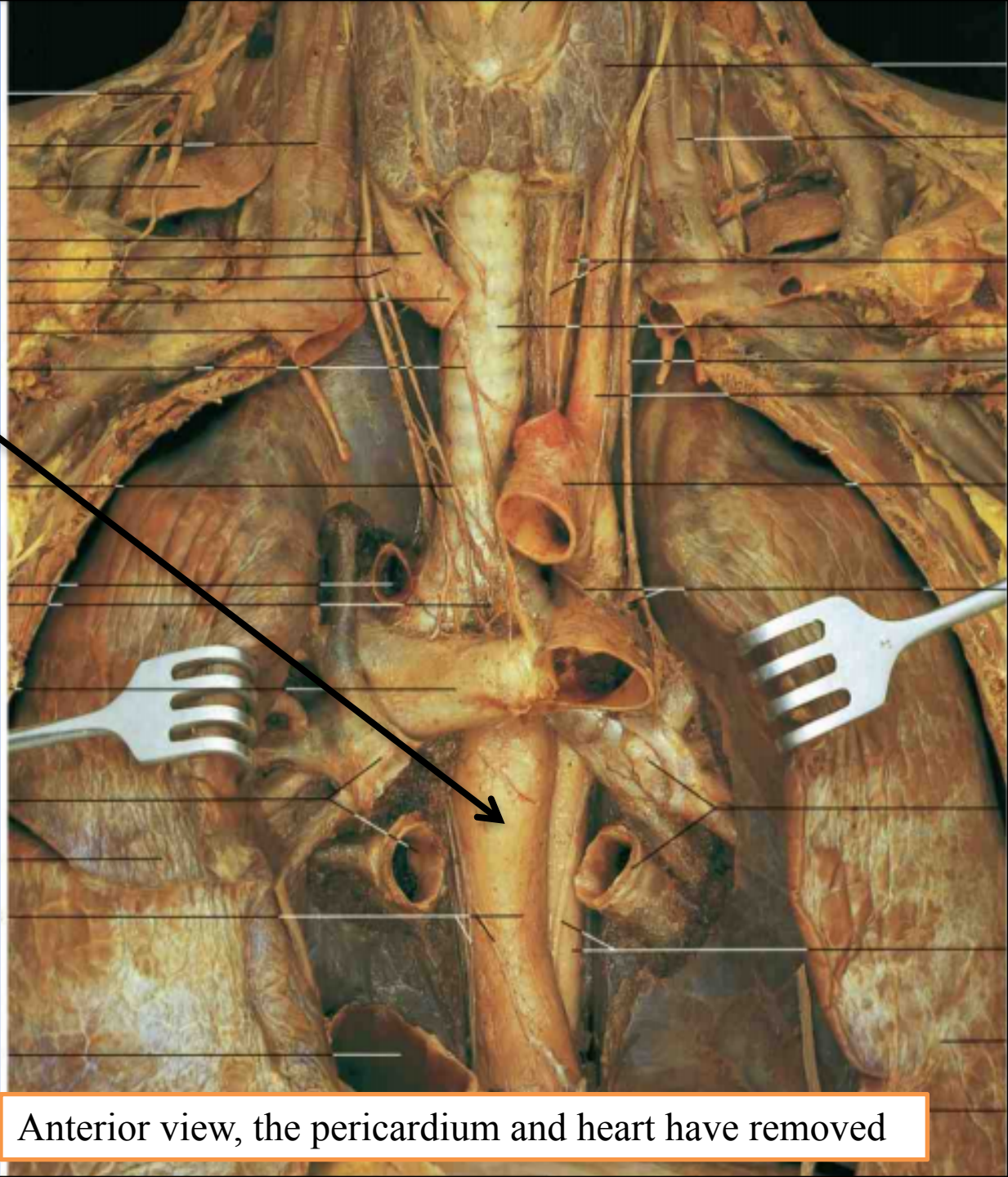

Cervical (cupula, or dome, of) parietal pleura and suprapleural membrane (Sibson fascia)
1st rib
Trachea
Right vagus nerve (X)
Esophagus
Sympathetic trunk
Right superior intercostal vein
4th thoracic vertebral body
Arch of azygos vein
Right main bronchus and bronchial artery
Azygos vein
Posterior intercostal vein and artery and intercostal nerve
Internal intercostal muscle
Internal intercostal membrane deep to external intercostal muscle
Gray and white rami communicantes
Costal part of parietal pleura (cut edge)
Greater thoracic splanchnic nerve
Esophagus and esophageal plexus
Bronchopulmonary (hilar) lymph nodes
Pulmonary ligament (cut)
*Nerve and vessels commonly run independently
plexus
Right subclavian artery and vein
Clavicle
Subclavius muscle
1st rib
Right and left brachiocephalic veins
Right internal thoracic artery
Thymus (seen through mediastinal pleura)
Superior vena cava
Phrenic nerve and pericardiacophrenic artery and vein*
Right pulmonary artery
Mediastinal part of parietal pleura (cut edge)
Fibrous pericardium over right atrium
Right pulmonary veins
Inferior vena cava (covered by mediastinal part of parietal pleura)
Diaphragm (covered by diaphragmatic part of parietal pleura)
Costal part of parietal pleura (cut edge)
Costodiaphragmatic recess of pleural cavity
Lateral view left side

8-The oesophagus

9-The thoracic duct

10-Posterior mediastinal

11-lymph nodes



Anterior view, the pericardium and heart have removed

Azygos Veins

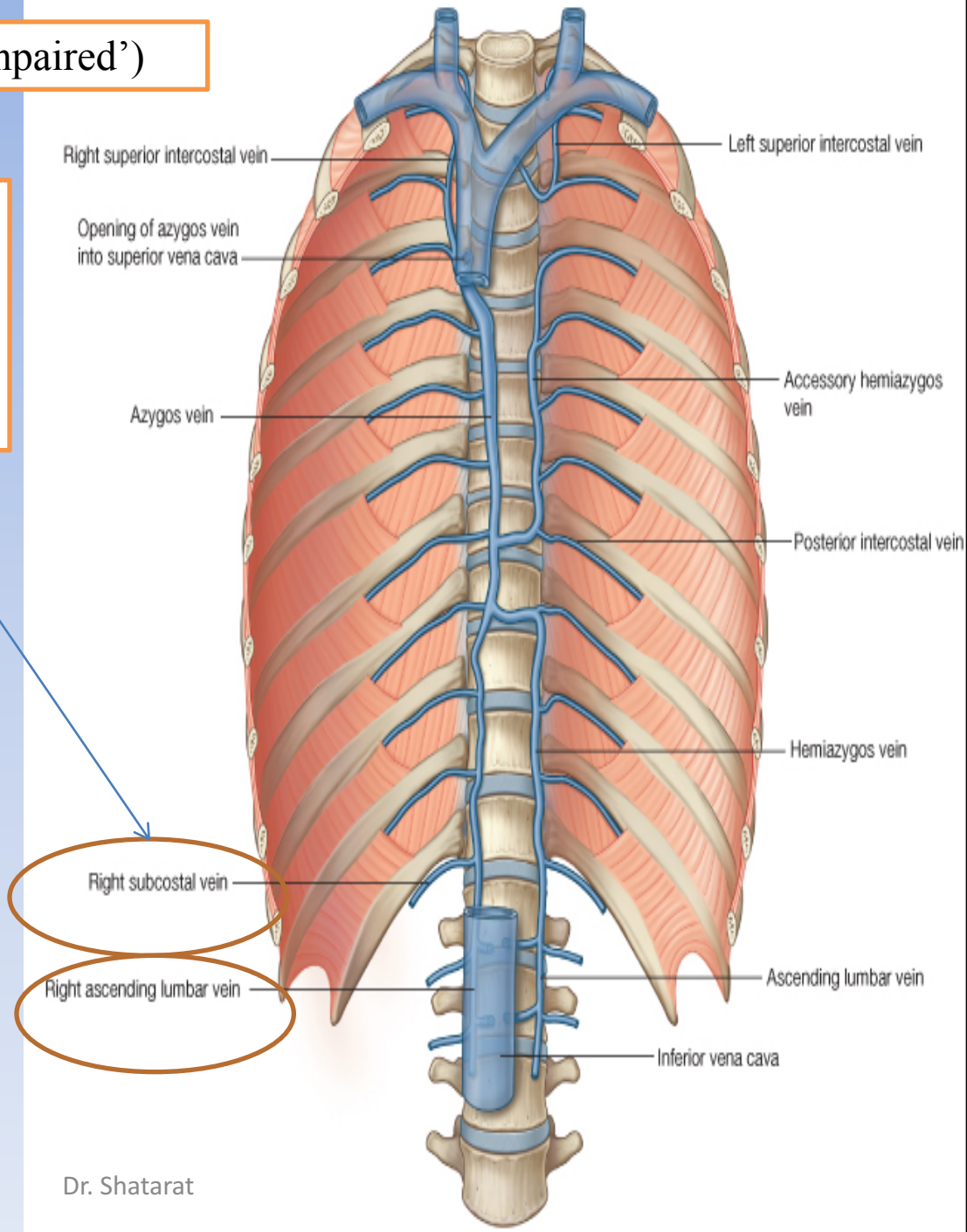
The azygos veins consist of:
A-THE MAIN AZYGOS VEIN
B-THE INFERIOR HEMIAZYGOS VEIN
C-THE SUPERIOR HEMIAZYGOS VEIN

❖ A-The azygos vein (Gr. azygos = ‘unpaired’)

❖ Typically starts from ***the posterior aspect of the inferior vena cava, at or below the level of the renal veins***, however, ***the origin of the azygos vein is variable***

➢ It is often formed by ***the union of the right ascending lumbar vein and the right subcostal vein***.

❖ It may pass behind **the right crus of the diaphragm** or **pierce it**, or it may **traverse the aortic hiatus** to the right of the cisterna chyli

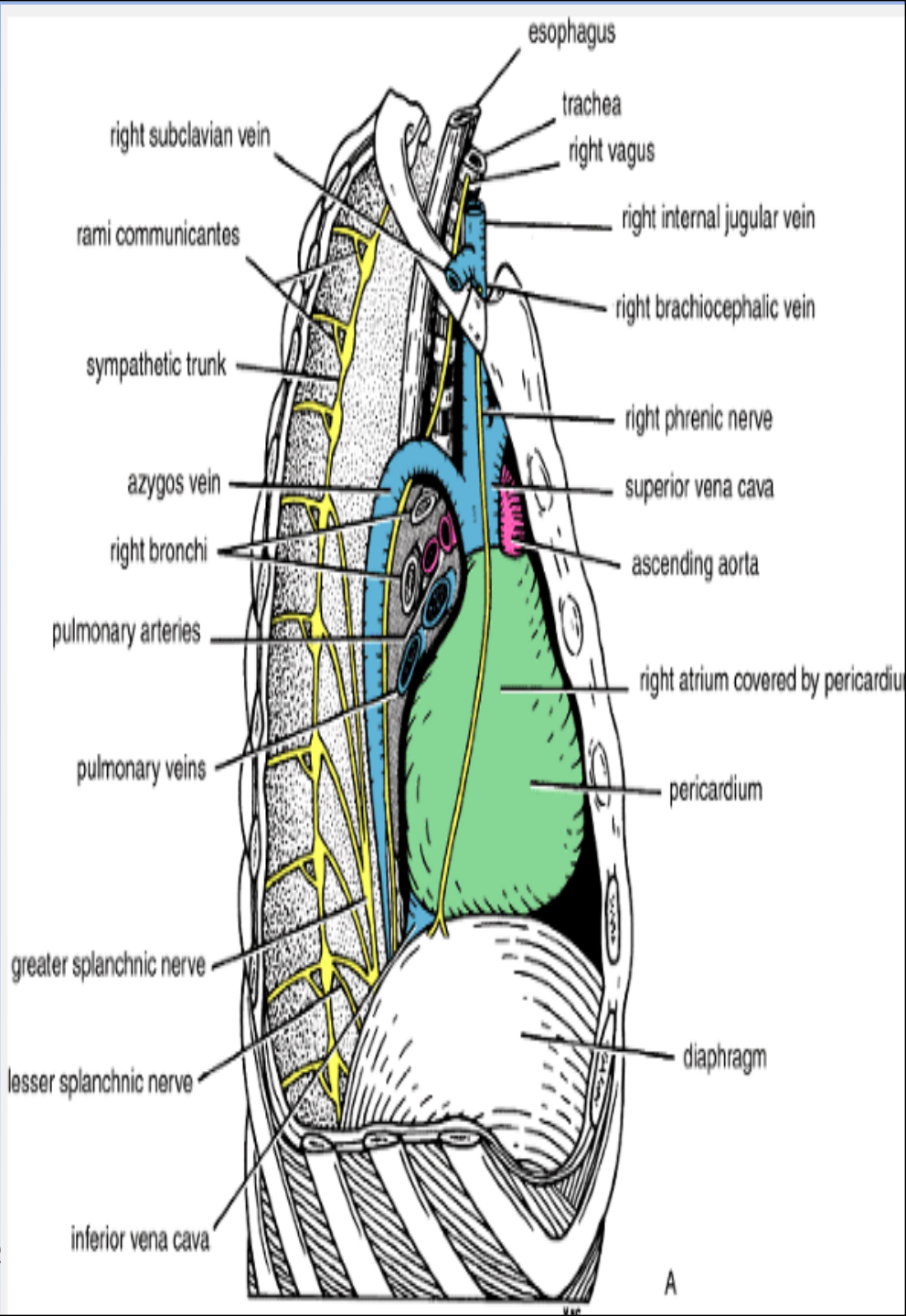


- The azygos vein ascends in the posterior mediastinum anterior ***to the bodies of the lower eight thoracic vertebrae***
- At the level of ***the fourth thoracic vertebra !!*** it arches forward above the right pulmonary hilum.
- It ends **in the superior vena cava, before the latter pierces the pericardium.**

It connects the systems of **superior vena cava and inferior vena cava** and can **provide an alternative path** for blood to the right atrium when either of the venae cavae is blocked!!

Or

When there is congenital interruption of **the inferior vena cava (IVC),** the azygos vein can become **as large as** the IVC that it has replaced (Gray's Anatomy)



Read and enjoy more about the azygos veins

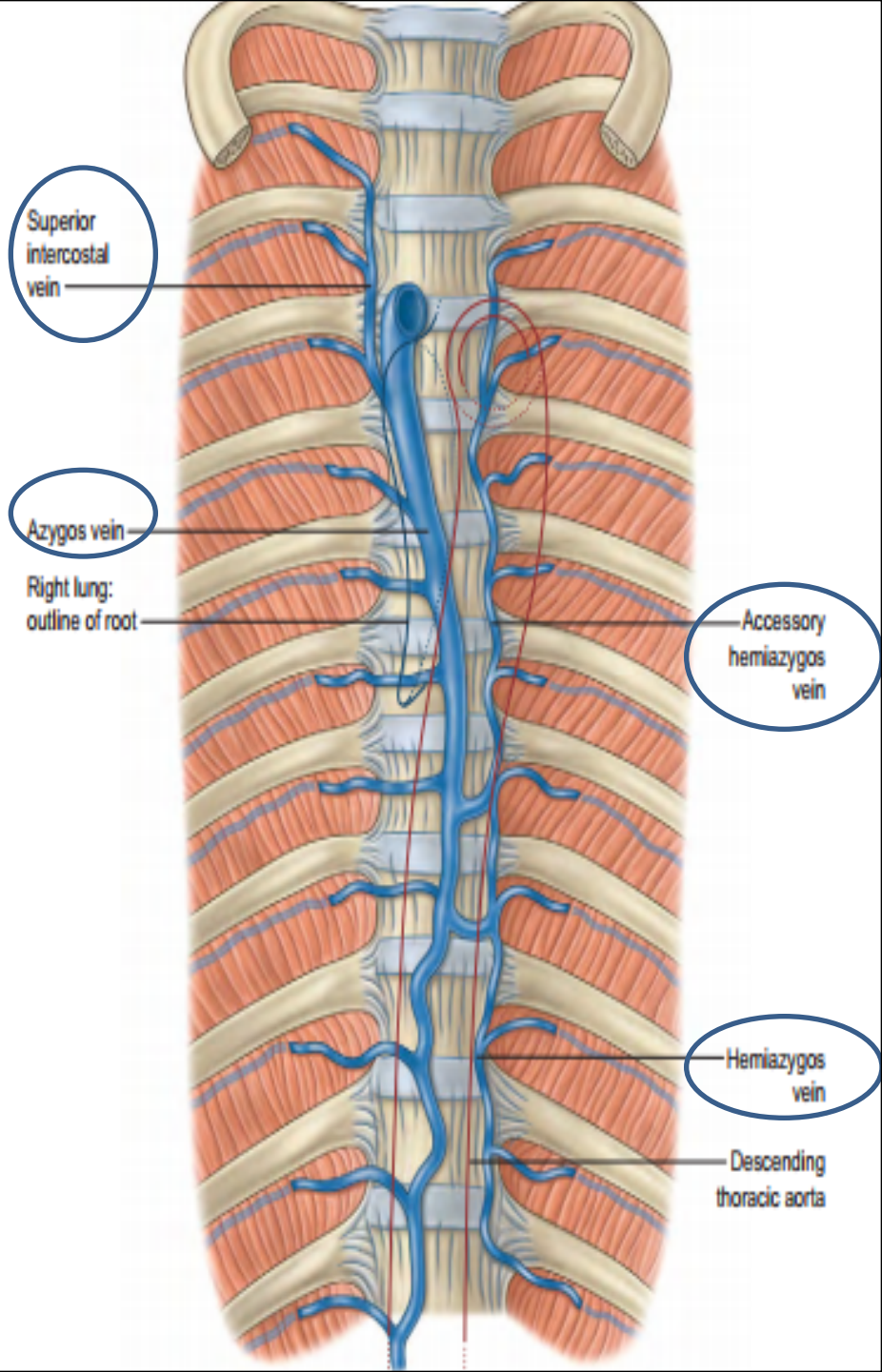
Compensatory dilatation of the Azygos Venous system Secondary To Superior Vena Cava Occlusion
https://www.ncbi.nlm.nih.gov/pmc/articles/PMC3303284/

Anomalous azygos veins - its embryological basis and clinical significance
International Journal of Research in Medical Sciences Shivanal U et al. Int J Res Med Sci. 2015 Sep;3(9):2323-2326 www.msjonline.org

Anatomical analysis of azygos vein system in human cadavers
T. KUTOGLU1), M. TURUT1), N. KOCABIYIK2), H. OZAN2), M. YILDIRIM

The azygos vein has numerous tributaries,

including
The eight lower right intercostal veins
The right superior intercostal vein
The superior and inferior hemiazygos veins
numerous mediastinal veins



R.O

Note: The azygos vein lies close to the right posterolateral aspect of the descending thoracic aorta: aortic pulsations may assist venous return in the azygos and hemiazygos veins

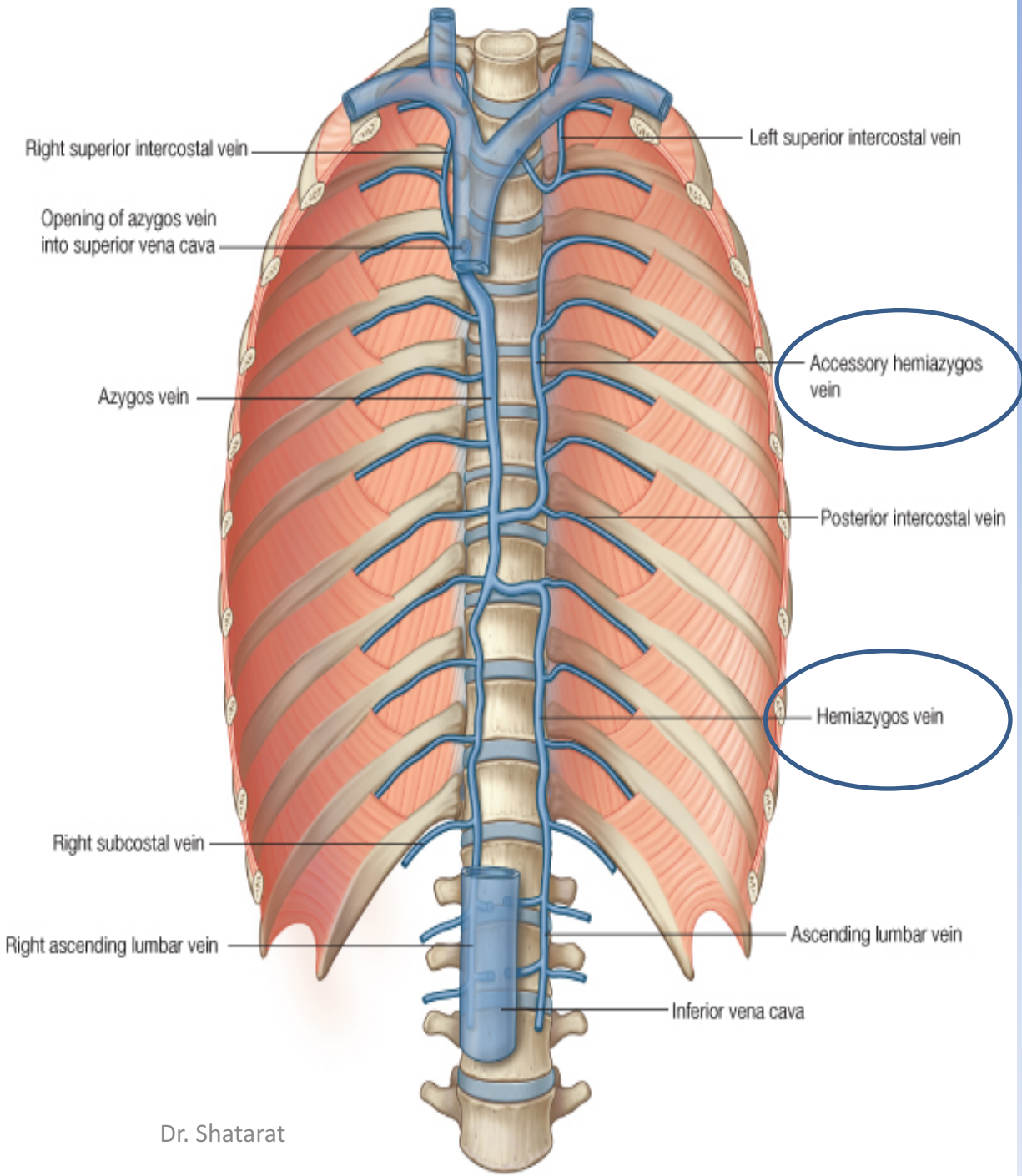
b-Superior Hemiazygos Vein

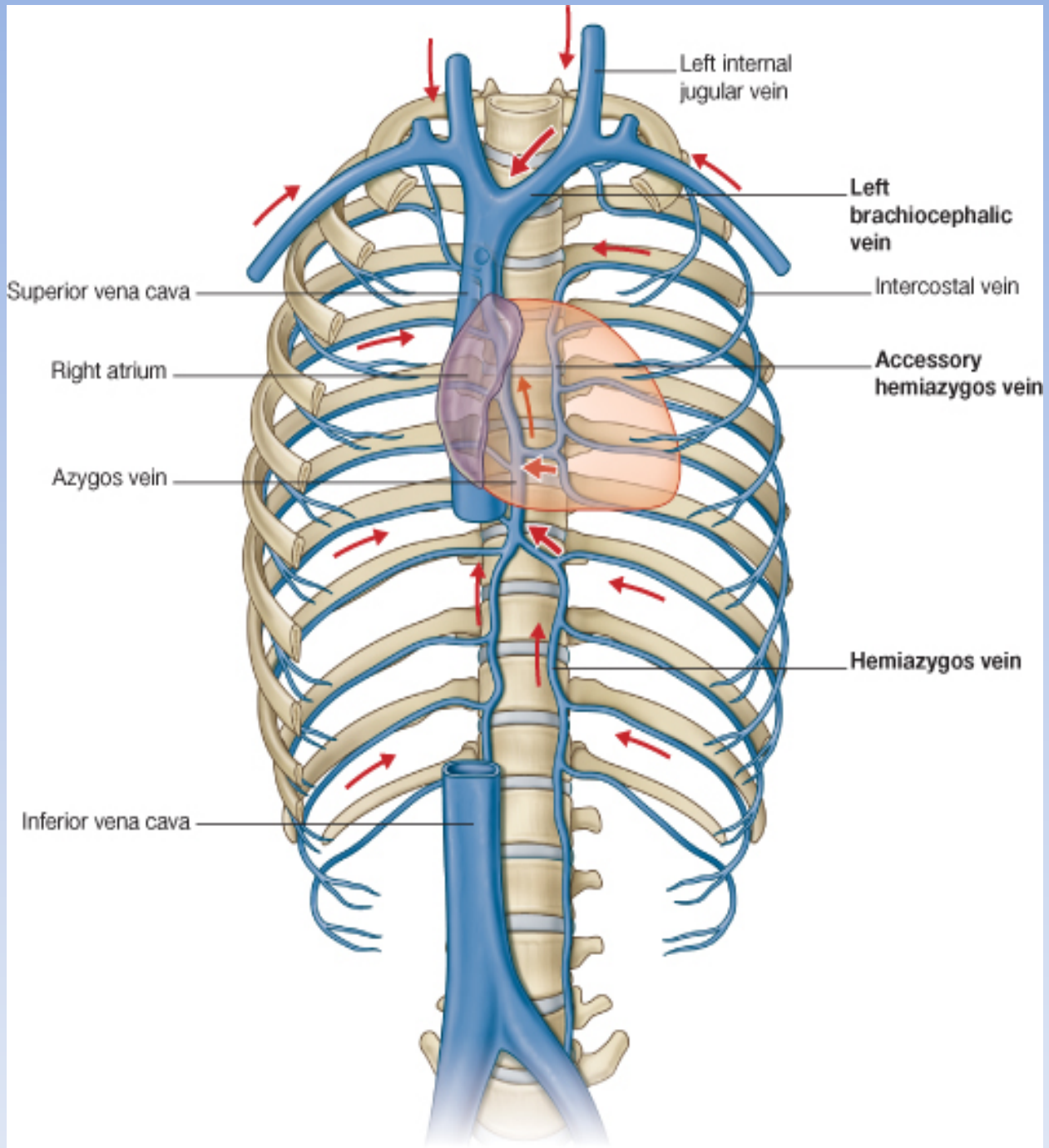
(accessory hemiazygos vein)

is formed by the union of the fourth to the eighth intercostal veins. It joins the azygos vein ***at the level of the seventh thoracic vertebra***

c-Inferior Hemiazygos Vein

- is often formed by the union of the left ascending lumbar vein and the left subcostal vein.
- **at about the level of the eighth thoracic vertebra, turns to the right and joins the azygos vein.**





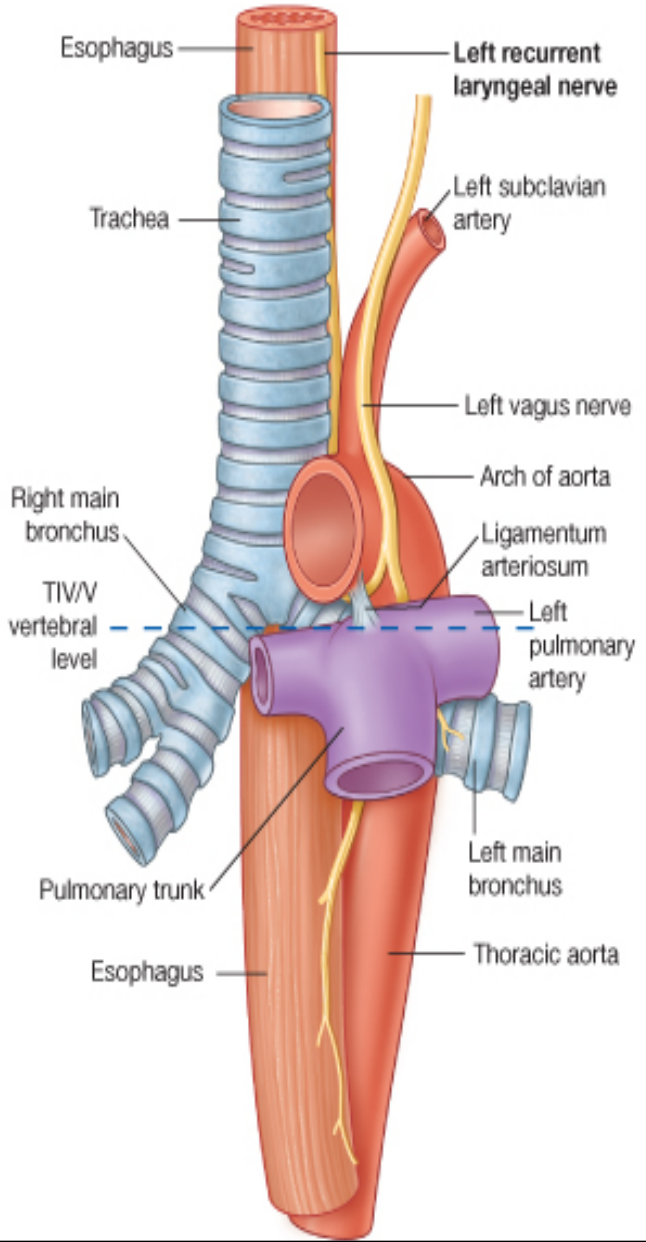
Descending Thoracic Aorta

- lies in the posterior mediastinum
- begins as a continuation of the arch of the aorta on the left side of the lower border of the body of the fourth thoracic vertebra (i.e., opposite the sternal angle).
- It runs downward in the posterior mediastinum, inclining forward and medially to reach the anterior surface of the vertebral column
- At the level of **the 12th thoracic vertebra**, it passes behind the diaphragm (through the aortic opening) in the midline and becomes continuous with the abdominal aorta.

Branches

1-Posterior intercostal arteries are given off to *the lower nine intercostal spaces*

2-Pericardial, esophageal, and bronchial arteries are small branches that are distributed to these organs.



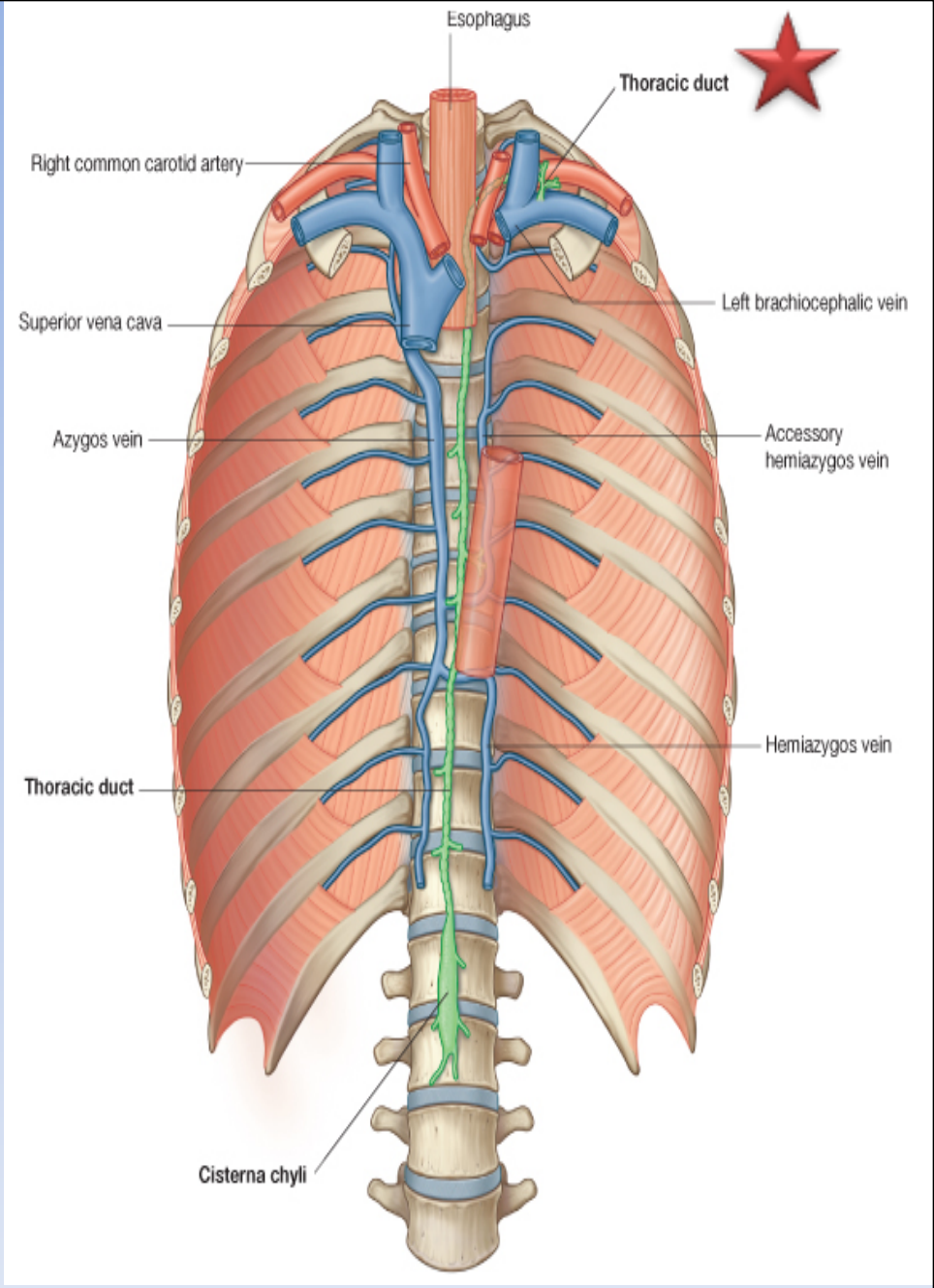
Thoracic Duct

- The thoracic duct begins below in the abdomen as a dilated sac,

THE CISTERNA CHYLI

- It ascends through the aortic opening in the diaphragm
- It gradually crosses the median plane behind the esophagus
- enters the beginning of ***the left brachiocephalic vein.***

The thoracic duct thus conveys to the blood all lymph from the lower limbs, pelvic cavity, abdominal cavity, **left side of the thorax, and left side of the head, neck, and left arm. What about the Right side????**



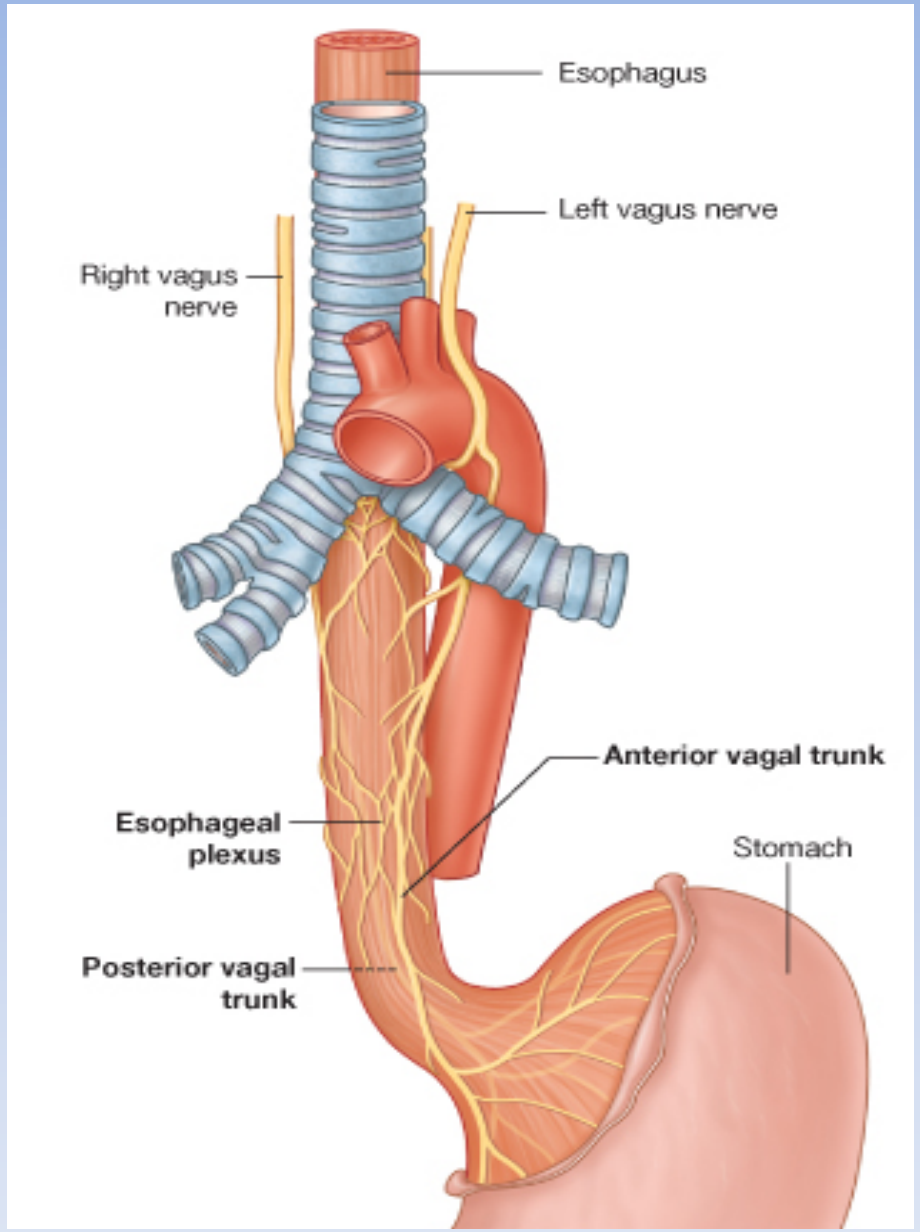
Nerves of the Thorax

Vagus Nerves

➢ ***The right vagus nerve*** descends in the thorax , subclavian artery
It passes ***behind*** the root of the right lung

➢ ***The left vagus nerve***
It crosses the left side of the ***aortic arch***

What about the phrenic nerve??!!

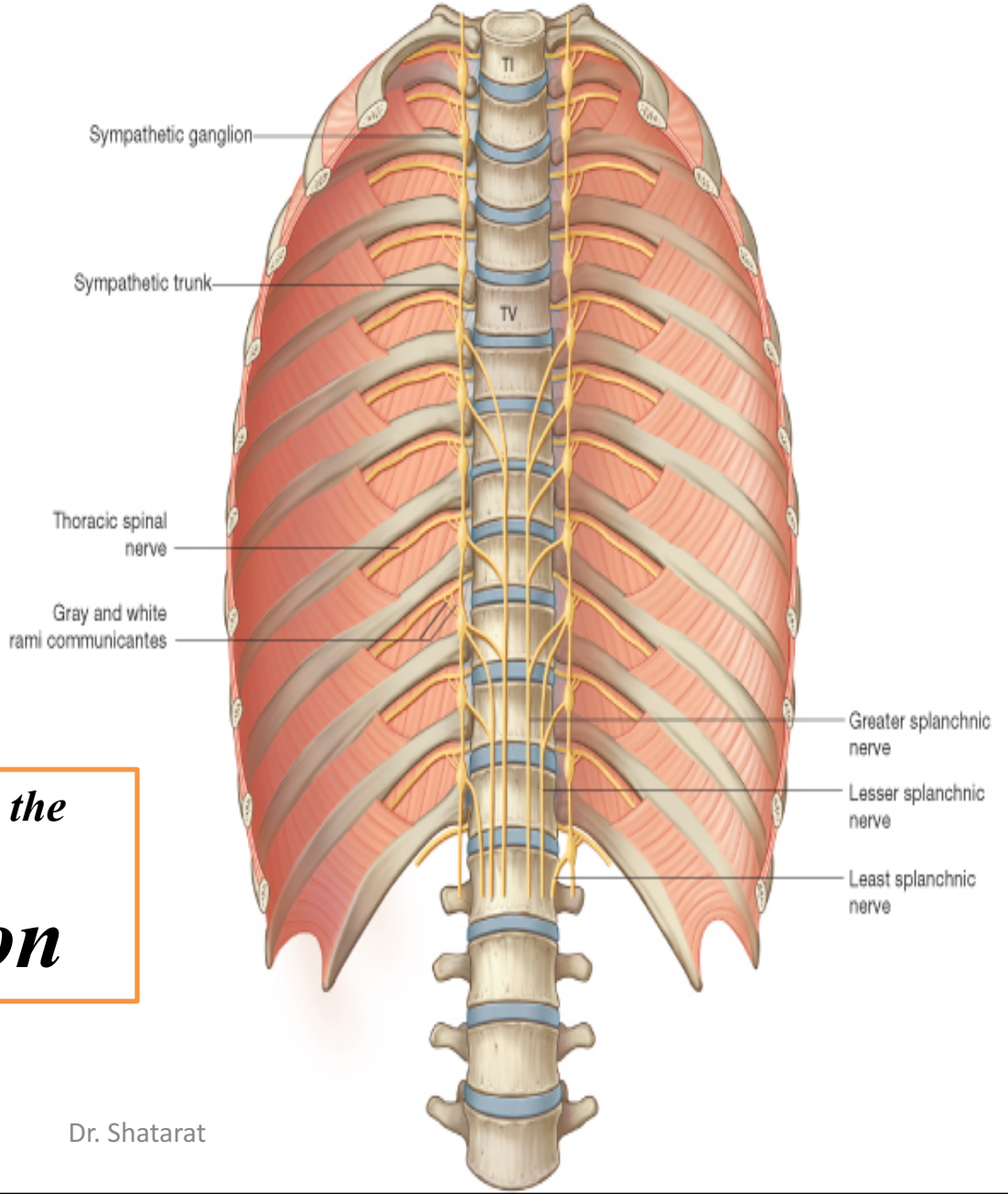


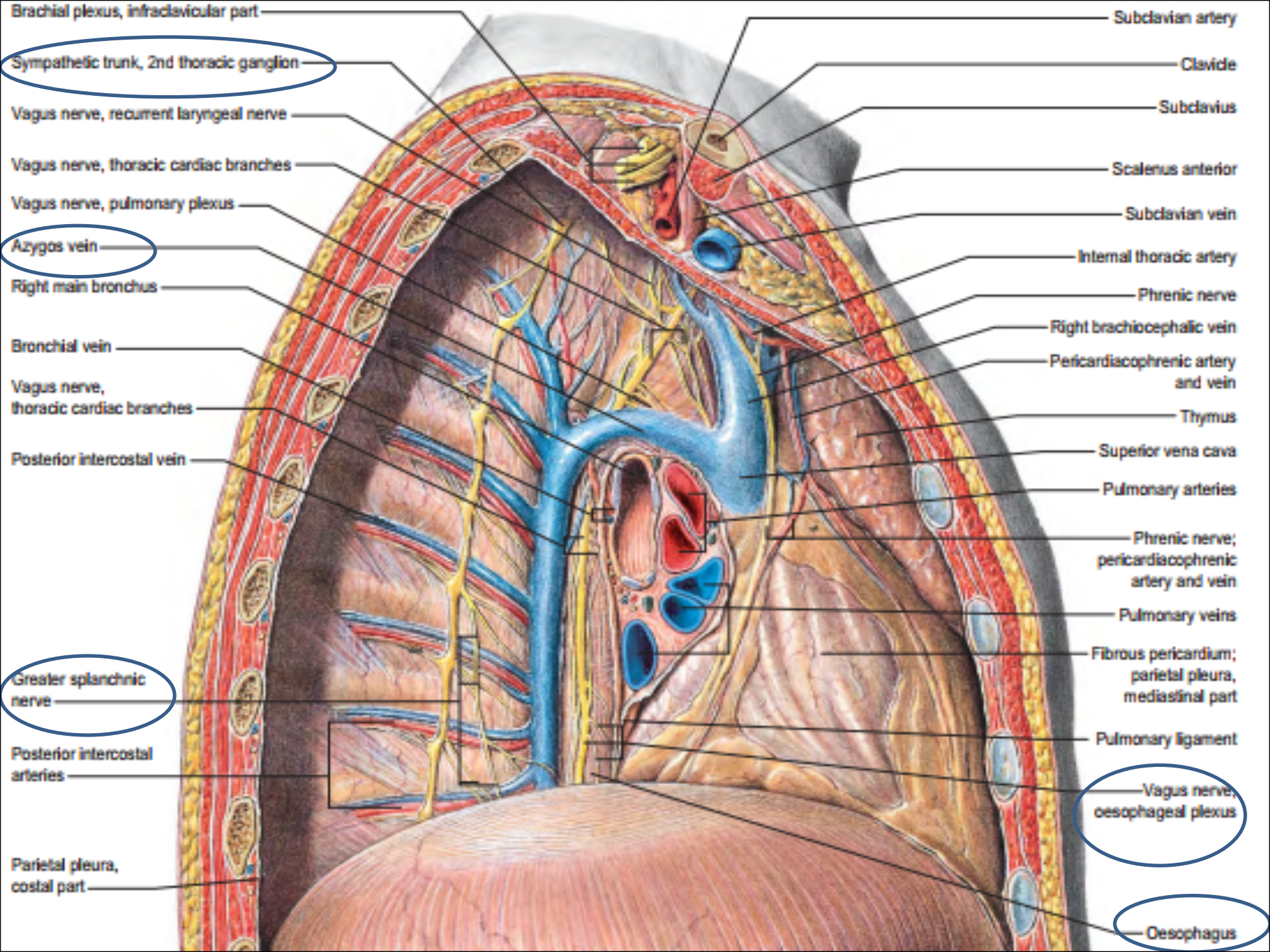
Thoracic Part of the Sympathetic Trunk

- The ***thoracic part of the sympathetic trunk*** is continuous above with the cervical and below with the lumbar parts of the sympathetic trunk.
- **It is the most laterally placed structure in the mediastinum and runs downward on the heads of the** ribs
- The sympathetic trunk has 12 (often only 11) segmentally arranged ganglia.

The first ganglion is often fused with the inferior cervical ganglion to form

the stellate ganglion




Brachial plexus, infraclavicular part
Sympathetic trunk, 2nd thoracic ganglion
Vagus nerve, recurrent laryngeal nerve
Vagus nerve, thoracic cardiac branches
Vagus nerve, pulmonary plexus
Azygos vein
Right main bronchus
Bronchial vein
Vagus nerve, thoracic cardiac branches
Posterior intercostal vein
Greater splanchnic nerve
Posterior intercostal arteries
Parietal pleura, costal part
Subclavian artery
Clavicle
Subclavius
Scalenus anterior
Subclavian vein
Internal thoracic artery
Phrenic nerve
Right brachiocephalic vein
Pericardiacophrenic artery and vein
Thymus
Superior vena cava
Pulmonary arteries
Phrenic nerve; pericardiacophrenic artery and vein
Pulmonary veins
Fibrous pericardium; parietal pleura, mediastinal part
Pulmonary ligament
Vagus nerve; oesophageal plexus
Oesophagus