

AURICULOTEMPORAL NEURALGIA: A CASE REPORT DESCRIBING MULTIMODAL CHIROPRACTIC INTERVENTION FOR RESOLUTION OF SYMPTOMS

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ABSTRACT

Objective: To describe the resolution of auriculotemporal neuralgia utilizing chiropractic interventions and instrument-assisted soft-tissue manipulation.

Clinical Features: A 65-year-old male sought chiropractic care for right-sided neck pain radiating into his external ear and parietal region, accompanied by frequent headache. The patient described this as a chronic tenderness that became worse over the past week.

Intervention and Outcome: Chiropractic management included spinal manipulation, pin and stretch, instrument-assisted soft-tissue mobilization, and a home-exercise program.

Conclusion: Our case identifies a peripheral nerve entrapment of the auriculotemporal nerve that led to auriculotemporal neuralgia. The combination of multimodal chiropractic intervention for the treatment of this condition should be studied in more detail. (*J Contemporary Chiropr* 2021;4:40-44)

Key Indexing Terms: Auriculotemporal Nerve; Neuralgia; Chiropractic; Soft Tissue,

INTRODUCTION

The Auriculotemporal Nerve (ATn) is a sensory branch originating from the posterior trunk of the Mandibular Nerve, a terminal branch of the Trigeminal Nerve (Cranial Nerve V). Due to its pathway, there is a major risk for irritation and compression, leading to auriculotemporal neuralgia (ATN). The ATn innervates the temporomandibular joint (TMJ), temporal region of the head, tympanic membrane, pinna, and external acoustic meatus. It also provides sensory fibers to the scalp and parasympathetic fibers to the parotid gland.

(1) Abnormal reinnervation of these fibers after a lesion, could potentially lead to Frey's syndrome. (2,3)

There are 5 main branches to the Auriculotemporal Nerve: the anterior auricular, articular, parotid, superficial temporal, and branches to the external auditory meatus.

1. The anterior auricular branch provides somatosensory innervation to the skin of the ear including the tragus and part of the helix.

2. The articular branch provides somatosensory innervation to the posterior TMJ.

3. The parotid branch receives its preganglionic fibers from the lesser petrosal nerve of the tympanic plexus originating from the glossopharyngeal nerve, before sending postganglionic general visceral efferent fibers to the parotid branch of the auriculotemporal nerve. This branch provides secretomotor innervation via parasympathetic fibers to the parotid gland and vasomotor via sympathetic innervation.

4. The superficial temporal branches run posterior to the superficial temporal artery. These branches provide somatosensory innervation to the skin over the temple. This branch also anastomoses with the facial nerve and zygomaticotemporal nerve, a branch of the maxillary division of the trigeminal nerve (cranial nerve V).

5. The branch to the external auditory meatus provides somatosensory innervation to the skin of the meatus as well as the tympanic membrane. (4)

ATN is an uncommon condition, a tertiary center the reported frequency was just 0.4% (2) Symptoms include excruciating, often one sided, pain attacks especially in the temporal region. Pain in the TMJ, parotid, and ear, with radiation to the temporal region, is also described. (5) Intensity of pain can range from moderate to severe and usually produces paroxysmal exacerbations of stabbing pain. Tenderness over the ATn has been

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reported and can be triggered with pressure on the preauricular region. This case report discusses a patient with auriculotemporal neuralgia with an insidious onset that was managed conservatively using a multimodal chiropractic intervention.

Current treatment for ATN is often how clinicians come to the diagnosis of this atypical condition. Diagnosis is made possible by injection of a blockade to the nerve with complete resolution of symptoms. (5) Alternatively, treatment and relief of symptoms are also achievable with botulinum toxin injection to the nerve. (6,7)

Patient Information

A 64-year-old male sought care for right-sided neck pain that radiated into and around his right ear and parietal region. Patient reported a 7 day history of headache like symptoms that began in the morning. He described the pain as a constant tenderness that intensified within 1 week. He indicated that it felt like he was brushing the right temporal region of his scalp with “an uncomfortable brush.” He also noted that his right ear was painful to touch. He had been waking up daily with a headache for a week. He had been taking ibuprofen to help modulate the pain. The pain was constant and also waking him up at night. The pain was usually worse in the mornings or when laying on his right side. He was unsure of what may have brought the pain on. Alleviating factors included sitting/resting quietly and warm weather. He felt that, in general, too much activity seemed to aggravate his condition. He rated his pain a 7/10 on the numeric pain rating scale (NPRS) at worst and a 1/10 NPRS at best. He had no upper extremity radicular pain. He had not been evaluated by anyone else for this condition and reported that at home while researching his symptoms, he came up with a self-diagnosis of occipital neuralgia and read that chiropractic care may help.

Clinical Findings

The patient stood 6’0” tall and weighed 215 lbs. His blood pressure was 171/90mmHg, and he was in no apparent distress. All cranial nerves were examined but no abnormal findings were present. He had no motor deficits to upper and lower extremity reflexes or manual muscle strength testing. His cervical range of motion was reduced in all directions symmetrically, and accompanied by pain. Shoulder Depression test caused neck pain bilaterally. Cervical extension test with right and left rotation caused mid-lower cervical joint pain. Cervical Flexion with right and left rotation, as well as Cervical Protrusion caused neck pain. Cervical Retraction test alleviated his neck pain. The patient had palpatory tenderness along the right cervical paraspinals and suboccipital muscles. He sustained upper cross syndrome posture and had upper cervical joint restrictions. Furthermore, when using

Table 1. Lab values

	Patient Value	Normal Value (male)
WBC	8.4	3.4-10.7
RBC	5.4	4.2-5.9 μ L
Hgb	16.1	14-17 g/dL
Hct	49.4	41-51%
MCV	92.3	10-80 fL
MCH	30.1	28-32 pg
MCHC	33	32-36 g/dL
RDW	13.2	11.5-16%
Pit Count	217	150-350,000 μ L
MPV	11.5	7.5-12 fL
Immature Gran %	0.4	.2-5%
Neut %	58.1	40-60%
Lymph %	24.4	20-40%
Mono %	9.3	2-8%
Eos %	7.3	0-6%
Baso %	0.5	<1%
Immature Gran #	0.0	0-0.5
Neut #	4.9	1.0-5.5
Lymph #	2.1	1.7-8.5
Mono #	0.8	0.3-0.9
Eos #	0.6 H	0-0.5
Baso #	0.0	0-0.3
ESR	7	0-15 mm/h
C-Reactive Protein	<0.5	0.0-0.8 mg/dL

instrument-assisted devices, myofascial restrictions were felt along the right suboccipital muscles, right lateral upper cervical paraspinal region extending down to C6/7 region, along the right scalene muscles, and upper trapezius region.

Following his initial exam, patient was immediately referred to a medical doctor to consider a differential diagnosis of temporal arteritis due to the description of his symptoms as well as his elevated blood pressure. His laboratory values are demonstrated in Table 1.

The only abnormal value seen was an increased number of eosinophils. Eosinophils are generally increased with an inflammatory response. When reading blood panels, it is often normal to see mild fluctuations above and below what is recognized as normal values. In this case no other values were significant enough to be considered abnormal.

Additionally, cervical spine x-rays were ordered. They demonstrated fusion of the C5/6/7 vertebral bodies with a reversal of the normal cervical lordosis. There was slight anterolisthesis of C3 on C4. Degenerative disc disease was present at multiple levels with narrowing of the C4-5 and C7-T1 disc spaces. Facet joint hypertrophy was also present throughout the cervical spine. Following a review of the imaging along with his laboratory testing a consult with the medical doctors, temporal arteritis was ruled out and chiropractic care was deemed safe. He decided to proceed forward with a trial of care to address the primary diagnosis of auriculotemporal neuralgia.

Therapeutic Intervention

His initial treatment consisted of high-velocity low-amplitude chiropractic manipulation to the upper cervical segmental dysfunction, instrument-assisted soft-tissue mobilization utilizing FAKTR instrument #3 to the areas of myofascial restrictions as well as manual pin and stretch to the right scalenes, suboccipitals, cervical paraspinals, upper trapezius and levator scapulae. The home instructions following this initial visit was to alternate between hot and cold packs, heat for 10 min immediately followed by ice for 10 min, 3x/day over the right upper cervical and occipital region.

Patient Follow-up and Outcomes

Two days later he presented for follow up. Subjective findings revealed improvement in the pain over his temporal region of his scalp; however, the pain in the ear felt the same. He noted soreness in his neck from the initial treatment and he had been compliant with the heat/ice instructions. Objective findings had remained the same. Treatment remained the same with the addition of pulsed ultrasound to the right lateral cervical paraspinal region. Patient's home exercise program (HEP) now included continuation of the heat/ice along with the addition of cervical retractions, 2 sets 10 reps holding each rep for 1 sec, to be performed every other hour during waking hours.

His third visit was 5 days later. At that time, he reported only mild ear pain that occurred in the morning, however it would go away within an hour of waking, with pain going down to a 0/10 on the numeric pain rating scale. He had no symptoms along his scalp. He reported compliancy with his HEP. His cervical ROM had improved in all directions, there was less tenderness to palpation along all involved muscular spasms/trigger points, and the fascial restrictions were less noticeable while using physical therapy instruments. The same exact treatment was provided at this visit as described in his second visit. Additions to his HEP included scapular retractions and foam rolling in the mid thoracic spine. We recommended

that 1 more treatment 1 week out would be necessary to assure ongoing resolution of symptoms.

A week later, he returned to the clinic and reported full resolution of symptoms, stating he had no ear or scalp pain. He indicated that his activities of daily living were no longer affected by this condition. Patient returned reporting no abnormal symptomatic or mechanical baselines and full ROM. He no longer had any noticeable palpatory tenderness or trigger points. At this time, he was released to care from this condition. He was however told that should his condition begin to return, to immediately return to the clinic.

DISCUSSION

There is limited evidence describing both the diagnostic evaluation of ATN as well as conservative treatment modalities for ATN. We feel this case is beneficial for the current evidence-based literature for these 2 reasons.

Regarding diagnostic guidelines for ATN, we found little evidence for specific diagnostic criteria, in part due to its rarity. Our diagnosis was based on symptomatology, examination, and treatment along the distribution and pathway of the ATn with the mentioned chiropractic modalities. The ATn is a terminal branch of the mandibular division of the Trigeminal Nerve.

The described symptomatology included paroxysms of unilateral pain with no triggers identified, tenderness in the preauricular region, and tenderness of the scalp around the temporal region along with inner auricular pain. From our patient's description, pain was located in the distribution of multiple branches of the ATn. Quality of the pain was described as sharp and shooting. Examination found trigger points located along the distribution of the nerve; thus, we conclude that these symptoms should be considered when considering the diagnosis of ATN. The patient improved not only on a functional basis but on the NRPS, using multiple conservative modalities. Manual as well as instrument-assisted soft-tissue work with spinal manipulation should be considered in the treatment of peripheral nerve entrapments.

Regarding conservative means of treatment, ATN can be secondary to other disorders. Those disorders may include surgical injuries, compression, traction or friction to the TMJ and parotid glands, (8) and must be ruled out prior to treatment. There are few described treatment methods for ATN, but they include nerve blockades such as cortisone, lidocaine and dexamethasone. (8,5,9) Oral options such as gabapentin, an anticonvulsant drug, is also widely used for treatment of neuropathic pain. (10) Although these more invasive treatments have worked in the past for this condition, our approach was to provide

treatment starting with the most conservative modality. The results of the treatment indicate that multimodal chiropractic conservative care could help treat this rare condition. To our knowledge, no current literature has described the conservative care approach that we discuss here.

Although ATN is seen as an infrequent syndrome (8), using a thorough examination of the patient's symptoms, objective findings, x-rays and lab work we were able to diagnose him. With the combination of manual manipulation, passive and active care modalities, treatment of ATN could be achieved without surgical or pharmaceutical means.

Integrative medicine has been shown to be beneficial in the management of many health conditions such as ATN. The quality of healthcare and extent of patient outcomes are often improved when there are multiple providers on the patient's healthcare team. (11, 12) Understanding this, the providers were sure to rule out other serious conditions and worked directly with a medical doctor for this case, specifically to use lab work and clinical expertise to rule out temporal arteritis.

Limitations

This is a single case study describing the treatment and management of a patient and therefore may not necessarily be applicable to other patients with the same condition. Furthermore, there were no cases in the literature that we could find suggesting that auriculotemporal neuralgia may be treated using similar treatment methods. Therefore, we cannot assume that patient improved solely from the care that was provided compared to the natural progression of auriculotemporal neuralgia. Additionally, our patient's symptoms were hard to differentiate between glossopharyngeal neuralgia, auricular neuralgia, and superficial cervical plexus neuralgia. It is entirely possible that the patient's exact diagnosis may have been or also included 1 of those diagnoses.

Future research, including additional case reports and more rigorous randomized controlled clinical trials, should consider the use of spinal manipulation, instrument-assisted soft tissue manipulation, and pin and stretch treatments in the conservative management of peripheral nerve entrapments as a whole, but specifically auricular neuralgia.

CONCLUSION

This report presents a case in which our experience, a patient responded favorably to chiropractic intervention for the likely diagnosis of auriculotemporal neuralgia. The results suggest that the treatment described in this case report could potentially aid in the recovery of ATN

without surgical or pharmaceutical means and warrants further study.

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