RESEARCH REVIEW– MURPHY

continued from page 10

C. Tinnitus secondary to hyperactivity of the tensor tympani.

8. The middle ear and inner ear receive input from the trigeminal and sympathetic nerves through the tympanic plexus.
9. Increased sympathetic tone is a factor in Meniere's disease.
10. The effect of the sympathetic nervous system is believed to be its influence on stria vascularis circulation, or from "sympathetic hyperactivity" that leads to dysfunction through changes of gland secretions in the eustachian tube, and thus could influence middle ear pressure relationships.
11. The mucosa of the eustachian tube requires lubrication provided by glands that are "under the influence of the sympathetic and parasympathetic innervation."
12. "Unque stionably, the upper cervical spine, the temporomandibular joints, the eustachian tube, and the autonomic nervous system can contribute to the global symptom complex of Meniere's disease."
13. Sympathetic irritation can result in enhanced neurogenic inflammation and associated edema in the eustachian tube, rendering the middle ear ventilation difficult. Support for this model includes the frequent Meniere's disease complaint of "having a wet ear."
14. An activated sympathetic system has an adverse effect of eustachian tube function. **[Important]**
15. The clinical observation of an enlarged pupil on the side of the affected ear in Meniere's disease patients is due to an activated cervical sympathetic system.
16. "Though an enlarged pupil is consistent with an activated sympathetic system, indications suggest that it can also be linked to an upper cervical spine disorder." **[Important]**
17. "Immediate enlargement of the pupil while turning the shoulder [head] is abnormal and points to an irritation in the upper cervical facet joints. This clinical observation links the cervical sympathetic system with the upper cervical spine." The cervical facet joints are innervated by sensory and sympathetic neurons.
18. "Functional disorders of the temporomandibular joints are likely to cause a functional disorder of the upper cervical spine and visa versa." **[Important]**
19. The eustachian tube has "quite a remarkable representation of sensory neurons" that can be activated through the mandibular branch of the trigeminal nerve that innervates the temporomandibular joint and upper cervical facet joints.
20. The sympathetic nervous system can be activated by a neck or temporomandibular disorder, causing eustachian tube neurogenic inflammation "with the consequence of reduced middle-ear ventilation."

The Potential Role of Joint Injury and Eustachian Tube Dysfunction in the Genesis of Secondary Meniere's Disease

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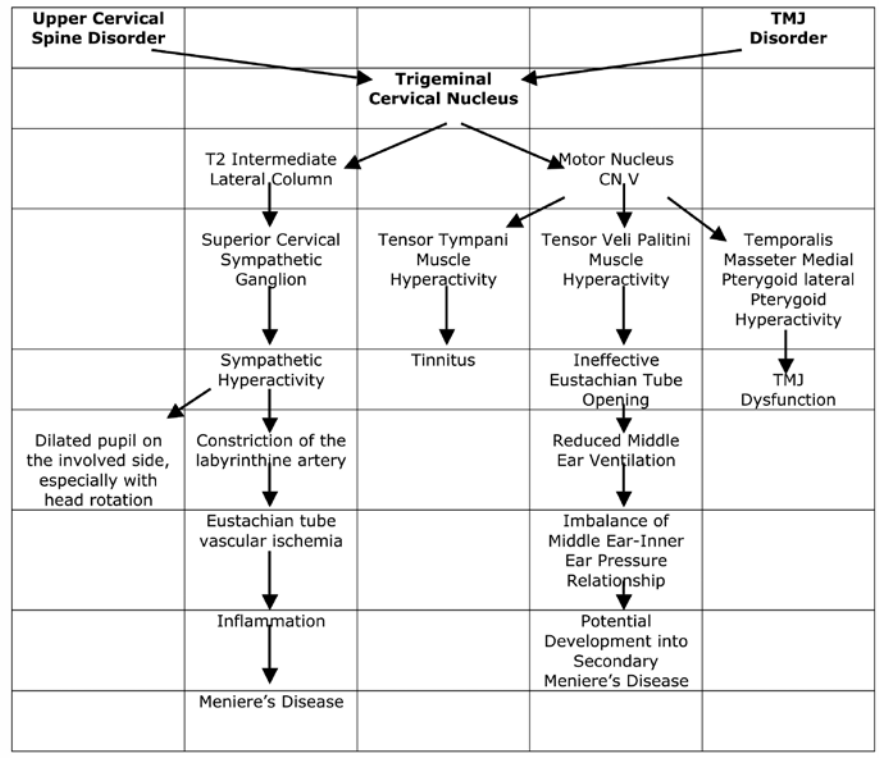
"Chiropractic manipulation of disorders of the cervical spine has been successfully used to treat patients with vestibular symptoms."



"Anatomical studies demonstrate that an independent pathway exists in the mediolateral cell column of the spinal cord, stretching from C2 to T2."

"Immediate enlargement of the pupil while turning the shoulder is abnormal and points to an irritation in the upper cervical joints."

21. "An independent pathway exists in the mediolateral cell column [IML] of the spinal cord, stretching from C2 to T2." **[Most Important]**
22. "The anterior cervical sympathetic system sends postganglionic neurons from the upper cervical ganglion, innervating the eye and organs of the ear," including the eustachian tube.
23. "An upper cervical facet joint disorder (or temporomandibular joint disorder) could simultaneously release inflammatory mediators in the eustachian tube via an axon reflex and activate the anterior cervical sympathetic system, the latter enhancing neurogenic inflammation in the eustachian tube resulting in reduced middle-ear ventilation. This imbalance of a middle ear — inner ear pressure relationship has the potential to develop into secondary Meniere's disease." **[Key Point]**

Comments from Dan Murphy:

This article supports the chiropractic subluxation, and it does so using the same mechanical-neurological-sympathetic-vascular-visceral models that we have often reviewed:

1. A spinal joint disorder alters the afferent input into the central nervous system.
2. This aberrant afferent input reflexes into the sympathetic nervous system, resulting in increased sustained sympathetic tone.
3. Increased sustained sympathetic tone compromises blood flow (a deleterious event) and alters visceral function (altered eustachian tube glandular secretions in this study).

I believe this article also adequately explains the mechanism by which chiropractic adjustments help otitis media.

Hundreds of Article Reviews that are clinically important to the chiropractor are accessible through my web page, ***danmurphydc.com.***

DAN MURPY, D.C., D.A.B.C.O. is the vice president of the International Chiropractors Association (ICA). He graduated magna cum laude from Western States Chiropractic College in 1978 and received his Diplomate in Orthopedics in 1999. Internationally recognized for his excellent lectures, Dr. Murphy has been on the faculty of Life Chiropractic West for more than 25 years. He has received many recognitions and awards and named "Postgraduate Instructor of the Year" by different national organizations many times, including the ICA. Very much in demand as a speaker, Dr. Murphy has taught more than 2,000 seminars all over the world.