Aintree Tinnitus Support Group

Wednesday 5th November 2008

Welcome to the 7th Meeting
Review of Electromagnetictherapy and Tinnitus

Amy Lennox
Student Audiologist
Bsc (hons)
Aims of today

- To share what I discovered whilst doing my literature review.
- To describe electromagnetic therapy.
- To discuss current research.
- To discuss the use of fMRI.
- To discuss possibilities of future research.
Causes of tinnitus

- Wax
- Loud Noises
- Hearing loss
- Infection
- Foreign Bodies
- Pathologies
- Blood flow
- Muscle Spasms
- Head/Neck Pain
- Meniere’s Disease
- Anxiety
- Stress
- Circulatory Problems
Why Electromagnetictherapy?

Also Known as rTMS.

- Produces a magnetic field.
- Can excite or inhibit neuron firing in the brain.
- Can alter blood flow in the brain.
- Does not cause pain or produce heat.
rTMS Currently Treats

- Tissue Injury
- Pressure Sores
- Migraine
- Post Operative Pain
- Oedema
- Tinnitus?
Why do we need research?

- Evidence Based Practice.
- Treatments are standardised.
- Most effective treatments are given.
- Treatments are safe.
What does the research so far show?...
Conducted in Liverpool.

58 people took part.

Half had real device, half had fake (placebo).

Asked to wear the device 15 minutes a day for one week.

14 out of 31 people wearing the real device found improvement.

Statistics say the results from this trial are significant.
Similar studies.

**Significant Studies**

- **Eichhammer (2003).**
  5 days of rTMS treatment.
  2 out of 3 found their tinnitus improved.

- **Kleinjung (2005)**
  found more lasting effects of up to 6 months after the having rTMS administered 78.6%
  found lasting improvement
Insignificant Studies

- **Fiedler et al (1998)**
  Used the same methods of rTMS as Roland, Found results were insignificant.

- **Dobie et al (1986)**
  Found no significant reduction in the Amount of time present, severity or loudness of tinnitus.
What’s wrong with these studies?

- Small scale
- Short term
- Subjective
Neural Imaging

fMRI. Can assess tinnitus more objectively.
fMRI

- Functional Magnetic Resonance Imaging
- Measures tinnitus more objectively.
- Shows changes in the cerebral blood flow in response to neural firing
- Is not suitable for all types of tinnitus.
Studies of rTMS and blood flow

- Pleweni et al has conducted numerous research.
- Still small scale but has shown some promising results.
- Has identified key areas in the brain where tinnitus is produced.
Criticisms of rTMS

- How penetrative is the magnetic field?
- Does it cause long term damage?
- Will not treat all types of tinnitus.
- TRT would still be an important part of tinnitus treatment.
- Different types of rTMS high/low frequency which is better?
What’s next?

- Large Scale study using rTMS and fMRI.

Watch this space.
Thank you for listening

- Any Questions?


Drews, Davies E. Effectiveness of Ginkgo biloba in treating tinnitus: double blind, placebo controlled trial. British Medical Journal 2001; 322:73


- Jastreboff, Tinnitus Retraining Therapy: Implementing the Neurophysiological Model Cambridge 2004 p16