

Persistent Trigeminal Artery: A rare cause of recurrent 6th nerve palsy

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INTRODUCTION

- In the embryonic period blood to the hindbrain is supplied by four carotid-vertebrobasilar anastomoses: Otic, Hypoglossal, Trigeminal, Proatlantal intersegmental arteries
- Persistent Trigeminal Artery (PTA) is the most cephalic, most common (86%), non-involuting embryological vascular remnant that persists into adulthood.
- Clinical implications in adults: Trigeminal neuralgia, Ophthalmoplegia, Hypopituitarism, Intracavernous fistula

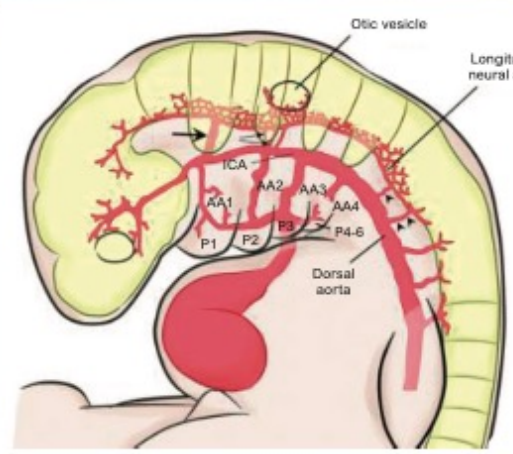


Fig 1: Embryonic circulation

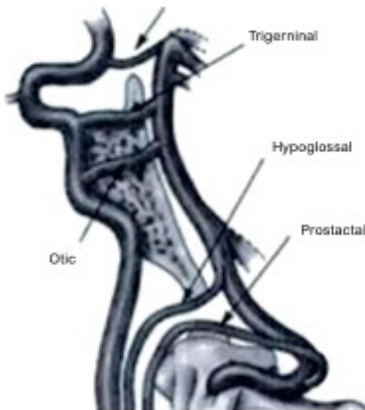


Fig 2: Four Carotid - vertebrobasilar anastomosis

CASE REVIEW

- 75 year old lady presented with
- Binocular horizontal diplopia due to Isolated Left sixth nerve palsy. Presumed to be microvascular in origin. Recovered.
 - 2 years later re-attended ED with progressive diplopia.
 - MRI brain done due to underlying malignancy - incidental small Petrous ridge meningioma, no compression of 6th nerve demonstrated.

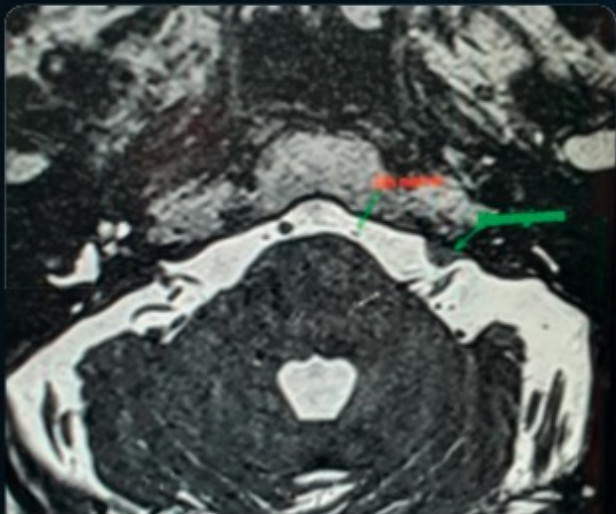


Fig 4: High resolution T2W MRI axial

AIM

To raise awareness of PTA as a rare cause of recurrent sixth nerve palsy

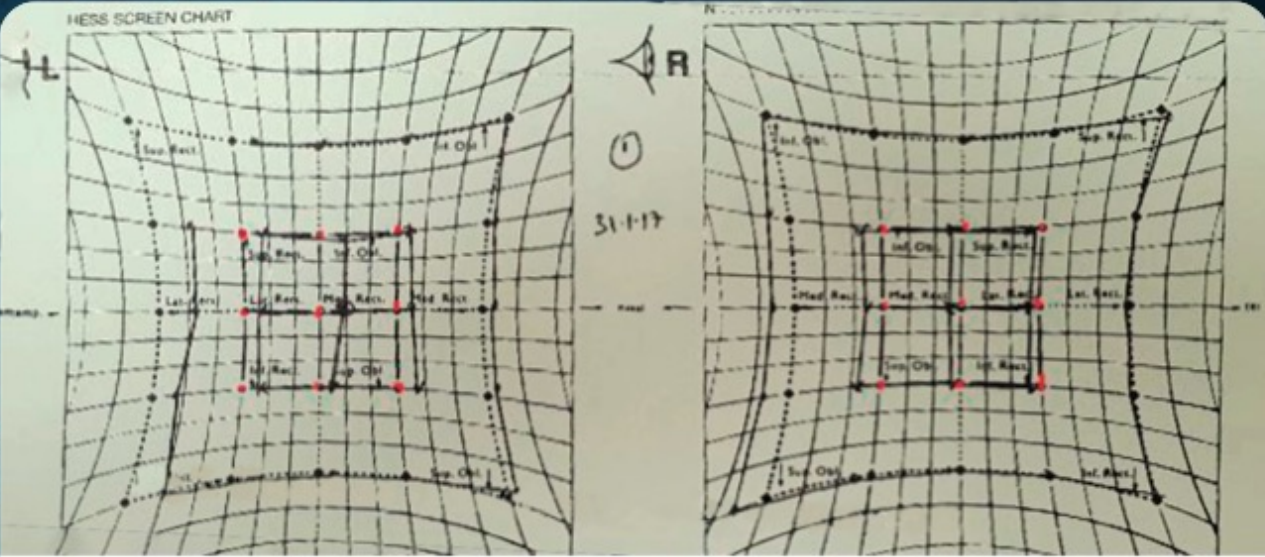


Fig 3: Hess chart - left 6th nerve palsy - January 2017

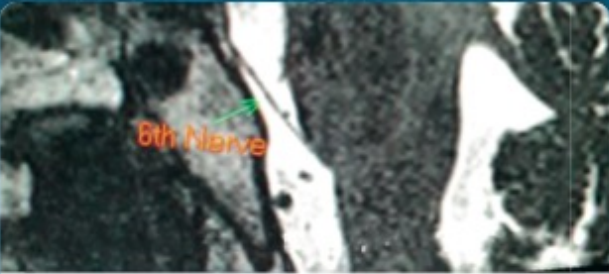


Fig 5: High resolution T2W MRI sagittal



Fig 6: 3D reconstruction of the Persistent Trigeminal Artery

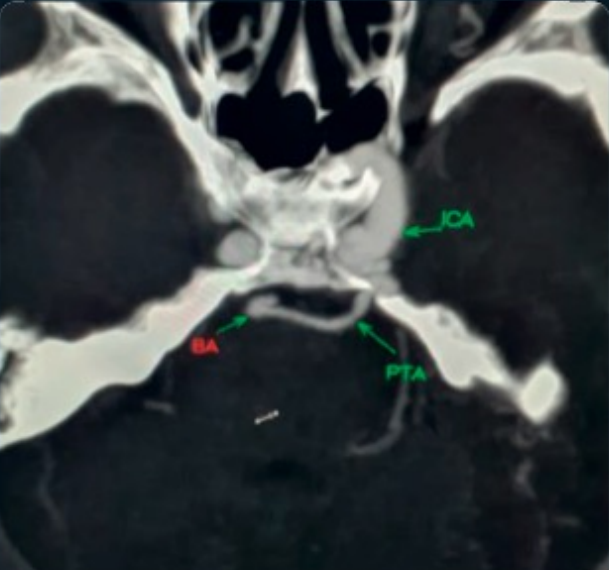


Fig 7: CTA Maximum intensity projection. ICA - internal carotid artery, PTA - persistent trigeminal artery BA - Basilar artery.

RESULT

Persistent intractable diplopia after 8 months
CT Angiography done - revealed persistent trigeminal artery causing neurovascular conflict.
Discussed at Neurovascular MDT, treatment was deemed unsuitable given the likely permanent nerve damage and risk of posterior circulation compromise.

DISCUSSION

Neuro-vascular compression/conflict is a well recognised but rare cause of 6th nerve palsy. Aneurysms, dolichoectatic or relatively normal - appearing vessels in an aberrant location are responsible. Nerve is vulnerable to continued pulsatile pressure causing focal axonal degeneration and demyelination at the site of contact. Demyelination-Remyelination cycle lead to permanently damaged nerve.

CONCLUSION

- Persistent embryologic vessels (PTA) - is rare but a very important cause of recurrent or persistent sixth nerve palsy.
- PTA can be easily missed if appropriate investigation is not done, awareness is important for the diagnosis and work up.

REFERENCE

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