

The Snoring Factors

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Abstract

The objective is to share information about factors that relate to snoring and potential corrections that can be applied by a clinician who understands applied kinesiology principles and techniques. It is well known that snoring causes social, emotional, and health issues in the population and increases risk factors for future disease processes if not addressed. The purpose of this paper is to present solutions from an applied kinesiology viewpoint that may stop or decrease the incidence of some types of snoring when applied.

Key Indexing Terms

Snoring, Chiropractic, Applied Kinesiology, Hypoglossal Nerve, Hyoglossus, Diaphragm, Pelvic Diaphragm, Tentorium Cerebelli, Submandibular Diaphragm, Insulin, Growth Hormone, Herbs, Manual Muscle Test, MMT, Nutrition, Physiological Phenomena, Functional Medicine, Obstructive Sleep Apnea, Post Pyramidal, Proprioceptors, Muscle Inhibition

Introduction

Snoring has enormous implications for the health of both men and women. It is one of the main factors behind sleep deprivation. Snoring is estimated to cost \$29.4 Billion annually and is present in 12.4% of the US population. Its presence increases the risk of certain illness and diseases. Current solutions for snoring include Positive Air Pressure (PAP), pseudoephedra, and weight loss (American Association of Sleep Medicine).

In functional health we have found a nexus involving several areas, including the 3 well known diaphragms; the pelvic, abdominal, cranial, and now a newly coined submandibular diaphragm.

Each of these diaphragms are composed of muscles and/or connective tissue structures which act as a foundation. All are muscular in nature with the exception of the cranial tentorium cerebelli. The submandibular diaphragm acts as an anatomical foundation for many structures above it - most importantly the tongue. We know that muscles are now considered part of the endocrine system and have a profound hormonal impact on the entire organism and at this time it is poorly understood and being elucidated (Roatta S). Recently we have also discovered that insulin has an impact on muscle function (Shin C1, Kim J, Kim J, Lee S, Shim J, In K, Kang K, Yoo S, Cho N, Kimm K, Joo S). Insulin's impact on muscle function has been observed in past years in various spheres anecdotally. Such things as poor muscle performance after sugar ingestion, and the famed insulin dump post extreme exercise or excess sugar consumption are simple examples.

Jargon relating to Snoring.

Submandibular Diaphragm is a neologism – it describes and is inclusive of muscles and connective tissue that lie inferior to the tongue and form a foundation. Pseudoephedra a drug used for symptomatic relief of snoring, The pharyngeal arches are an embryologic

term that refers to the developmental arches present in the developing embryo. These develop into muscles of the mastication, and many structures in the head and neck and relate to a developmental and neurologic nexus to all structures which arise from it. Sleep apnea, OSA- is obstructive sleep apnea. Proprioceptors are nerve endings that relay sensory input. “Meridian therapy” is the stimulation of acupuncture points that alter function and energy in energetic pathways called “meridians.” “Nutritional support” would be those supplements given to assist structural corrections. “Diet modification” means changes made to patients’ diets. “Grounding” refers to any method of getting a patient in contact with natural earth. It is believed to de-stress the body and assist by decreasing stress level and hence improving muscle testing outcome,



Illustration 1: Gray, Henry. “Anatomy of the Human Body 1918” - Mylohyoid muscle -Public Domain

Mylohyoid is a muscle that originates or near the molars of the mandible and inserts on the hyoid. “TS Line” Stands for Temporo-Sphenoidal line, a mostly diagnostic palpatory line located bilaterally on the skull near the temporal and sphenoidal areas. The clinician palpates this line for nodules that correspond with muscle and possible organ imbalances.

Snoring Factors

There are many factors that may be related to the causation of snoring. This paper focuses on a few of those that when addressed have proven to be workable solutions to improving this condition in a

clinical setting. Other factors will be explored in future papers.

Use of the tongue is constant. It is arguably one of the most used body parts next in line to the heart, diaphragm and lungs.

The tongue is dependent on its foundations – the submandibular diaphragm, and the hyoid. It also is central in a tug of war over the “neutral position” between its 4 extrinsic muscles and to lesser degree its intrinsic muscles. When a person sleeps, the autonomic tone of the muscles determines the tongue’s position and is based on several factors including normal proprioceptive feedback. These factors will determine the resting position or “neutrality.” The position of neutrality ensures a patent airway and no snoring. In the next paragraphs we will review a few of the more common reasons why this autonomic tone and hence position of neutrality are compromised.

Factor 1 -Insulin

We know that insulin plays an important role in many biological processes. It is the communicating factor that allows the body to access the very thing that keeps it going – glucose. Without proper utilization of glucose either stored or provided by the diet the muscles are left to metabolize and store glucose and they have a limited capacity to do so. As age increases so to does the incidence of snoring and insulin resistance. There is a purported correlation between snoring, and the reported squealae - diabetes. The correlation does not acknowledge that insulin causes snoring, but quite the opposite – that

snoring causes diabetes. This insulin overabundance may impact smaller groups of muscles. There is evidence in mammals that an increase in sympathetic tone increases insulin and may decrease blood flow in skeletal muscle thereby making them weaker and more susceptible to injury. This of course opens the door for another factor which is adrenal dysfunction. The bottom line here is that at this time elevated insulin levels which are epidemic may cause muscle dysfunction which can compromise structure (Doehner W^{1,2}, Turhan G³, Leyva F⁴, Rauchhaus M³, Sandek A³, Jankowska EA⁵, von Haehling S⁶, Anker SD⁶).

Factor 2- Diaphragm dysfunction

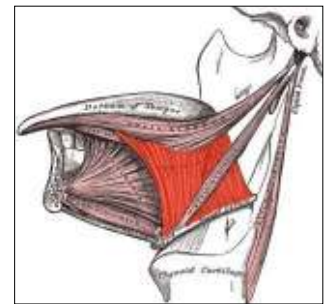
The submandibular diaphragm (a neoglism) is made of the mylohyoid and serves as a foundation of many structures above. It also serves to balance the hyoid and all muscles that contact it in the stomatognathic system. Simple dysfunction of this diaphragm can be the cause many problems including snoring, TMJ dysfunction, spinal subluxation, cranial faults, and remote imbalances.

Factor 3 - myodysfunction

Next we will focus on the extrinsic muscles that directly impact the tongue. These muscles are constantly engaged to one degree or another in a perpetual tug of war with regard to positioning of the tongue. If there is a balance of function in these muscles as a cohesive unit it is likely the airway will be better maintained. They are listed as follows;

1. As muscles that are depressors and protrusive and,
2. as muscles that reduce airway dimension, elevate, and or retract.

1. Extrinsic muscles that depress and protrude include;
 - a. Genioglossus – this is the only muscle that protrudes the tongue and moves it forward. Its origin is on the the genial tuberosity of the mandible.
 - b. Hyoglossus – the hyoglossus arises on the hyoid bone and performs two motions- retraction of the protruded tongue and depression.
 - c. Chondroglossus – is considered a part of the hyoglossus. It arises from the lesser cornu of the hyoid and is medial to the hyoglossus. It then blends with the intrinsic muscles of the tongue.



Text 1: Illustration 1: Gray, Henry. "Anatomy of the Human Body 1918 - Genioglossus and extrinsic muscles of othe tongue -Public Domain

2. Muscles that reduce airway dimension, elevate or retract the tongue.
 - a. Styloglossus - originates on the styloid process of the temporal bone. It draws the sides of the tongue up to create a trough for swallowing.
 - b. Palatoglossus – Originates from the palatine aponeurosis. It depresses the soft palate, moves the palatoglossal fold in the direction of the midline, and elevates the back of the tongue during swallowing.

The intrinsic muscles will be discussed in future papers and these include;
Superior longitudinal muscle: It curls the tongue upward and also shortens

Inferior longitudinal muscle: It curls the tongue downward and shortens
Transverse muscle: It narrows and protrudes the tongue.
Vertical muscle: It flattens and broadens the tongue.

TMJ Dysfunction – first pharyngeal arch structures.

Injury or aberrant function of the tongue causes inhibition of several muscles. We see this pattern when a person bites their tongue. It manifests in two ways;

- 1.) they stop chewing – due to an inhibition of several muscles of mastication and,
- 2.) they tend to lose their appetite or no longer want to eat which is a somatovisceral and autonomic phenomena.

Other more popular explanations for causes of snoring include obstruction in the nasal passageways, sleep deprivation, consumption of relaxants such as alcohol or other drugs that relax throat muscles, and sleeping on one's back, which may result in the tongue dropping to the back of the mouth.

Discussion

There are no references or techniques in the applied kinesiology armamentarium that directly address the treatment of the underlying causes of the symptom of snoring. Yet many tools are in the toolbox. Those adept at Applied Kinesiology may employ myriad techniques to the resolution of this imbalance.

Insulin excess can be detected using the waist to hip ratio, addressed and supported with several herbs, vitamins and minerals as well as intense diet and lifestyle management. These may also be interpreted using a simple finger stick insulin level tests. In a fair percentage of patients a latissimus dorsi inhibition may be present but may only show when perturbed via high carbohydrate or sugar challenges. The muscle test alone cannot be used as the weakness may not be revealed unless the patient is grounded or a unipolar magnet is employed as taught by Dr. Michael Lebowitz.

This must be managed and the one action that must be taken is that resistance to insulin has to be addressed. We know that insulin is likely to create a subclinical inhibition of the depressor and protrusion muscles. This in turn causes a decrease in the airway diameter and potentially resultant sleep apnea. The lack of inhibition of the muscles that close the airway by their antagonists, along with obesity, will cause the airway to be reduced and hence obstruction, snoring, apnea or worse – both. This of course will be magnified in a muscle that is already poorly functioning. The extrinsic muscles of the tongue although rugged are subject to some of the same proprioceptive injuries as other skeletal muscles.

The next factor, submandibular diaphragmatic dysfunction is addressed by corrective techniques and includes the use of “blocking and tackling” techniques such as origin and insertion, muscle spindle cell and GTO manipulation. This is a very important area to properly address and stabilize because it is the foundation. The methods of detection in a muscle that is not directly testable are palpation and therapy localization. Various degrees of tenderness will be located in the muscle belly and at the origins and insertions.

Each of the muscles listed above must have any detectable proprioceptive dysfunction addressed – this alone may improve snoring.

Frank pathology is rare in snoring but it is very important and it is implicated in many dysfunctions and disorders most notably diabetes and worsening of sleep and then disorders associated with sleep deprivation. This list is long.

Conclusion

Snoring can be addressed effectively from an applied kinesiology perspective. Muscles are central to maintaining a proper airway. Clinicians can address the muscles, skeletal, nutrition and neurological aspects of snoring. PAP machines and weight loss programs are purported to be effective in making improvements but they do not address the cause. The devices should be used concurrently with applied kinesiology methods to help people achieve new levels of health.

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