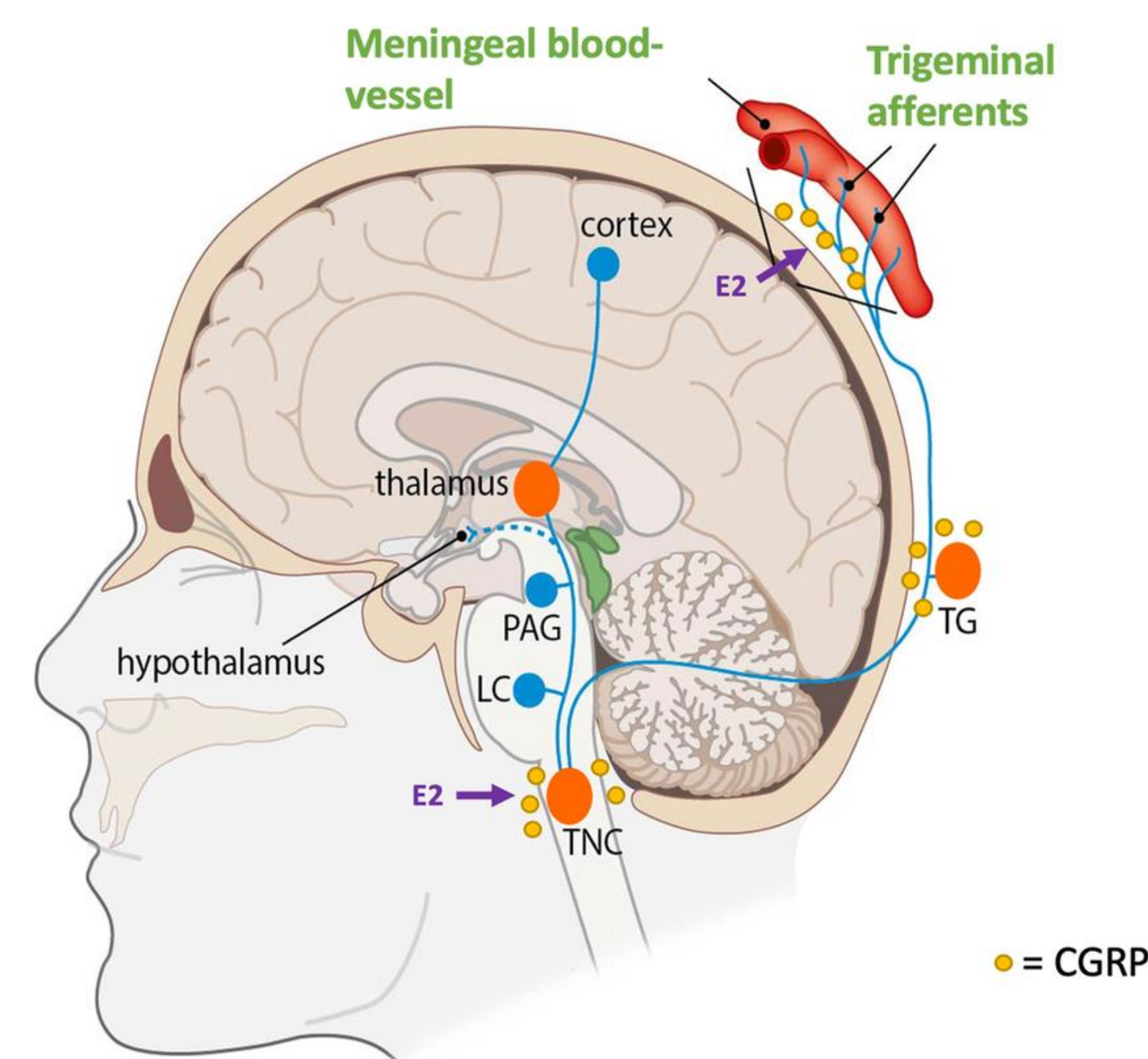


Objective:

- To examine the clinical benefit of cervical medial branch blocks and radiofrequency ablations as a treatment modality for migraines.

Background:

- Migraine headache is a type of moderate to severe headache that is associated with nausea and/or vomiting, or photophobia and phonophobia.
- Migraines are due to activation of the trigeminovascular system, which consists of the trigeminal ganglion which centrally project and synapse to the trigeminal nucleus caudalis and the upper cervical dorsal nerves at the levels of C1-3.
- Activation of the trigeminovascular system leads to the release of neuropeptides, vaso-activation, and neurogenic inflammation.
- Blocking the cervical dorsal nerves in the trigeminocervical system with cervical medial branch blocks and radiofrequency ablations could be a possible treatment modality to help with migraines.
- Current medications for migraines include propranolol, amitriptyline, topiramate, valproic acid and calcitonin gene-related peptide (CGRP) antagonists. Interventional treatment options include occipital and trigeminal nerve blocks and Botox injections.



Case:

- A 65-year-old female with a past medical history of chronic migraine without aura, cervical spondylosis, neck pain, hypertension, type 2 diabetes mellitus, and bladder cancer presents with chronic migraines and neck pain.

Results:

Initial Visit:

- Migraines occurred 7 days per week with associated nausea, photophobia and phonophobia
- Previously tried amitriptyline, propranolol, topiramate, and botulinum toxin injections without significant relief
- Had also tried greater occipital nerve blocks, lesser occipital nerve blocks, and trigger point injections every 3 months, which **reduced the severity** of the headaches **but did not change the frequency** of her daily headaches.

Treatment:

- The patient's neck pain was likely facet mediated. She underwent C3/4, C4/5 cervical medial branch nerve blocks two times with excellent pain relief of her neck each time. She subsequently had C3/4, C4/5 cervical radiofrequency ablations (RFAs).

3 Month Follow-up:

- She had >80% relief of her neck pain and she only experienced 2 migraines in total.

6 month follow up:

- She continues to enjoy >80 % relief of her neck pain and she still only experienced 2 migraines in total.

9 month follow up:

- Patient reported experiencing daily headaches again. C3/4, C4/5 cervical medial branch nerve RFAs were repeated for her neck pain.

Literature Review:

- One multicenter, randomized, double-blind trial that compared the effectiveness of steroid injections and pulsed radiofrequency (PRF) in participants with either Occipital Neuralgia or migraine with occipital nerve tenderness (1)
- One randomized, double-blind, and controlled clinical trial included 40 subjects with chronic migraine and compared treatment with PRF on the cervical 2-3 posterior medial branches and sham → They found that PRF on the cervical 2-3 posterior medial branches helped improved pain intensity, headache duration, and Migraine Disability Assessment Questionnaire (MDAQ) score (2)
- A case report published by Li et al (2018) described a chronic migraine patient who had a pulsed radiofrequency ablation of the of C2 (axis) dorsal root ganglion (DRG). This patient was found to be headache free after one year (3)

Conclusion:

- The cervical medial branch nerves originate from the dorsal rami which contain the central processes of cells in the cervical dorsal root ganglia
- Since the trigeminocervical nucleus involves the upper cervical dorsal nerves, targeting the upper cervical medial branch nerves could modulate the pain signals involved in migraines
- The patient's daily migraines likely returned at the 9-month mark because the effects of her RFA wore off
- It is important to note that these conclusions are based on an observational study of one patient. To further examine the clinical benefit of CMBB/RFA for migraines, further studies with a larger patient population is required.

References:

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- Li, J., Yin, Y., Ye, L., & Zuo, Y. (2018). Pulsed radiofrequency of C2 dorsal root ganglion under ultrasound guidance for chronic migraine: a case report. *Journal of pain research*, 1915-1919.