“Hyperacusis Activities Treatment”
Richard Tyler
University of Iowa

Terminology
- Loudness Hyperacusis
  - Some moderately loud sounds are very loud
- Annoyance Hyperacusis
  - Some sounds are annoying (not always loud)
- Fear Hyperacusis
  - Patients are afraid of some sounds (not always loud)
- Pain Hyperacusis
  - Sounds evoke pain sensation

Other Terms
- Hypersensitivity
- Select-sound sensitivity
  - Sensitivity refers to threshold
- Misophonia
  - Dislike of sounds
Less confusion if

- Choose simple terms with clear distinct definitions
- Avoid temptation for everyone to make up new terms

Terminology

- Loudness Hyperacusis
  - Some moderately loud sounds are very loud
- Annoyance Hyperacusis
  - Some sounds are annoying (not always loud)
- Fear Hyperacusis
  - Patients are afraid of some sounds (not always loud)
- Pain Hyperacusis
  - Sounds evoke pain sensation

Hyperacusis

Adult

Child

Williams Syndrome

Autism?
Many different causes

- Most unknown
- Few diseases and syndromes associated with hyperacusis.
- For example;
  - migraine, depression, post-traumatic stress disorder, head injury, Lyme disease, William’s syndrome, fibromyalgia, Addison’s disease, autism, myasthenia gravis and middle cerebral aneurysm (Katzenel and Segal, 2001)
Hyperacusis and Hearing Loss

- About 40% do not ‘think’ they have a hearing loss
- Likely most (90%?) do
- Hyperacusis is a bigger problem than hearing loss and usually tinnitus
- Hyperacusis often occurs with mild hearing loss
- Similar to tinnitus, many hyperacusis patients seek audiological help for hyperacusis, and many end up with hearing aids (Kochkin and Tyler, 2008)

Possible causes of Hyperacusis

Patients perspective…
Peripheral mechanism in some?

Hyperacusis and Other Sensory Systems
Hyperacusis and Tinnitus

- First linked by
  - Tyler and Conrad-Armes (1983)
- Must have common mechanisms in some
- But also
  - hyperacusis without tinnitus
  - Tinnitus without hyperacusis

Loudness Hyperacusis – magnitude estimation
Related problems

• Unable to enjoy music
• Annoyance, Fear and/or pain in places where loud sounds are likely to occur
• Avoidance of being in these places
• Withdraw from socialization and communication
• If desire tinnitus maskers
  • Noise might make hyperacusis worse
• If require hearing aids
  — Amplification can make hyperacusis worse

Open-ended questionnaire

(Tyler and Baker, 1983)

• Please list the difficulties you have as a result of your Hyperacusis

• List them in order of importance

• Allows patient to describe what is important to them
Hyperacusis Questionnaire

Which of the following sounds or events are often too loud for you?

<p>| | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>b. Crowds/large gatherings</td>
<td>b. Restaurants</td>
</tr>
<tr>
<td>c. Dishes being stacked</td>
<td>c. Sporting events</td>
</tr>
<tr>
<td>d. Dog barking</td>
<td>d. Telephone ringing</td>
</tr>
<tr>
<td>e. High pitch voices/screaming</td>
<td>e. TV/radio</td>
</tr>
<tr>
<td>f. Lawnmower</td>
<td>f. Vacuum cleaner</td>
</tr>
<tr>
<td>g. Music (loud rock concerts)</td>
<td>g. Whistle/horn/siren</td>
</tr>
<tr>
<td>h. Music (religious service)</td>
<td>h. Other _______________</td>
</tr>
<tr>
<td>i. Music (symphony, quartet, etc.)</td>
<td></td>
</tr>
</tbody>
</table>

Pain Hyperacusis
Dull Ache / Wound

- "The sound of putting on clothing feels like lightly blowing on an open wound."
- "My ear feels raw and vulnerable to sound as if it were an open wound"
- "Setting a coffee mug on a wooden table feels like a thumb pressing hard on broken bone, deep in the ear."
- "Walking on gravel feels as if I am pressing the gravel into my wounded ears."

Copyright R Tyler

Sharp pain descriptions

- "Clinking dishes feel like an icepick stabbing deep into my ears."
- "High frequency noises feel like needles stabbing my eardrum"

Copyright R Tyler

pain hyperacusis often associated with tinnitus

- 55% prevalence of pain hyperacusis in tinnitus patients
- 63% prevalence of pain hyperacusis in tinnitus patients
  - Schecklmann, et al., 2015 Validation of Screening Questions for Hyperacusis in Chronic Tinnitus BioMed Research International

Copyright R Tyler
Hyperacusis; different symptoms

- Only specific sounds
- All loud sounds
- unexpected sounds
- frequency and ear dependent
- specific circumstances

Treatments

Sound Therapy
   - Reduce central gain
   - Desensitization
3. Tyler et al. (2000, 2009)
   - Tinnitus Hyperacusis Treatment
4. Hearing Aid Adjustments
5. Use of hearing protection

Hazell & Sheldrake (1989, 1992)
- based on their theory of need to reduce central gain (Hazell, 1987)
- Bilateral noise generators devices
- Continuous exposure low-level noise
- See also Formby and Gold (2002)

• Desensitization
• Pink noise, 2 hrs/day earphones
• Increase level gradually
  • to Loudness Discomfort Level
• Requires 3 months to 2 years

Tyler et al., (2000; 2009)

Hyperacusis Activities Treatment
• picture based
• Desensitization
• Record specific sounds that are too loud
• play back at low levels in peaceful environment
• gradually increase levels and duration
• Gradually work into realistic situations

Formby and Gold, 2002
Ear plugs?
• Many patients use earplugs throughout the day in everyday listening situations (not necessarily with high-intensity sounds)
• The use of earplugs becomes part of their everyday life
• It is not improving their condition
• Limiting exposure to sound could make hyperacusis worse
• Therefore, recommend not to use unless intense noise present
• Must be gradual reduction in use for some

Hearing Aids
• Hearing aids (with closed canal earmolds) can reduce sound by (at most) ~ 30 dB
• Reduce maximum output of hearing aids so that high level sounds are peak-clipped or compressed
• Adjust input/output (gain) so that low-level sounds are amplified, but not high-level sounds
• Followed by gradual transition (over months) to 'normal'

Where do you want to start?

Hyperacusis

Noise Level

10

Load for Normal

8

Load for Hyperacusis

4

Your reaction to sound?

- Loud
- Annoying
- Fearful of sounds
- Painful
- Loud sounds make tinnitus worse
- Loud sounds cause pain
• Can you provide examples of sounds that bother you or are too loud?
• Are there times during the day when you are particularly bothered?
• Are there times during the day when you are not bothered?

• What have you tried for your hyperacusis?
Using gradual exposure to overcome strong reaction

Tinnitus/Hyperacusis Treatment

• To download pictures go to:
  http://www.medicine.uiowa.edu/oto/research/tinnitus/
• Search “Iowa tinnitus clinic”
References


Copyright R Tyler

---

Establishing a Tinnitus Clinic

Richard S. Tyler

The University of Iowa

---

Advantages of Tinnitus Clinic

– Help patients
– More complete overall service
– Increase referrals
– Many will require and benefit from hearing aids
Disadvantages of Tinnitus Clinic

- Need a plan for treatment
- Time commitment
  - Some patients require extensive counseling
- Services often not covered by insurance
- Some patients require great emotional support

Background Information on Tinnitus

- Workshops
  - e.g., Management of the Tinnitus Patient (U of Iowa)
- Books
  - Henry and Wilson
    - Psychological Management of Tinnitus,
  - Tyler (Ed).
    - Tinnitus Treatments: Clinical Protocols (2007)
    - Consumer Handbook of Tinnitus (2016)
- Journal articles

Evaluation

- What are the individual patient's needs?
  - Hearing aids
  - Counseling
    - What level of help needed
    - What problems exist
  - What are patient expectations
  - What has the patient tried already
  - Hyperacusis present?
Different severities requiring different approaches

- Curious
  - basic information (10 minutes)
- Concerned
  - require time to discuss their specific situation and problems
  - more detailed information on the physiologic and psychologic components
  - Provide some self-directed management strategies (1 hour or more)
- Distressed
  - detailed analysis of individual needs
  - Individualized treatment based on Thoughts and Emotions, Hearing and Communication, Sleep, and Concentration (several visits)

Group Sessions

- Good introduction to treatment options
- Cost effectiveness
- Possible to include spouses, parents and children of the patient
- Appreciation that related problems are shared by many with tinnitus
- See Newman and Sandridge (2006)

Highly Distressed Patients

- recognize patients in crisis
- suicidal risk
- referral of patients,
  - Psychiatry, psychology, Crisis Services
handouts and resources for patients

- American Tinnitus Association brochures
- Self-help books
- Instructional materials on relaxation techniques, stress reduction, sleep hygiene
- Information on local support group, stress management courses, psychological counseling, yoga, etc.
- Tinnitus handouts and diaries
  - Part of Tinnitus Activities Treatment

Demonstration devices

- Hearing aids: open-fit programmed to mild high frequency loss
- Ear level sound generators for tinnitus therapies you are using
- Sound machine
- Sound pillow
- Music therapy CDs
- Apps for tinnitus

Treatments Patients Want

- How willing would you be to accept a this treatment, if it were to completely eliminate your tinnitus?
- Respond from 0-100%
  - 0% - you would never consider it
  - 100% – you would absolutely try it.

Summary

- Prepare yourself
- Evaluate tinnitus and reaction to tinnitus
- Develop a counseling and sound therapy strategy
- Consider individual needs of patient
- Group and individual sessions
Recent review of a variety of clinical protocols

26th Annual International Conference on Management of the Tinnitus and Hyperacusis Patient
June 14-15 2017
The University of Iowa
Diagnosis, Treatments, Medications, Psychiatry, Imaging, Surgery, Sound Therapy, Manufacturer Forum, Future
Thank you!!!