المرحلة : الثاني
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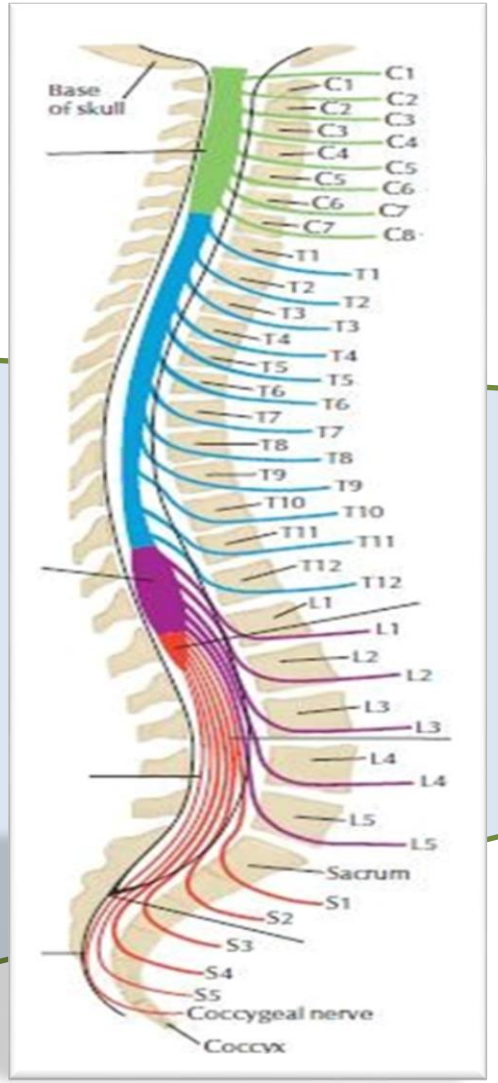

Spinal Cord
Blood Supply Anatomy

الدكتور
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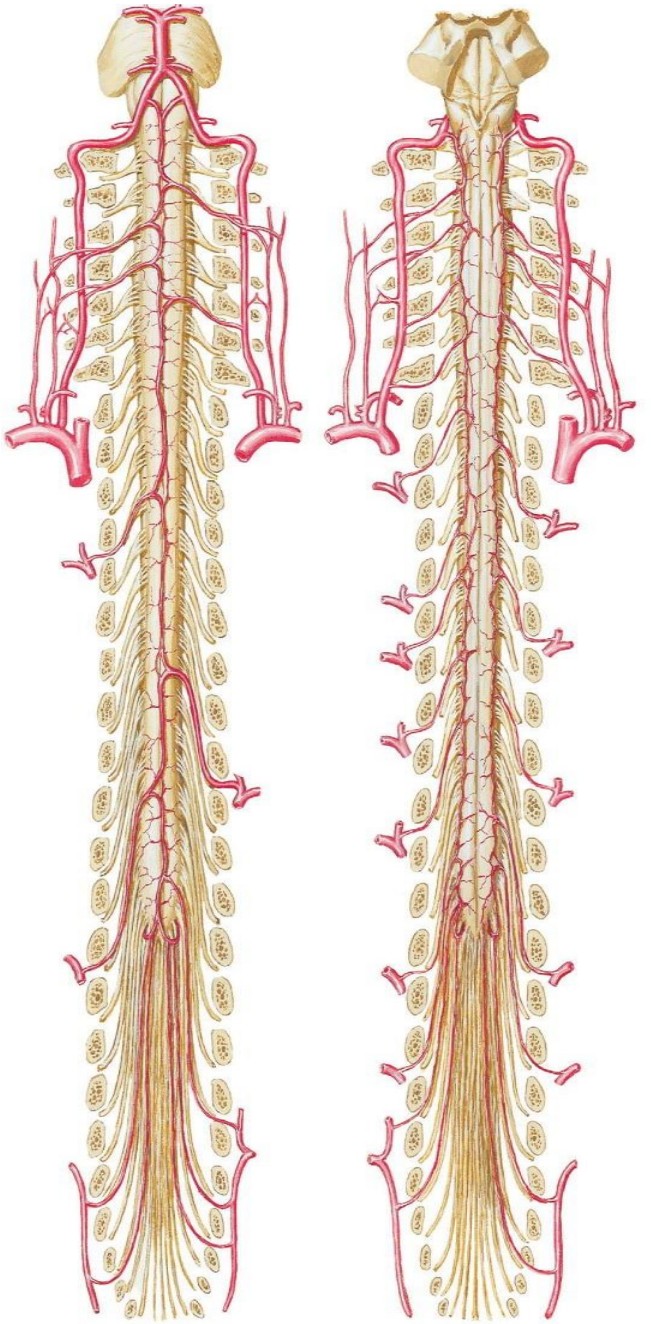
Blood supply

- The spinal cord is supplied by the (single) anterior and (right and left) posterior spinal arteries which descend from the level of the foramen magnum and form three longitudinal channels from which branches enter the cord.
- They are supplemented at variable levels by anastomoses with a variable number of radicular arteries.
- The main arteries supply the spinal cord lies on pia mater whereas their small branches evaginate it.

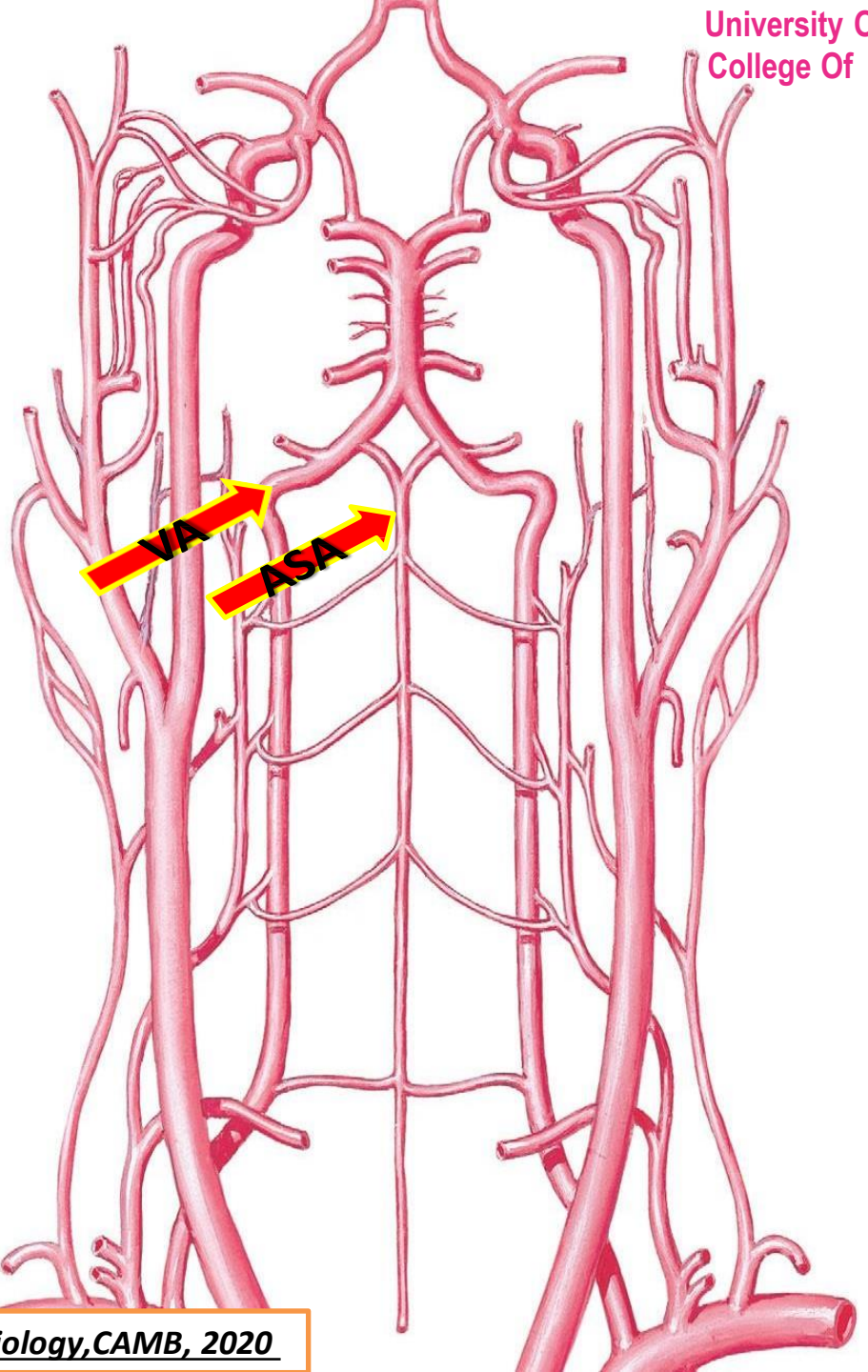


Anterior spinal artery

- **Origion :** union of the two anterior spinal branches, each given off by a vertebral artery above the foramen magnum.
- **Supply :** (4 areas) It supplies the whole cord anterior to the posterior grey columns, i.e. the lateral grey and white columns and the anterior grey and white columns of both sides.
- The anterior spinal artery is a midline vessel that lies on the anterior median fissure.

** ASA = Anterior Spinal Artery

VA = Vertebral Artery

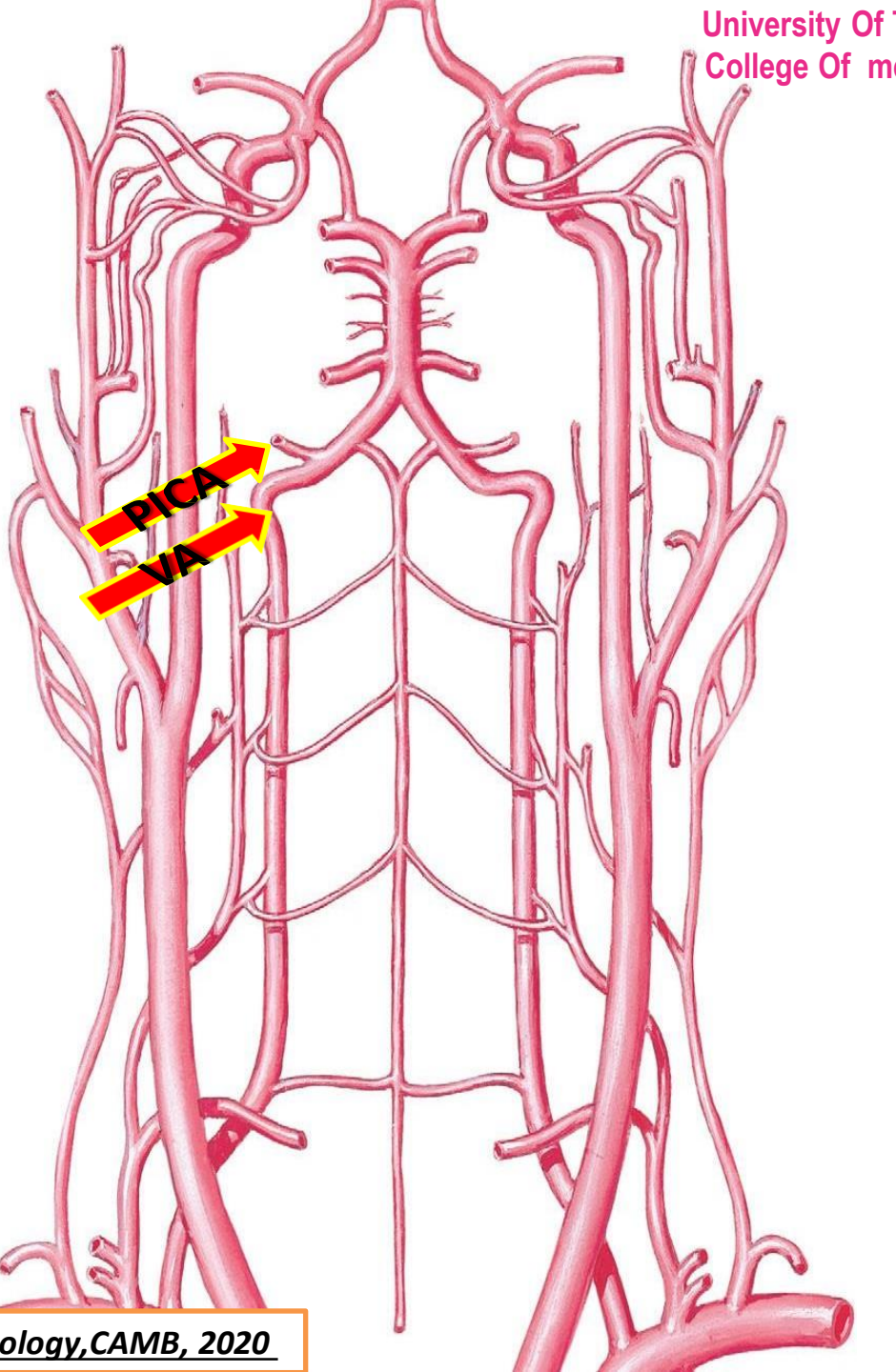


Posterior spinal artery

- **Origion :** The posterior spinal artery on each side arise from the posterior inferior cerebellar or vertebral arter above the foramen magnum.
- **Supply :** The posterior spinal artery supplies the grey an white posterior columns of its own side.
- Posterior spinal a. is NOT shown.
- PSA is forming longitudinal trunks that run through an behind the posterior nerve rootlets for the whole lengt of the cord.
- There is some anastomosis between the vessels of th two sides, with rather scanty connections with th anterior spinal artery, except at the lower end of the cor where there are often good anastomoses.

** PICA = Posterior Inferior Cerebellar Artery

VA = Vertebral Artery



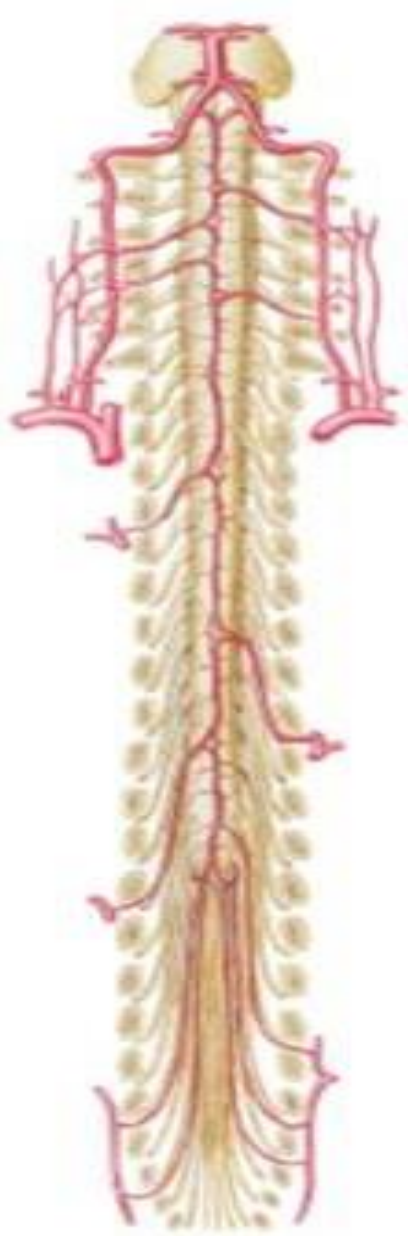
Radicular arteries

- At one stag during embryonic development every segment of the cord receives a radicular vessel on both sides; they enter through the intervertebral foramina as spinal arteries to penetrate the meninges and run along the nerve roots.
- They are derived from various parent vessels depending on the level:

vertebral, costocervical, posterior intercostals, lumbar, and lateral sacral.

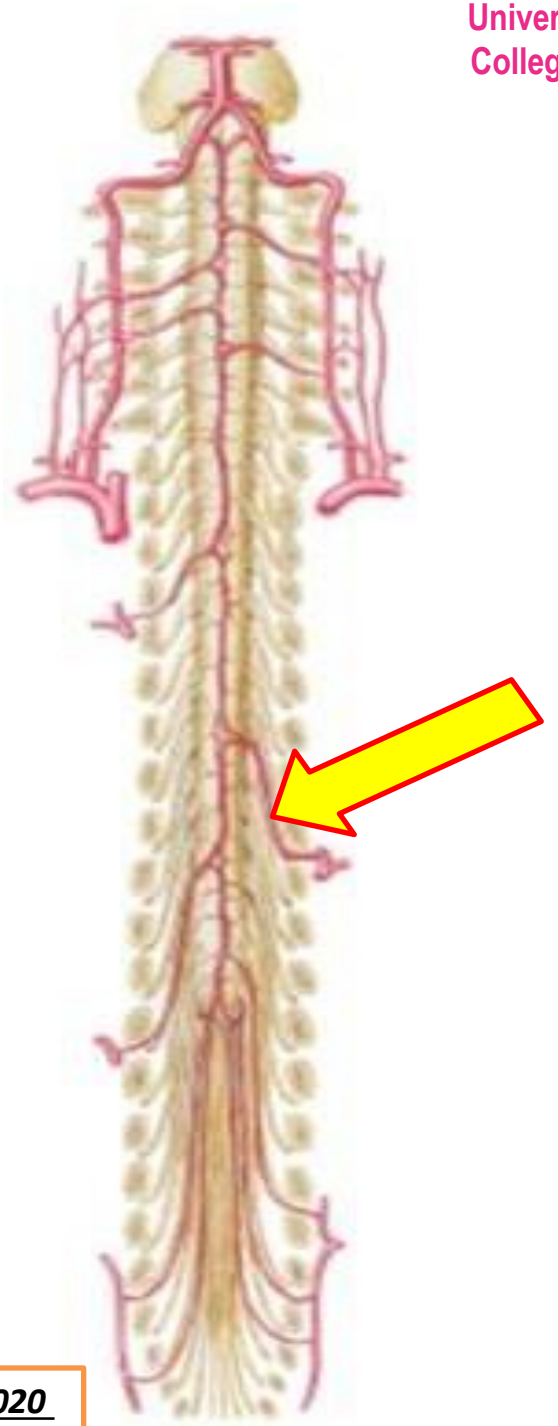
- As fetal growth proceeds, most of the radicular arteries disappear.
- Their most characteristic feature is

1. their variability in number and position.
2. blood from them may flow up and/or down the cord.



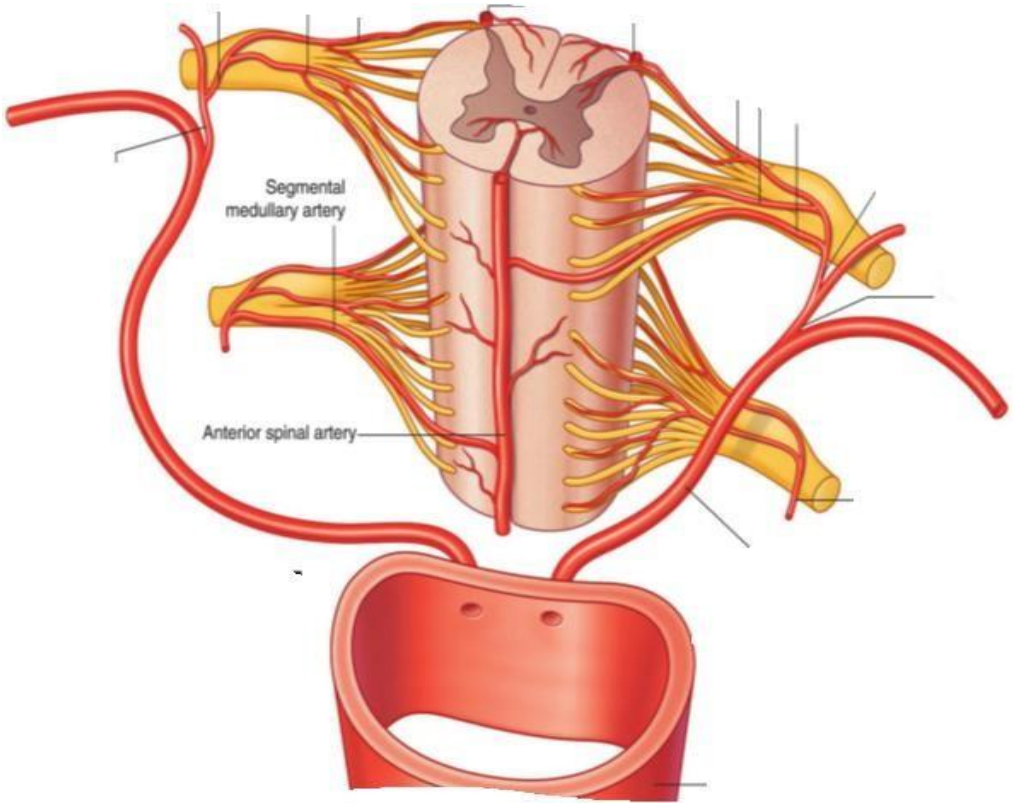
Adamkiewicz artery

- arteria radicularismagna (of Adamkiewicz), usually arises from a lowe intercostal or upper lumbar branch of the aorta on the left side.
- Operations on the vertebral column or adjacen structures (such as aortic aneurysms) that interfere with the parent stem of a major radicular vessel may seriously impair the blood supply to the cord.



Anastomosis

- The anastomotic connections on the surface of the cord (deep to the pia mater) between the anterior and posterior spinal and radicular vessels provide very small pial arteries that are capable of supplying peripheral areas of the cord.
- This is important with respect to the lateral corticospinal and anterolateral tracts whose fibres are laminated, with sacral fibres lying nearest to the surface.
- Interference with the anterior spinal supply may eliminate the function of these tracts, except for the sacral fibres which remain supplied by the pial vessels ('sacral sparing').

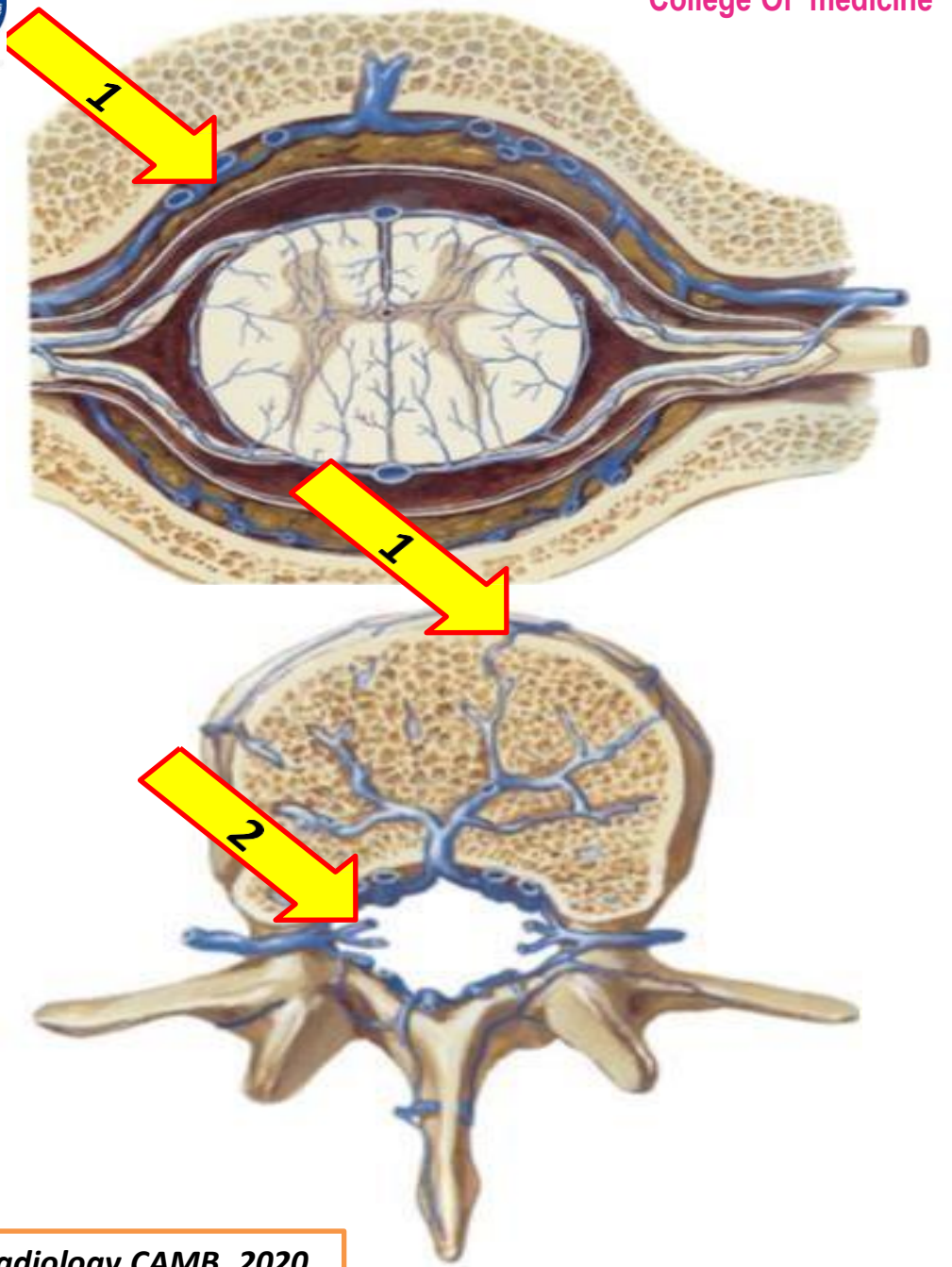


Venous drainage

- The spinal veins form loose-knit plexuses in which anteriothere are an and a posterior midline longitudinal vein, and on each side a pair of longitudinal veins posterior to
- the anterior and posterior nerve roots.
- These veins drain to the internal vertebral venous plexus (1) (between dural and bony canal) , and thence

via the external vertebral venous plexus (2) to the segmental veins: vertebral in the neck; azygos in the thorax; lumbar in the lumbar region; and lateral sacral in the sacral region.

- At the foramen magnum they communicate with the veins of the medulla.



Thank you

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