Refined sound therapy in combination with cognitive behavioural therapy to treat tinnitus: A randomised controlled trial

Di Ji¹, Yao Fan², Liuqian Wang¹, Guojing Tan¹, Wei Yu¹, Junjie Yang¹, Yan Zhang¹, and Anchun Deng¹

¹The Second Affiliated Hospital Of Army Medical University
²Chongqing Medical University

November 15, 2022

Abstract

Objective: To evaluate the effectiveness of refined acoustic therapy in combination with cognitive therapy for tinnitus compared to common treatment modality. Study Design: A single-center, randomized, and controlled trial. Methods: Patients were randomised into either the treatment group (refined sound therapy combined with cognitive therapy) or the control group (post-auricular injections of lidocaine and methylprednisolone sodium succinate). Information pre- and post-treatment was collected using the Self-Rating Depression Scale (SDS), the Hamilton Anxiety Rating Scale (HAM-A), visual analogue score (VAS), Tinnitus loudness, and Tinnitus Handicap Inventory (THI) score. Results: The THI (33.54 versus 19.23), SDS (41.79 versus 35.54) and HAM-A (9.46 versus 6.19) scores of the treatment group improved significantly (p < 0.05). In the control group, the THI scores improved significantly (31.7 versus 26.24, p<0.05), but the SDS (p=0.338) and HAM-A (p=0.574) scores did not. Tinnitus loudness (the treatment group 46.67 versus 41.19; the control group 43.12 versus 40.18) and VAS scores (the treatment group 5.67 versus 4.17; the control group 5.58 versus 4.73) were significantly improved in the two groups (p<0.05). There was significant difference in the reduction of THI (14.31 versus 5.45), SDS (6.25 versus 1.02), HAM-A (3.27 versus 0.45) and VAS (1.50 versus 0.85) scores between the two groups (p<0.05), and the treatment group showed a greater reduction. There was no significant difference in the reduction of tinnitus loudness (p=0.057). Conclusion: Refined sound therapy combined with cognitive therapy is more effective at treating tinnitus and improving psychological symptoms. Post-auricular injections of lidocaine and methylprednisolone sodium succinate has no effect at improving psychological symptoms.

Hosted file

Assessed for eligibility (n=100)
  Excluded (n=10)
    • Not meeting inclusion criteria (n=2)
    • Declined to participate (n=8)
Randomized (n=90)
  Allocated to intervention (Refined sound therapy combined with cognitive therapy, n=48)
    • Received allocated intervention (n=48)
    • Did not receive allocated intervention (n=0)
    Lost to follow-up (n=0)
    Discontinued intervention (n=0)
  Analyzed (n=48)
    • Excluded from analysis (n=0)
  Allocated to intervention (Post-auricular injections of lidocaine and methylprednisolone sodium succinate, n=42)
    • Received allocated intervention (n=33)
    • Did not receive allocated intervention (COVID-19 affects going out) (n=9)
    Lost to follow-up (n=0)
    Discontinued intervention (n=0)
  Analyzed (n=33)
    • Excluded from analysis (n=0)
The bar charts below depict the changes in VAS and sound levels before and after treatment.

**VAS Pre- vs Post-treatment**
- **VAS Pre**:
  - Level: 5.67
  - dB HL: 43.12
- **VAS Post**:
  - Level: 2.263
  - dB HL: 15.531

**Sound Pre- vs Post-treatment**
- **Sound Pre**:
  - Level: 2.253
  - dB HL: 16.77
- **Sound Post**:
  - Level: 4.17
  - dB HL: 40.18
The image shows a bar chart comparing VAS-pre and VAS-post levels. The chart indicates that the VAS-pre level is 5.58 with a range of 1.751 to 2.637, and the VAS-post level is 4.73 with a range of 1.751 to 2.637.