Resolution of Anosmia and Ageusia Following Knee Chest Upper Cervical Specific Chiropractic Care: A Case Report

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ABSTRACT

Objective: To describe the case of a woman with loss of smell (anosmia) and taste (ageusia) undergoing upper cervical chiropractic care.

Clinical Features: A 64 year old women with a history of head and neck trauma and the subsequent loss of smell and taste.

Intervention & Outcome: The patient received upper cervical spinal correction following a Knee Chest Upper Cervical Specific (KCUCS) protocol. There was improvement of symptoms within 48 hours of the first upper cervical correction with complete restoration of smell and taste within 3 months.

Conclusion: This case study suggests that there may be a role for the use of precise upper cervical chiropractic care in the management of patients with smell and taste disorders in patients with a history of head and neck trauma. Controlled studies are necessary to further our understanding of these findings.

Key Words: Anosmia, ageusia, upper cervical, chiropractic, subluxation, Knee Chest Upper Cervical Specific Technique

Introduction

One to two percent of Americans under 65 experience a loss of smell and taste, anosmia and ageusia respectively. Around 200,000 people will visit a physician for smell and taste related disorders in any given year. One of the most common causes of smell and taste disorders is a previous injury to the head and/or neck. 1-4

The olfactory system and gustatory system provide your sense of smell and taste. A loss of smell and taste can have a significant impact on quality of life. These two senses are part of the five special senses that feed directly into the brainstem via cranial nerves and then communicate with many different areas of the brain for interpretation with the end result being the experience of smell and taste. This system is complex with many different inter-connections with various neural structures.5,6

Because the loss of smell and taste are not life threatening they often receive very little attention from a medical stand point. Diagnosing loss of smell and taste is commonly done with cranial nerve testing which consists of testing various smells such as coffee or mint versus a control with no smell. Loss of taste is commonly tested using items that are sweet, salty, acidic, and bitter.7

There is no treatment for the loss of smell and taste unless it is due to some other complicating factors.8 This case report will
discuss the upper cervical chiropractic management of a patient with loss of smell and taste.

**Case Report**

**History**

A 64 year old woman presented to a chiropractic clinic with complaints of neck pain, right sided knee pain, anosmia, and ageusia. The patient reported having anosmia and ageusia for 9 months upon presentation.

**Examination**

The examination revealed a repeating pattern of thermal asymmetry in the cervical spine using a Tytron C-5000 paraspinal infrared thermal imaging device.\(^9\) Upon palpation, pain was noted in the suboccipital area. She described the pain as a dull ache, which became sharp during palpation. Also noted was myosspasm of the suboccipital and cervical musculature. There was decreased range of motion in the upper cervical spine. Spinal compensations were noted in the cervical, thoracic, lumbar, and pelvic regions.

Radiographs were taken to rule out gross pathology and any appearance of misalignment in the upper cervical spine. A Blair Series was utilized in this case consisting of a base posterior, anterior to posterior open mouth, oblique nasium, and neutral lateral cervical.\(^10\)

Anosmia was tested having the patient close their eyes and then using mint gum and a no smell control. Ageusia was not tested. Her right knee was edematous. Upon further examination, no damage was noted to the menisci, anterior or posterior cruciate ligaments, nor the lateral and medial collateral ligaments. It was noted that the patient had postural distortions in the neck, upper back, lower back and pelvis that resulted in a functional short right leg.\(^11,12\)

**Intervention**

The patient was under upper cervical chiropractic care for three months following KCUCS protocol. During the course of care, she was evaluated and adjusted accordingly. KCUCS protocol required a total of three upper cervical adjustments over the three months of care. The necessity for an upper cervical spinal correction was determined using a combination of Tyron C-5000 to determine the recurrence of thermal asymmetry in the cervical spine, postural analysis in the form of leg length inequality, and spinal palpation.\(^13\)

After each adjustment, there was no report of adverse symptoms other than very mild soreness in the area of correction and throughout the spine. The correction was performed using a knee posture table with the patient in a knee chest position.\(^14,16\)

A three-directional vectored torque correction was utilized to address the subluxation at the C1 vertebrae.

**Outcome**

Upon administering the upper cervical correction the patient presented in 48 hours to report the return of her sense of smell and taste. The patient further noted that these changes were coming and going throughout the course of care. By the third month, she noted the anosmia and ageusia had completely resolved.

**Discussion**

This case is of note because the patient experienced a restoration of smell and taste with a change in symptoms within 48 hours of the initial correction and complete resolution within three months.

The upper cervical misalignment was documented with a combination of thermal imaging, x-ray analysis, and palpation. The proposed mechanism is an avascularization of the brainstem, penumbra effect, due to a torque misalignment of C1 resulting in a compression of the brainstem/upper spinal cord via the upper cervical dentate ligaments in effect creating a tourniquet like effect.\(^17,20\) This may result in a restriction of blood flow in and out of the brainstem/upper spinal cord to the extent that it may interfere with the function of these special senses.\(^21\) The correction of this torque misalignment of C1 may have resulted in restoration of normal blood flow.\(^22\) With normal blood flow the tissues could resume normal function thus coming out of a penumbra and thus smell and taste return.

The effect on cranial nerves I and VII must be discussed, since they are known to feed into the trigeminal nucleus. In certain individuals the trigeminal nucleus can extend down through the spinal cord as far down as the fourth cervical vertebrae.\(^23,24\) This variability of cranial nerve nuclei placement in the brainstem warrants further research as does the variability of the circle of Willis. Some sources report up to 83 variations of the circle of Willis and associated vessels.\(^25\) One study found that 85% of post-traumatic patients with anosmia had reduced blood perfusion as seen on MRI to the olfactory bulbs.\(^26\) Further study needs to be conducted in common anatomical variations of arterial and venous blood flow patterns throughout the brain and brainstem and its relationship to the upper cervical spine.

**Limitations**

Because this is a case report it cannot be assumed that the patient’s response to upper cervical care can be generalized to all patients with anosmia and ageusia. It is also a possibility that her condition may have improved during the course of care due to the natural course of the healing process. It is uncertain if the chiropractic management of this case was responsible for improvement however, when examining the timeline of treatment it appears to be associated. More research in this area is warranted to determine a possible relationship.

**Conclusion**

This case described the successful resolution of anosmia and ageusia following the introduction of upper cervical chiropractic care. The possible relationship between a previous injury to the head and neck that resulted in a misalignment in the upper cervical spine and subsequent
development of anosmia and ageusia is not known. Further research is needed in this area to determine if there is a link.

References