

HEARING SOLUTIONS  
JAN 2013 MONTHLY MEETING  
TINNITUS  
PRESENTED BY DR KUPPERMAN

Before recently moving to Sun City and becoming a valuable asset to the Hearing Solutions SIG Dr. Kupperman, known as Jerry to most of us spent a lifetime in the hearing audiology profession including four years with the VA, teaching graduate courses at Wisconsin University on How to Run a Business and How to fit Hearing Aids, as owner and operator of a large audiology practice and holding a chair on the Wisconsin state licensing board for eight years.

## TINNITUS

- Tinnitus is often referred to as “Ringing in Ears”
- Correct pronunciation is “tin-eye-tis”
- No one knows a lot about Tinnitus.
- The data is limited.
- Before someone asks, there is no data to support the proven success of a pill advertised on TV.

## Types of Tinnitus

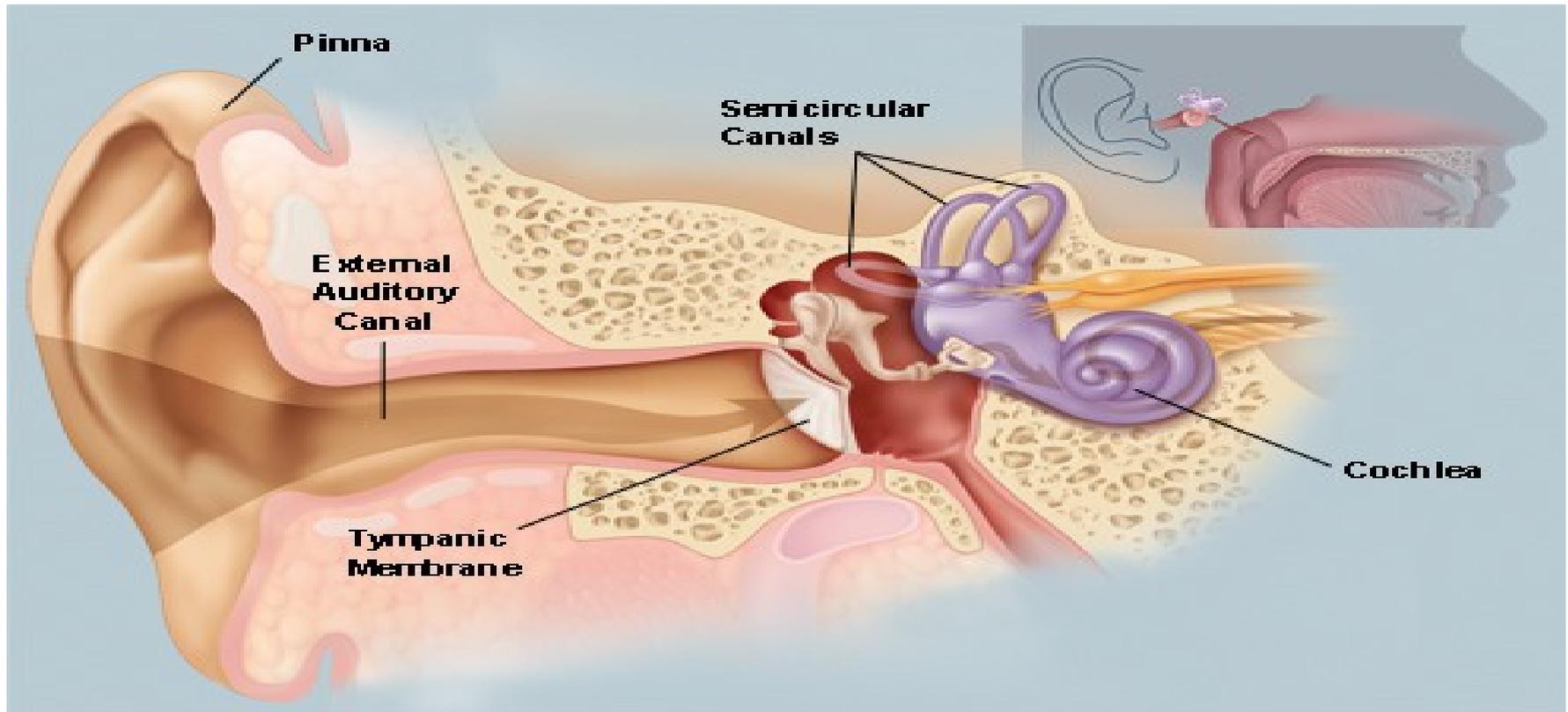
- **Objective Tinnitus** (Noise in head that someone else can hear). Very rare.
- **Subjective** (Patient describes peripheral sound being heard to Audiologist).
- **Intermittent** (sounds like crickets)
  - **Constant** (never ending)
  - **Metabolic** (a host of medical body disorders) Very common.
  - **Sudden Onset** (one ear or both ears with dizziness and a loud static noise that lasts 1 to 1½ minutes). THE EAR IS DYING-GO IMMEDIATELY TO THE EMERGENCY ROOM-DON'T WAIT-DON'T GO TO PCP FIRST-CAN HAPPEN TO ANYONE ANYTIME. IT IS POSSIBLE TO STOP OR REVERSE THE DAMAGE BY QUICK ACTION. THE ONE BLOOD VESSEL THAT PROVIDES BLOOD TO THE INNER EAR HAS BEEN OBSTRUCTED FOR SOME REASON SUCH AS A BLOOD CLOT OR A VIRUS THAT INFLAMED THE NERVE.ATTENDING PHYSICIAN SHOULD TREAT WITH A STEROID PACK OF PILLS TO TURN OFF BODY IMMUNE SYSTEM AND TREAT WITH ANTIBIOTICS TO YOUR EAR.

INTERMITTENT VERTIGO IS NOT RELATED TO SUDDEN ONSET TINNITUS.

- **Monaural** (one ear-most people have it in both ears-often from gun blast-primary damage to opposite ear). Could be Acoustic Neuroma (non-cancerous tumor of inner ear) that could result in 10-15 years. Brain surgery is required to remove the tumor. PAY ATTENTION-NEEDS TO BE ADDRESSED.

# CROSS SECTION OF HEAD

(A PHOTOMICROGRAPH THAT IS NECESSARILY OUT OF PROPORTION)



The above slide shows the ear canal (outer-middle-inner).

- The first part of the hearing mechanism is normal healthy hair like hearing cells (20,000 small-medium-large cells in each ear) that is nature's most exquisite accomplishment.
- The cells become broken off in ears when damaged by loud noise medication or old age (diminished blood flow in the one vessel as it slowly gets plugged up).
- There are three rows of outer cells (first to be damaged) that function as detectors and amplifiers via vibrations.
- There is one row of inner cells that transforms the vibrations into electrical signals to the brain. Damage to these cells affect understanding which can't be fixed. Any loss over 60dB will never be normal. Damaged cells don't move as much so you don't hear as well (This is called hearing loss).
- The sound signals are still being transmitted to the brain-you just don't hear them even though the sounds are real and in the brain.

The kind of Tinnitus we are talking about is in the brain. What is unknown is why Tinnitus sounds come and go.

## **Tinnitus: It Has a Certain Ring to It**

**Robert E. Sandlin, Ph. D and Robert J. Olsson, M.A.**

This study points out that fifty million Americans experience some form of tinnitus. That's about one in seven Americans and if children are removed it is closer to one in four and one

The study further points out that the way tinnitus is treated is through Habitual training of the brain. Example: a fan is blowing, then it stops-some hear the fan-some don't but it starts and stops never the less. The brain is taught to not pay attention.

Therapy may work for one individual and not for another.

Three realities remain for Tinnitus:

- There is no consensus as to cause
- No permanent cure is know
- All forms of treatment are for systems-not cause

## THERAPIES

- No single therapeutic approach to the treatment of tinnitus is sufficiently compelling to warrant its exclusive use above all others.
- There are no test batteries for tinnitus that provide reliable, clinical predictors of cause or treatment.

# Audiologists

- Audiologist are trained in the anatomical and physiological models of tinnitus.
- Audiologists do not have a great interest in the management of tinnitus because workable treatment models are not available.
- If a non medical treatment is discovered this will change.

## Realities of Tinnitus Treatment

- There is no consensus as to what causes the problem.
- There is no known cure.
- All present forms of therapeutic intervention treat the symptoms-not the cause of the disorder.
  - Let's look at some of the treatment options

## MEDICAL MANAGEMENT

After determining that patient has ringing and how the patient reacts the Physician uses drugs in an effort to:

control the subjective loudness of tinnitus

control the intensity of the patient's response

control anxiety and depression

Three types of medications are tried but there is no evidence that any drug is beneficial in all instances. In other cases success is termed "random chance".

In some extreme cases of 24/7 severity individuals become so disturbed that they choose to end their life.

## SURGICAL MANAGEMENT

- No consistent results.
- Could actually make the problem worse.
- Minimal or partial help may be the best one could expect.

# NON-MEDICAL/SURGICAL MANAGEMENT

Common types:

- Masking (introducing a stronger sound as a distraction so that the Tinnitus sound is not heard).
- Habituation Training (teaching the brain to get used to the Tinnitus sound so it is blocked out of mind).
- Cognitive Therapy (training the brain to recognize the Tinnitus sound as a non-issue that can be ignored).
- Actual process of wearing hearing aids has two benefits: it makes the patient less aware of the tinnitus and it improves communication by reducing the annoying sensation that sounds and voices are masked by the tinnitus. (Dr. Kupperman observed that just wearing hearing aids blocked the perception of Tinnitus in 65% of his patients with Tinnitus). He also quickly added it did not have that effect on him personally.

Less Common types:

- Biofeedback
- Physiological Counseling
- Nutritional Controls
- Acupuncture
- B12
- Ginkgo Biloba  
(there is no good evidence that these are effective with tinnitus).

Although 50 million Americans have Tinnitus, only 12 million are bothered by it. Those that are not bothered by it recognize the sound as a non-issue and choose to ignore it.

## **Hearing Aid Masking**

- Hearing aid masking involves using an external signal (i.e., masking noise) sufficient to mask or 'cover' the ongoing tinnitus.
- Rationale: an external acoustic stimulus is easier for the patient to ignore than the constant, ongoing tinnitus.
- About 35 to 40% of patients found maskers effective.

## HEARING AID COMBINATION DEVICES

Several hearing aid manufacturers provide aids with sound generators referred to as a “Master” that produce a soft, soothing noise similar to the sound from a showerhead, fountain or gently falling rain to provide tinnitus relief.

They need to be fit by someone who knows what they are doing.

The Audiologist asks patients predetermined questions about the noise being heard to pinpoint the frequency and volume before programming the aid to match the noise with a Master sound and train the brain to ignore the master sound.

The success rate is about 70% while just wearing hearing aids provide a success rate of 60%.

Hearing aids with a Master are about 1/3 more expensive.

## ULTIMATE GOAL

- Mask or cover up the tinnitus
- Reduce the loudness of the tinnitus
- Take your focus off the tinnitus

MOST IMPORTANT THING TO REMEMBER IN GENERAL IS THAT TINNITUS IS NO BIG DEAL-IT WON'T KILL YOU-IGNORE IT!

Although 50 million Americans have Tinnitus, only 12 million are bothered by it. Those that are not bothered by it recognize the sound as a non-issue and choose to ignore it.

## Questions and Answers:

Q: Can medications cause tinnitus?

A: Yes. Cancer drugs for example. Common aspirin in very large doses (12 full size tablets/day) can be another cause.

Q: What happens to tinnitus when you go off medications?

A: Usually partial reversal but not always.

Q: Is tinnitus associated with hearing loss?

A: In our age group the chances are there is an association.

Q: What causes hair cells to break off?

A: Very loud sounds, like a gun going off.

Q: Is it possible to have tinnitus with 100% hearing loss.

A: Yes. The tinnitus emanates from the brain's central auditory system rather than being a peripheral issue.

Q: What takes place in the ear when an explosion occurs?

A: The hair cells get smashed.

Q: What is the relationship between tinnitus and bilateral sudden hearing loss attributable to audio immune disease?

A: I don't know. It is very rare happening in only about 1 of 7 million.