Trigeminal Neuralgia

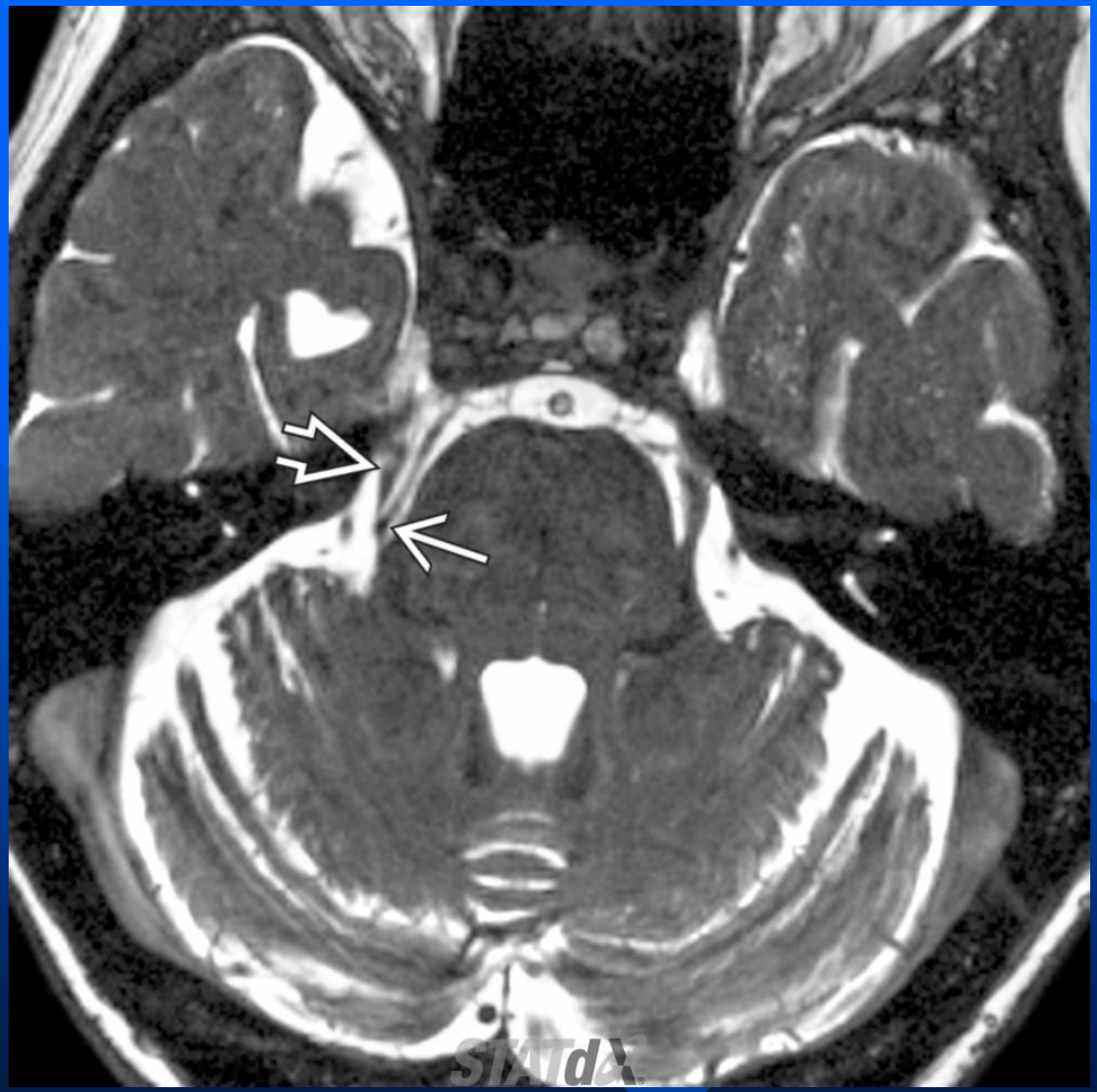
- Vascular loop compressing trigeminal nerve (CNV) at its root entry zone (REZ) or preganglionic segment (PGS)
- Trigeminal neuralgia symptoms
  - Lancinating pain following V2 ± V3 distributions
  - May occur spontaneously or in response to "trigger" from tactile stimulation
- Treatment: Begin with conservative drug therapy; microvascular decompression or focused radiotherapy (~ 70% long-term success rate)

Diagnostic Checklist

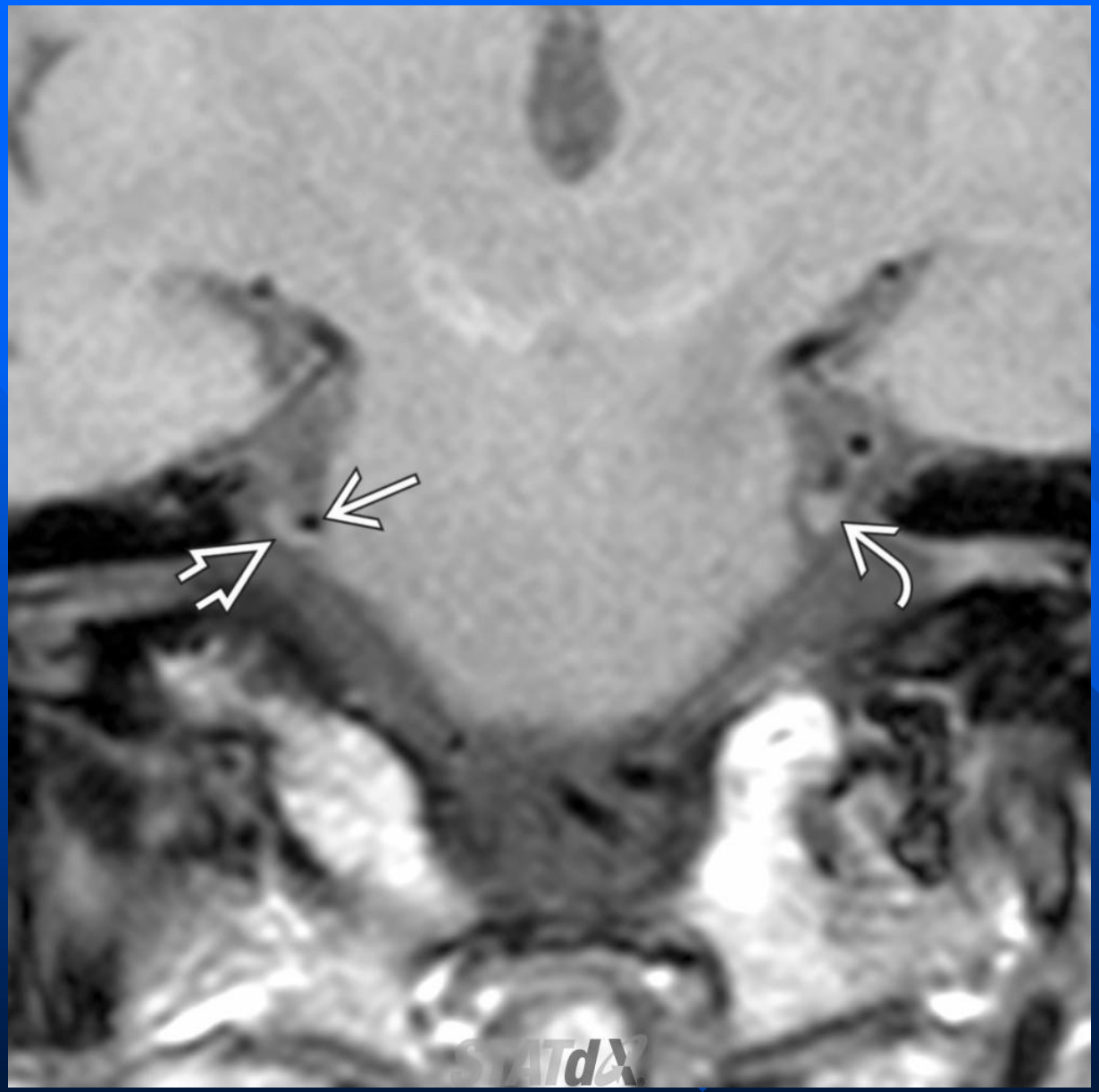
- 1st look for multiple sclerosis or DVA with draining vein along PGS
- Also check for cisternal mass: Schwannoma, meningioma, epidermoid
- Next, follow CNV distally into cavernous sinus & face
- Exclude perineural tumor, malignancies of face
- Lastly, view high-resolution thin-section MR for causal vessel
- Causal vessel will bow PGS or deform REZ

Imaging

- High-resolution MR: Serpiginous asymmetric signal void (vessel) in CPA CNV REZ or PGS
  - CNV PGS atrophy: Severe, prolonged compression; compressing vessel will bow PGS
- Offending vessels: **Superior cerebellar artery** (55%) > AICA (10%) > basal artery (5%) > variant vein (5%) > other

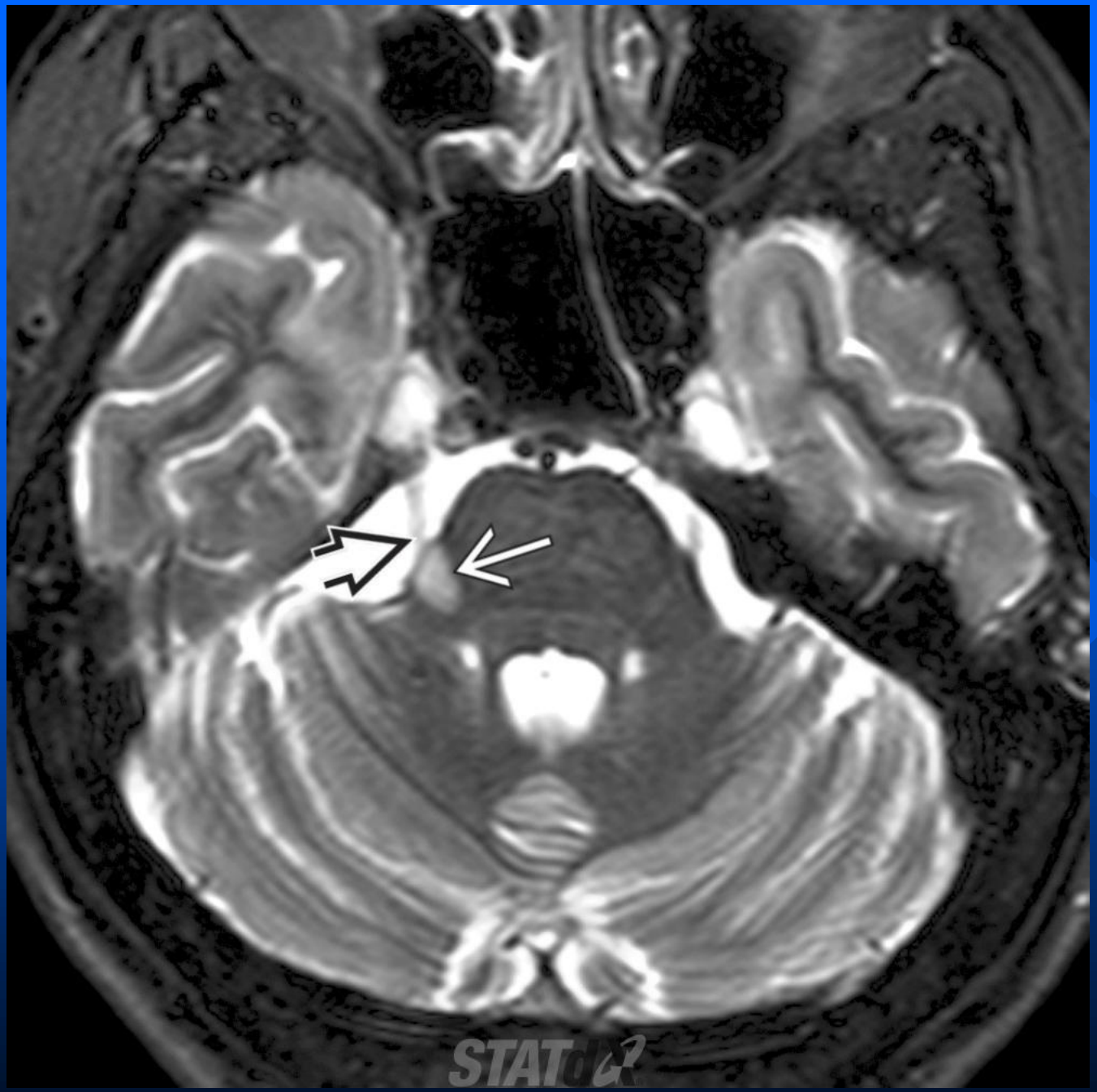


Axial T2WI MR in this patient with right trigeminal neuralgia (TN) shows the low-signal superior cerebellar artery (white solid arrow) impinging on the root entry zone of the preganglionic segment (white open arrow) of the trigeminal nerve.

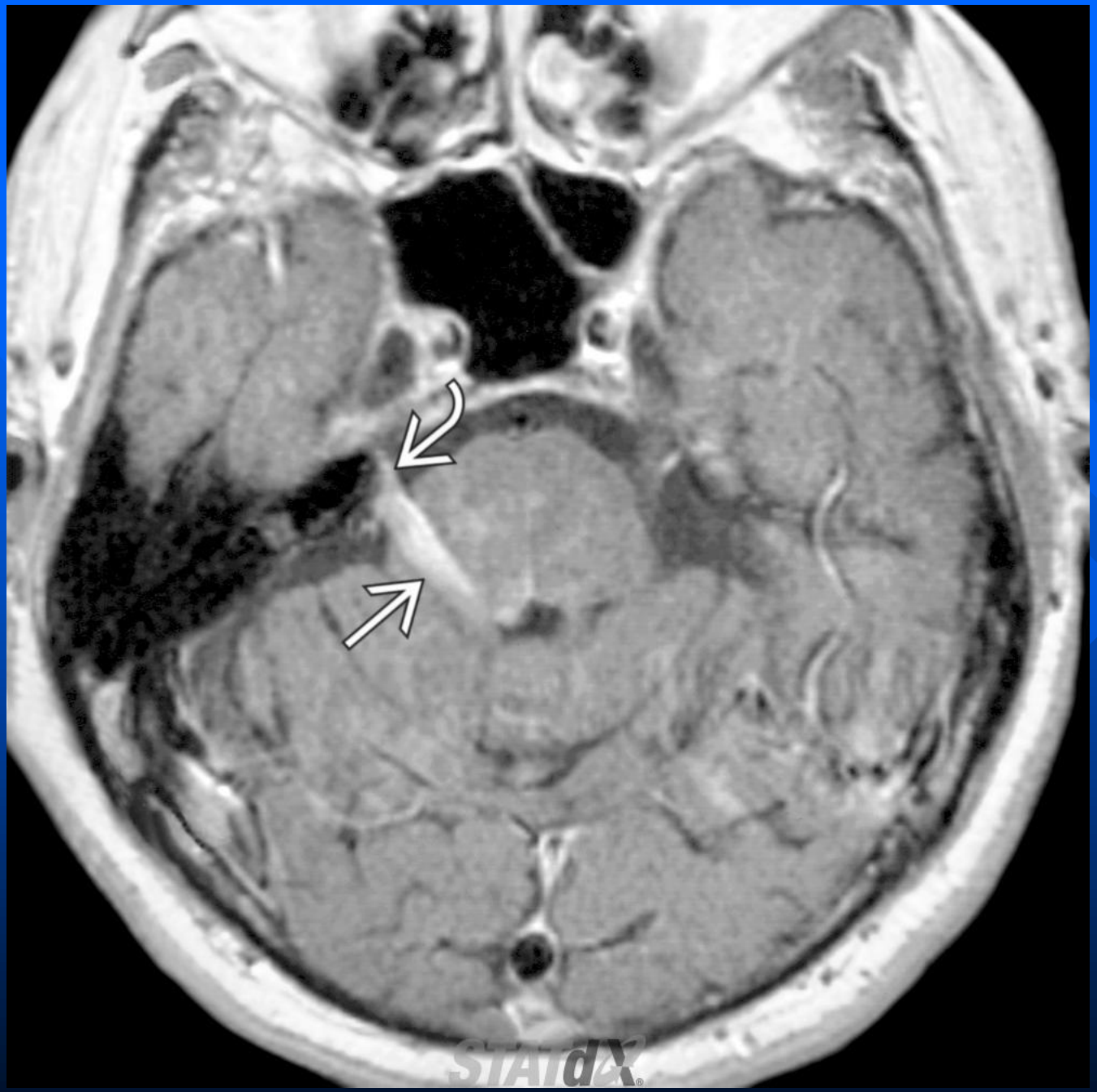


Coronal T1WI MR in the same patient reveals the superior cerebellar artery (white solid arrow) compressing & deforming the right proximal preganglionic segment of CNV (white open arrow). Notice the larger, normal left preganglionic CNV (white curved arrow). indicating that atrophy is a feature of the affected right side.

In this patient with right TN, a coronal T2WI MR demonstrates a flattened CNV root entry zone (white open arrow). This patient's trigeminal neuralgia was secondary to a combination of compression from the superior cerebellar artery (white solid arrow) & PICA (white curved arrow).



Axial T2WI FS MR in a patient with right TN reveals a multiple sclerosis lesion (white solid arrow) involving the lateral pons at the root entry zone of the trigeminal nerve (black open arrow). Rarely, cisternal masses or MS may present with TN.



Axial T1WI C+ MR in a patient with right TN shows a developmental venous anomaly of the cerebellum draining through the lateral pons (white solid arrow) & root entry zone (white curved arrow) of CNV. Less than 5% of patients with TN have a venous explanation for their symptoms