

AORTIC ARCHES IN VERTEBRATES

- (1) Aortic arches are paired blood vessels which connect the ventral aorta with the dorsal aorta around the pharynx.
- (2) In the typical arterial plan the blood leaves the heart through the ventral aorta.
- (3) Aortic arches arise as paired branches from the ventral aorta and distribute blood to the gills in the form of a series of afferent branchial arteries from the gills. The blood is collected by a series of efferent branchial arteries.
- (4) They run upwards and join together to form a median dorsal aorta behind the pharynx.
- (5) Each pair of afferent and efferent arteries constitutes an aortic arch i.e. aortic arches connect the ventral aorta to the dorsal aorta through which the arterial blood is directed to the different parts of the body.
- (6) The number of pairs of aortic arches, although less in adult, is typically six during the embryonic development.
- (7) The first aortic arch is called mandibular aortic arch; the second aortic arch is called hyoid aortic arch; the remaining aortic arches are referred to as III, IV, V and VIth aortic arches.

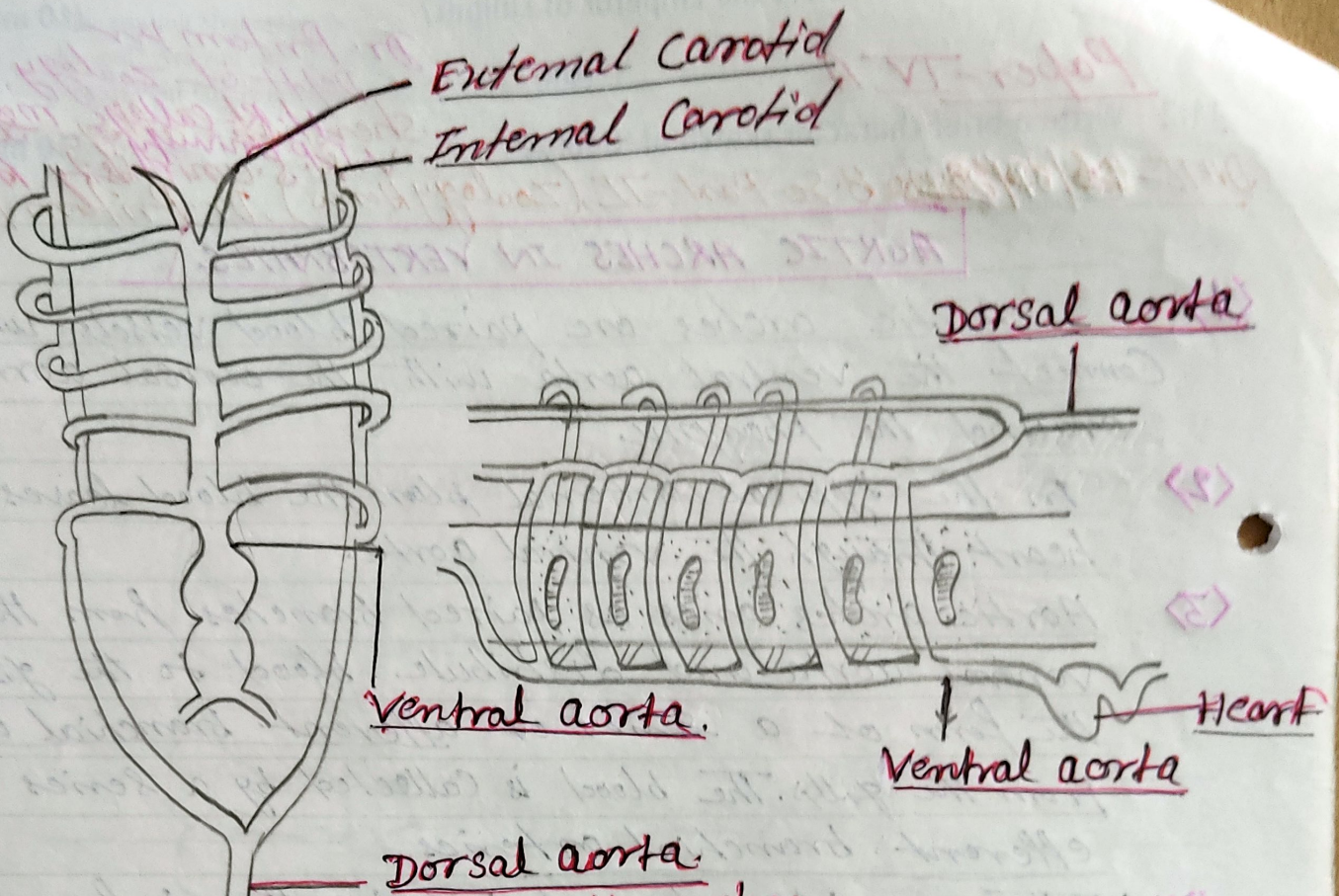


Fig: - Typical plan of aortic arches.

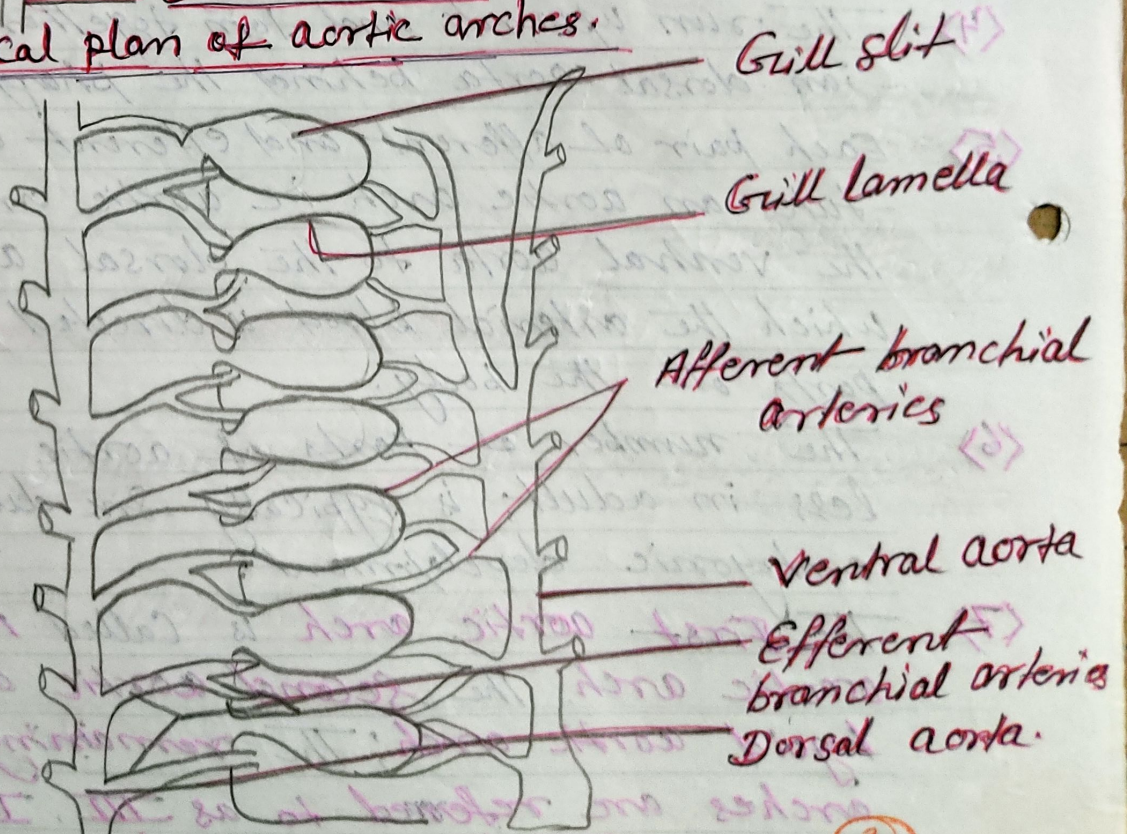


Fig: - Aortic arches of Petromyzon.

The number of aortic arches occurred as the evolution proceeded. As a result, the number of ~~are~~ aortic arches is more in lower chordates.

This modification is due to shift to lung respiration from the gill.

The number of aortic arches in *Bdellostoma* is 15 pairs and in *Petromyzon marinus* is 8 pairs.

AORTIC ARCHES IN FISHES: (i) The greatest number exist, in certain primitive sharks. *Heptanucleus* has 7 pairs of aortic arches and *Hexanucleus* has 6 pairs of aortic arches. *Scoliodon* has 5 pairs of aortic arches while teleost fishes have only 4 pairs of aortic arches.

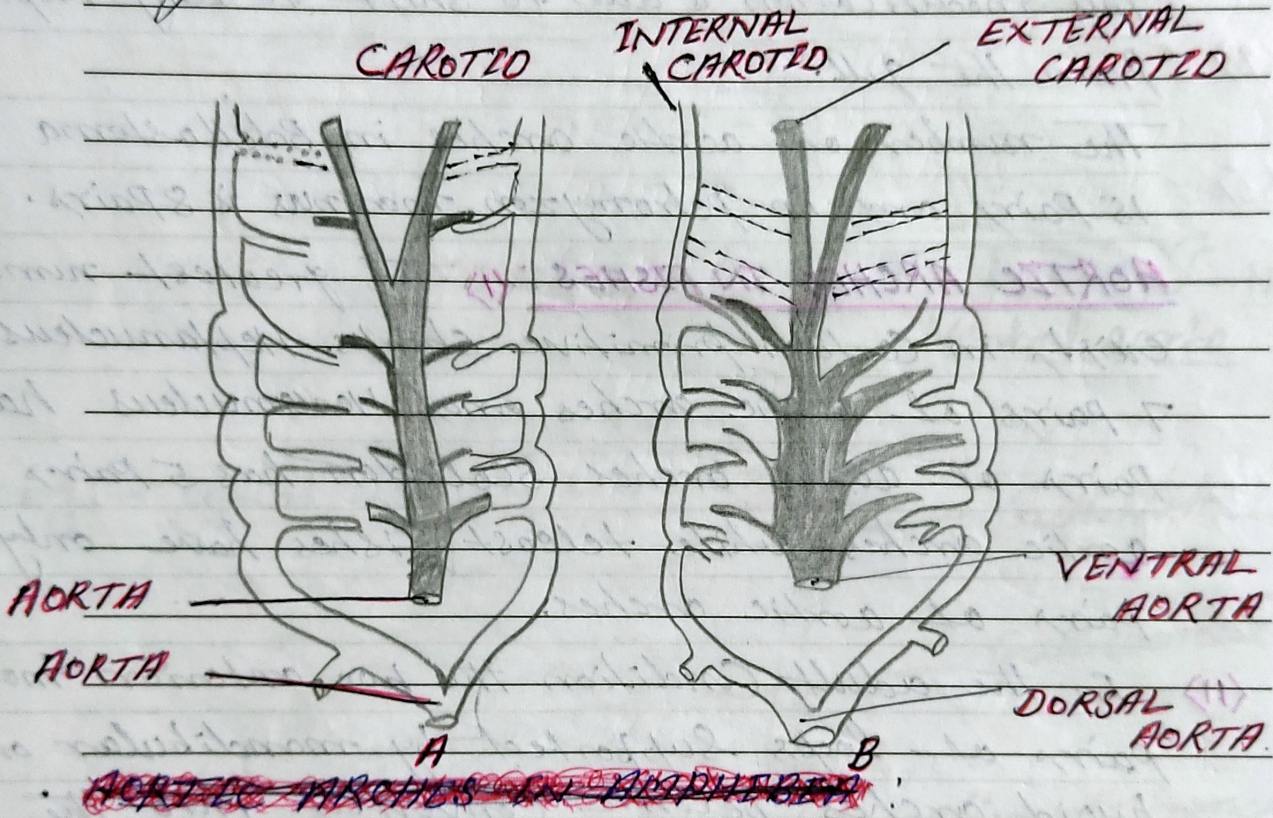
(ii) In the adult condition the two anterior most pairs of loops supported by mandibular and hyoid arches become converted into the branches of third.

(iii) Third along with the branches of the ventral aorta forms the external and internal carotids.

The external carotid extends forward to supply lower and part of the upper jaw and the internal carotid artery forms the extension, forward to each radicle and supplies the

brain & face.

(IV) with the development of lungs (in dipnoi) a pair of pulmonary arteries are developed from sixth pair of arches on the ventral side of the pharynx.



A - SCOLIODON

B - IN BONY FISHES.

Fig: — AORTIC ARCHES.

(4)