Gamma Knife Radiosurgery for Trigeminal Neuralgia caused by a Cavernous Malformation: Case Report and Literature Review

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No Disclosures
INTRODUCTION

• A cavernous malformation (CM) involving the trigeminal nerve is a very rare cause of trigeminal neuralgia.
• There are only 13 previous reports in the literature of cavernous malformations causing trigeminal neuralgia
• Given the small number of cases trigeminal neuralgia secondary to a CM, it is unclear what the role each treatment modality plays in the treatment of CM associated trigeminal neuralgia
CASE PRESENTATION

• 80-year-old female presented to the neurosurgical clinic with a 33-year history of left-sided trigeminal neuralgia (TN) pain
• She had typical TN pain with a shooting, lancing pain 4-6 times per day triggered by peri-oral touch
• A trial of carbamazepine and gabapentin was unsuccessful due to disequilibrium symptoms and fatigue
• All cranial nerves were intact, except for hypoesthesia in the V2-3 distribution on the left.
IMAGING

- Magnetic Resonance Imaging (MRI) revealed a .75cm x .75 cm mass lesion in the lateral aspect of the left pons in the trigeminal entry zone
TREATMENT

• Due to her age and medical co-morbidities, the patient declined microsurgical removal of the cavernous malformation.

• The patient was fixed to the Leksell Model G head frame and underwent Gamma Knife Radiosurgery (GKRS).

• A single 4 mm isocenter was used (80 Gy maximum dose, 40 Gy at the 50% isodose line) targeting the trigeminal nerve root entry zone distal to the cavernous malformation.
POST-OPERATIVE COURSE

• The patient had near complete relief from her symptoms and discontinued taking her TN medications against medical advice
• After one month, she developed a recurrence of her pain
• This was controlled with lamotrigine 100 mg two times a day
• At one-year follow up, the patient noted that the severe pain attacks had been reduced by 75%
DISCUSSION

• Adachi et al. (2014) created a classification system for a series of 11 patients to guide therapy for this patient population
• The CM presented here is a type P, meaning the CM originating in the intra-axial trigeminal nerve root in the pons
• Adachi et al. recommended open surgery as primary management
• Data from large centers for open surgical resection of brainstem cavernous malformation reports a morbidity and mortality rate of 14-36%
• GKRS was performed to the trigeminal nerve itself to dull afferent input
• The annual risk of symptomatic hemorrhage from a previously unruptured CM is low, and may be as low as 0.6% per year
• GKRS to the trigeminal nerve has been shown to be an effective and safe treatment modality for secondary TN
CONCLUSION

• The treatment of TN secondary to CM is not well established
• GKRS is a safe and effective treatment for TN secondary to CM when compared to historical literature, and has a minimal side effect profile