Right lateral medullary syndrome (Wallenberg syndrome) with lateropulsion and ocular tilt reaction

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A 55 year old man presents with acute onset right-sided facial numbness, left-sided body numbness, vertigo, right ptosis, and binocular vertical diplopia

He has a history of hypertension and dyslipidemia

Visual acuity was 20/20 OD, 20/20 OS

He saw 14/14 correct Ishihara color plates in both eyes

There was no relative afferent pupillary defect

Figure 1.

External examination

Pupil sizes in light and dark are summarized in the table

	Right	**Left**
Light	2mm	2.5mm
Dark	3mm	5mm

Figure 1.

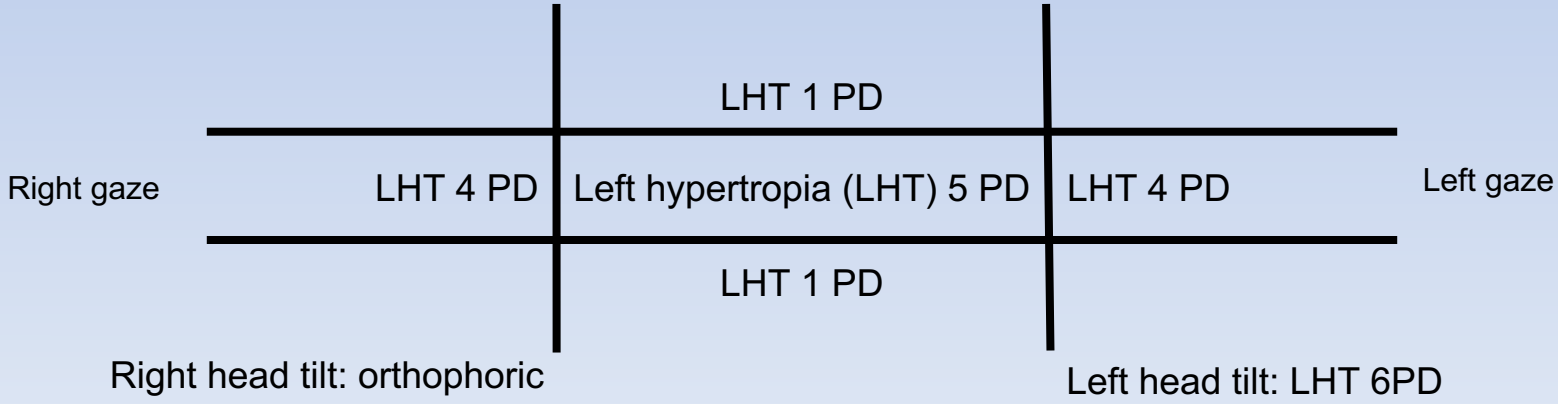
External examination

-There is right ptosis (upper and lower lid), miosis and dilation lag indicating a right **Horner syndrome**.

-The right pupil is smaller than the left pupil, and the anisocoria is worse in the dark due to dysfunction of the right sympathetic pathway

Eye movements (The patient had a right head tilt)**:**

- Full range of motion of both eyes
- Gaze-evoked nystagmus only on right gaze
- Hypermetric saccades to the right, hypometric saccades to the left
- Ocular alignment is summarized below:



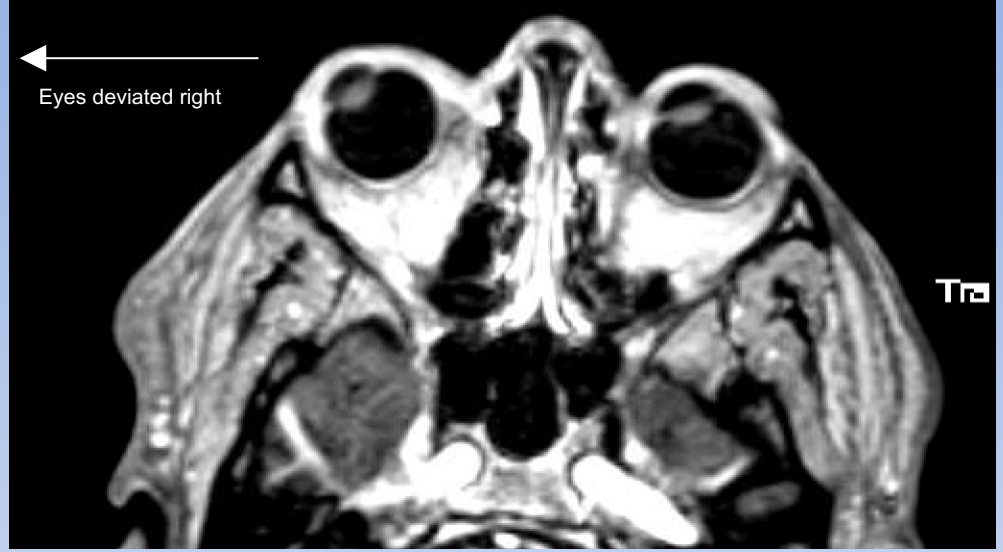
Video 1

https://www.youtube.com/watch?v=P2Q3mySds_Y&feature=youtu.be

This video shows that the patient's eyes are deviated to the right when he closes his eyes

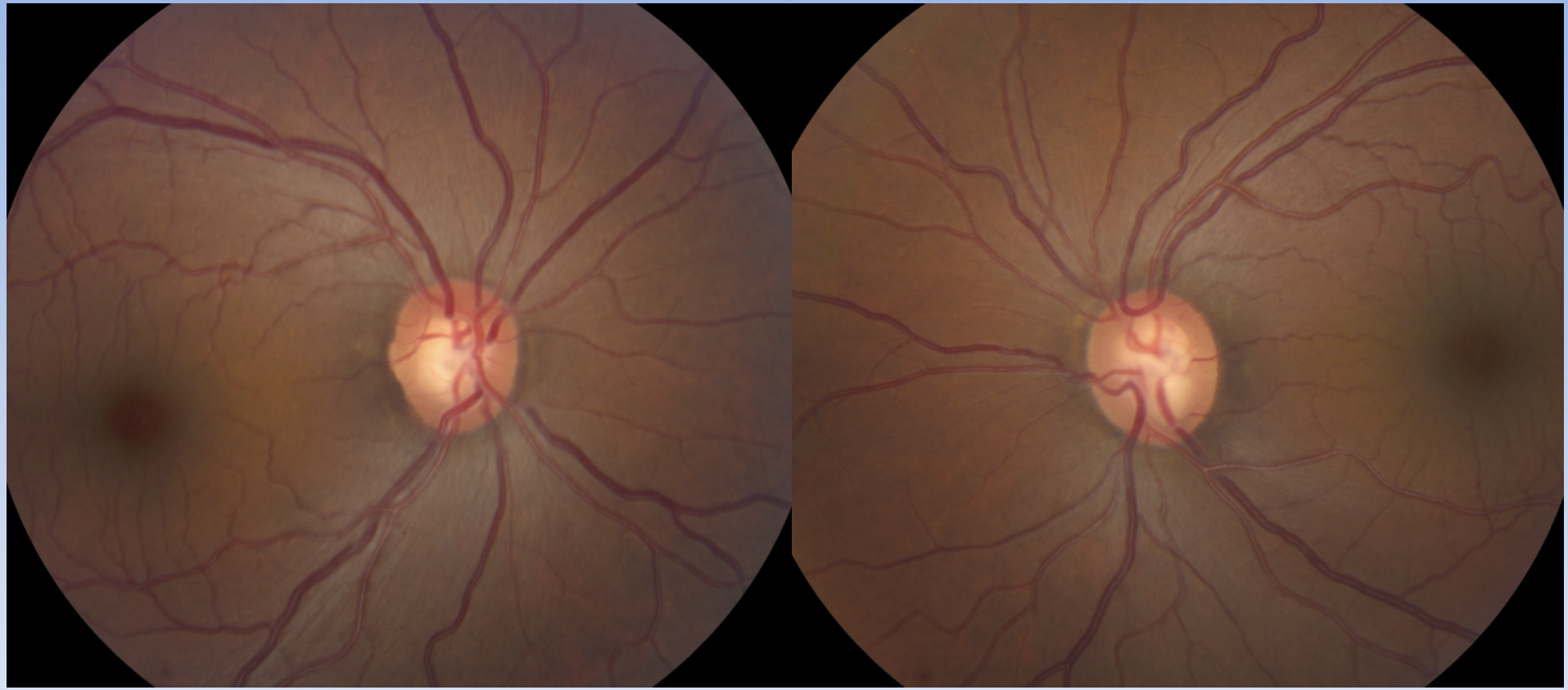
This is a sign of ocular **lateropulsion**, which is a compelling sensation of being pulled towards one side (the side of the lesion in Wallenberg syndrome)

Figure 2.



The previous video and MRI above demonstrate ocular **lateropulsion**, which is a compelling sensation of being pulled towards one side (the side of the lesion in Wallenberg syndrome). When the patient closes his eyes, both eyes deviate towards the side of the lesion.

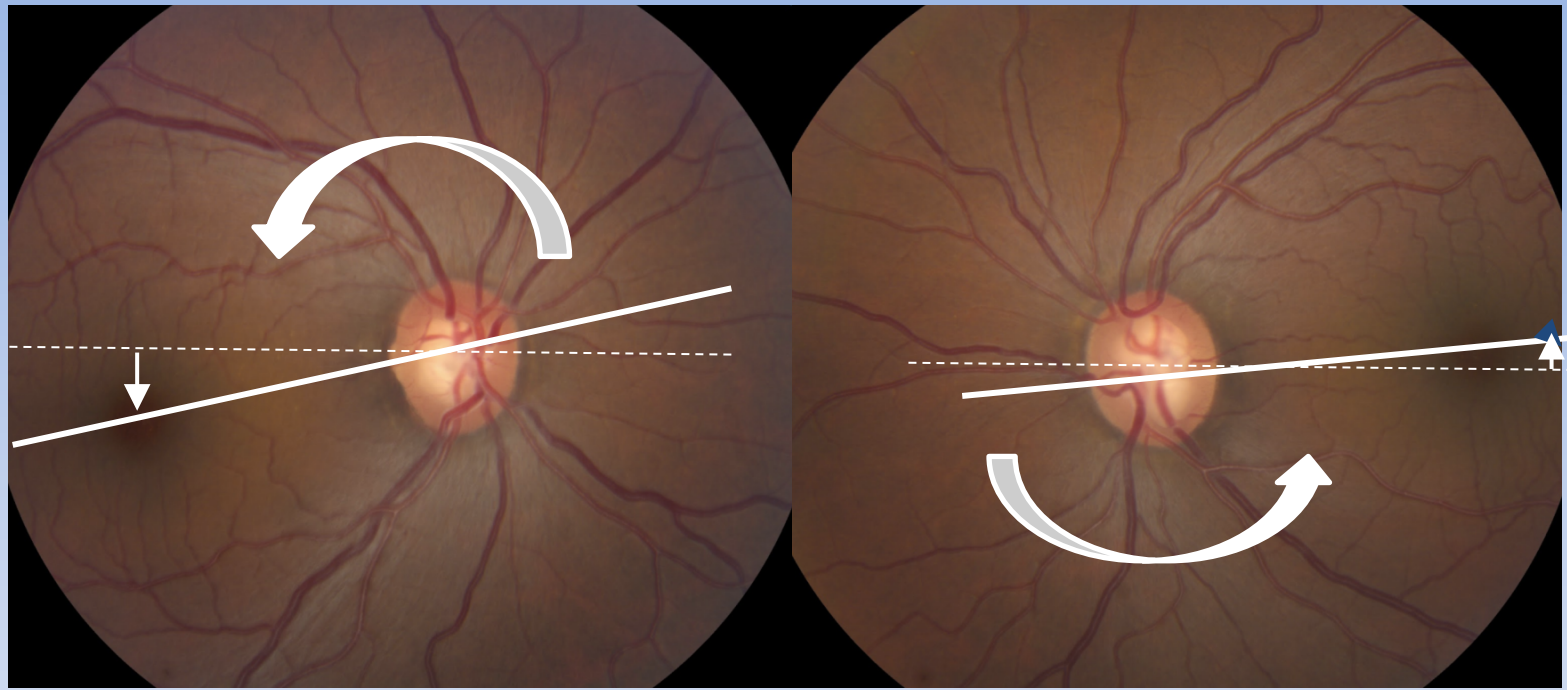
Figure 3: Fundus photographs with the patient looking straight ahead at the camera



Right eye

Left eye

Figure 3.



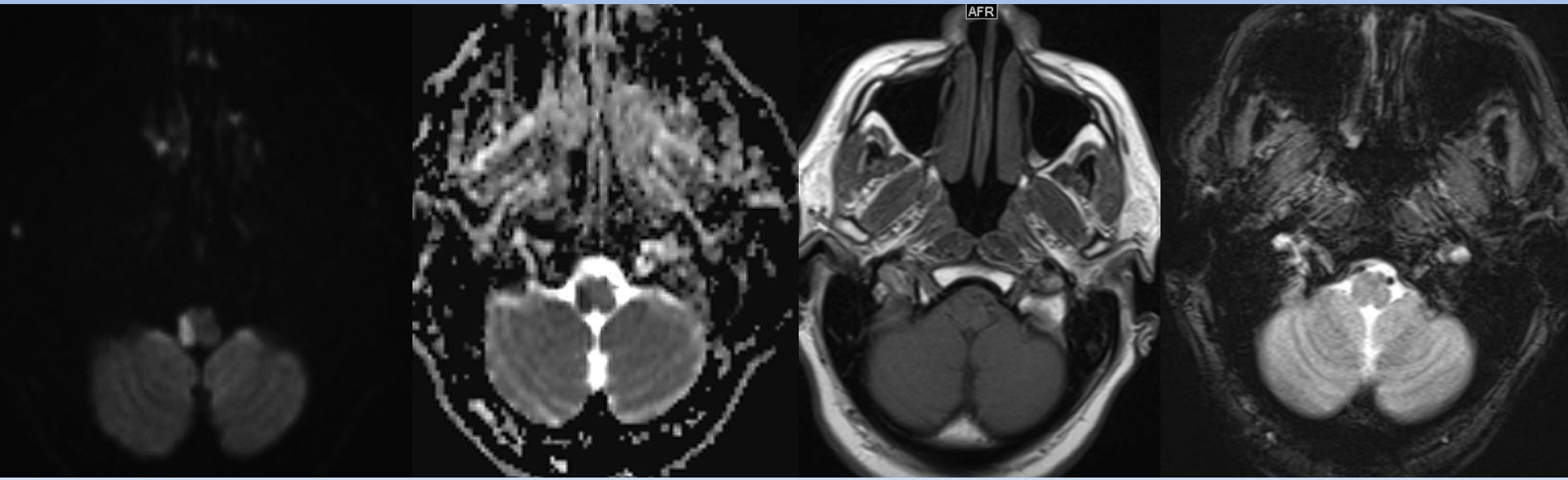
Right eye

Left eye

Fundus photos show **excyclotorsion** of the **right eye** (the macula is at a lower position compared to the center of the optic disc) and the **left eye** is **incyclotorted** (the macula is at a higher position compared to the position of the optic disc)

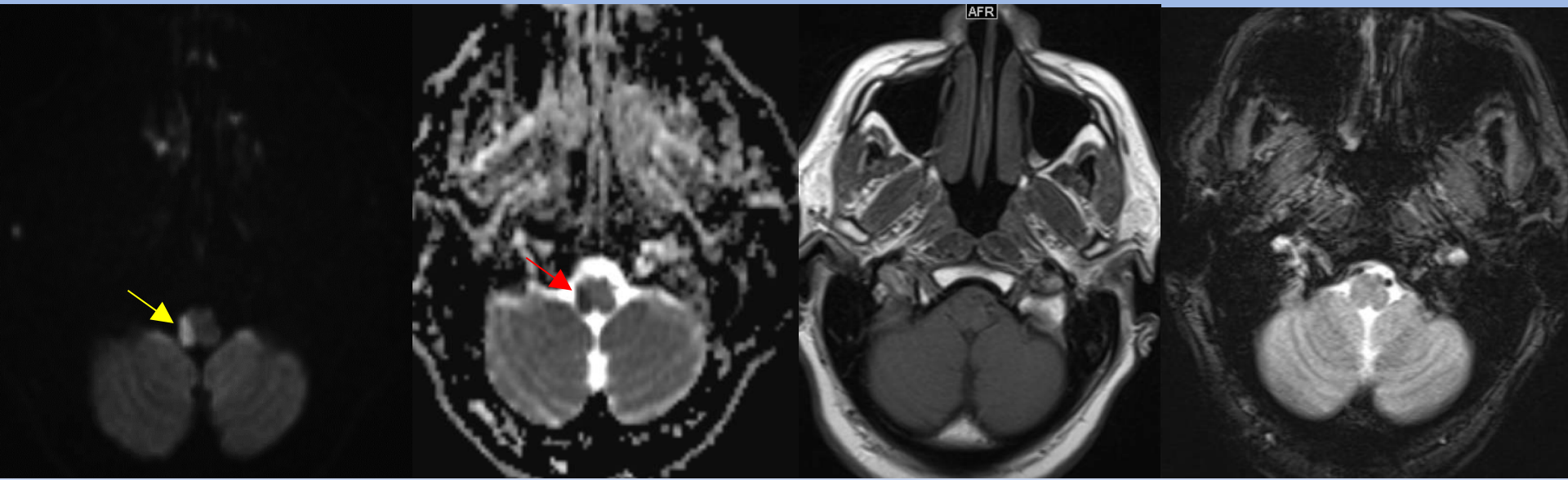
Figure 4.

MRI of the brain



DWI ADC T1 T2

Figure 4.



DWI ADC T1 T2

MRI of the brain shows a right lateral medullary infarction.

There is a hyperintensity on DWI (yellow arrow) and corresponding hypointensity on ADC (red arrow) in the right lateral medulla consistent with an acute infarction. The T1 and T2 sequences are normal in this acute small infarction.

Figure 5.

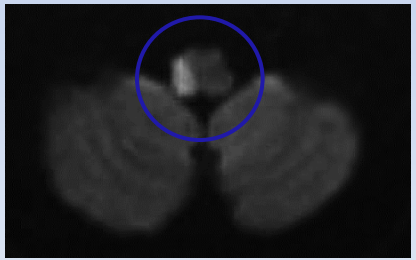
Nucleus ambiguus: Hoarseness, diminished ipsilateral gag reflex, dysarthria, dysphagia

Lateral spinothalamic tract: Crossed sensory deficit (ipsilateral face, contralateral body)

Descending sympathetic pathway: Horner syndrome

Inferior cerebellar peduncle: Ipsilateral cerebellar ataxia, vertigo

Vestibular nuclei: Skew deviation, nystagmus, nausea, vomiting, vertigo



Structures in the lateral medulla typically affected in Wallenberg syndrome

Summary points on lateral medullary syndrome (Wallenberg syndrome):

- There are prominent neuro-ophthalmic findings including ipsilateral Horner syndrome, ocular tilt reaction (skew deviation, ocular torsion, head tilt), ipsilateral ocular lateropulsion, and nystagmus

- It is usually caused by compromise of the posterior inferior cerebellar artery (PICA; red arrow) leading to infarction

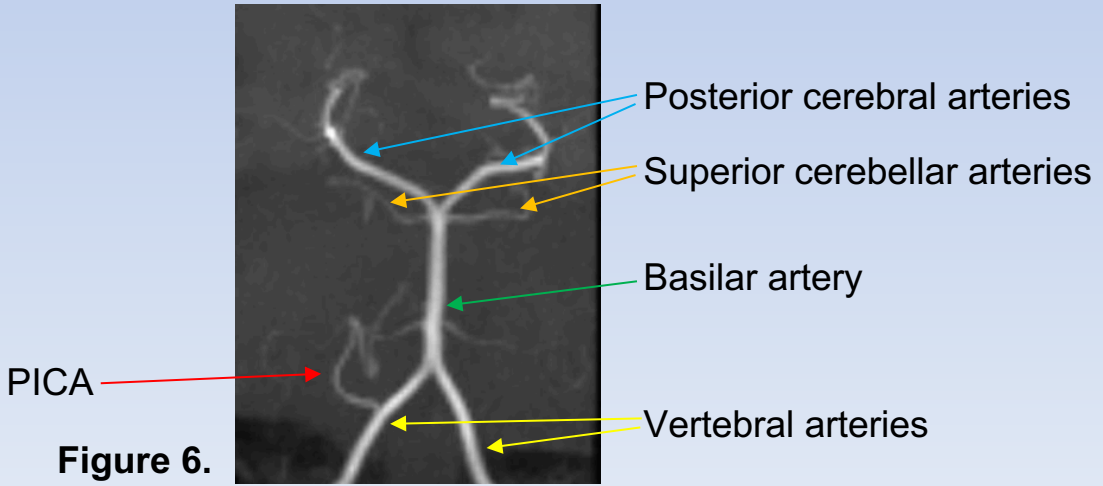


Figure 6.