

High Resolution MRI Findings Following Trigeminal Rhizotomy

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Learning Objectives

By the conclusion of this session, participants should be able to: 1) Describe radiologic changes in patients with trigeminal neuralgia post rhizotomy.

Introduction

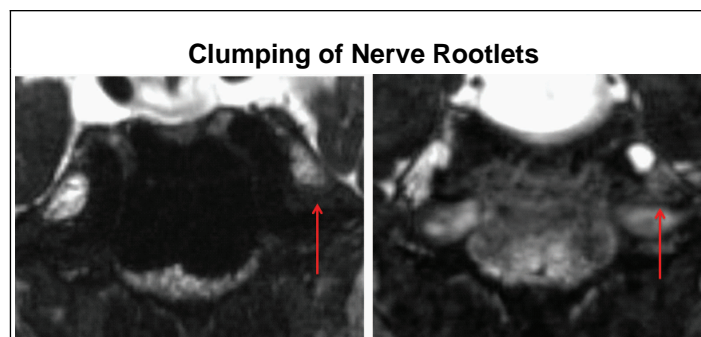
Patients with trigeminal neuralgia often undergo glycerol or radiofrequency radiofrequency-thermocoagulation glycerol rhizotomy of the trigeminal nerve for treatment of symptoms. To date radiologic changes in patients with trigeminal neuralgia post rhizotomy have not been described. The aim of this study was to evaluate patients after trigeminal rhizotomy to characterize post-rhizotomy changes on 3D high resolution MRI.

Methods

A retrospective review of trigeminal neuralgia protocol studies was performed on 26 post-rhizotomy patients compared with 54 treatment naïve trigeminal neuralgia subjects. Examinations were reviewed independently by two neuroradiologists blinded to side of symptoms and treatment history. Symmetry of Meckel's caves on constructive interference in steady state (CISS) and the presence of contrast enhancement within the trigeminal nerves on volumetric interpolated breath-hold examination (VIBE) images was assessed subjectively. Signal intensity (SI) of Meckel's cave was measured on coronal non-contrast CISS imaging on each side.

Results

Post rhizotomy changes include subjective clumping of nerve roots and/or decreased CISS SI within Meckel's cave, which was identified in 17/26 (65%) patients after rhizotomy and 3/54 (6%) treatment naïve patients ($p < 0.0001$). CISS SI within Meckel's cave was on average 13% lower on the side of rhizotomy in post treatment patients, compared to 1% difference in controls ($p < 0.0001$). Small regions of temporal encephalomalacia were noted in 8/26 cases (31%) of patient post rhizotomy and 0/54 (0%) of treatment naïve patients ($p < 0.0001$).



	Post-Rhizotomy	Treatment Naïve	Sens	Spec	PPV	NPV	p value
Subjective Nerve Clumping or ↓ CISS SI *	17/26 (65%)	3/54 (6%)	65%	94%	85%	85%	<0.0001

	Post-Rhizotomy	Treatment Naïve	P value	Interobs Agr.	κ
Hematoma	1/26 (4%)	0/54 (0%)	>0.05	100%	1
Atrophy of Muscles of Mastication	3/26 (10%)	3/54 (4%)	>0.05	96.3%	0.64
CN V enhancement	0/26 (0%)	0/54 (0%)	>0.05	100%	1

Conclusions

Post trigeminal rhizotomy findings frequently include nerve clumping and decreased CISS signal in Meckel's cave. Small areas of temporal encephalomalacia are encountered less frequently.

References

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