Effectiveness of transmeatal low power laser irradiation for chronic tinnitus

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FROM ABSTRACT:

Objective:
To evaluate the effectiveness of 5mW laser irradiation in the treatment of chronic tinnitus.

Study design:
Prospective, randomised, double-blind study.

Methods:
This investigation included 66 ears in 45 patients with chronic unilateral or bilateral tinnitus.

A 5mW laser with a wavelength of 650 nm, or placebo laser, was applied transmeatally for 15 minutes, once daily for a week.

A questionnaire was administered which asked patients to score their symptoms on a five-point scale, before and two weeks after laser irradiation.

A decrease of one scale point, regarding the loudness, duration and degree of annoyance of tinnitus, was accepted to represent an improvement.

Results:
In the active laser group:
The loudness was improved 48.8% of patients.
The duration of tinnitus was improved in 57.7% of patients.
The degree of annoyance of tinnitus was improved 55.5% of patients.

No significant improvement was observed in the placebo laser group.

Conclusion:
Transmeatal, low power (5 mW) laser irradiation was found to be useful for the treatment of chronic tinnitus.

THESE AUTHORS ALSO NOTE:

Treatment of chronic tinnitus is a challenging problem and of many different treatment modalities, none have significantly improved tinnitus.
“In recent years, low power laser therapy has been widely used in the treatment of tinnitus.”

Low power laser is “useful for wound healing, musculoskeletal diseases and pain control.”

A prior study notes a success rate of 80% improvement in the relief of tinnitus with treatment using low power lasers.

This study included 66 ears of 45 patients with chronic unilateral or bilateral tinnitus. The average duration of tinnitus was eight years with a range between six months to 25 years.

The earpiece of the laser used was positioned in the external auditory canal and aligned towards the tympanic membrane to direct the laser beam to the cochlea.

The laser output was 5mW and the wavelength was 650 nm.

The cochlea was irradiated for 15 minutes once daily for a week. The placebo group received the same technique as the active laser treatment, except the laser beam was not activated.

RESULTS

In the active laser group:
The loudness was improved 48.8% of patients.
The duration of tinnitus was improved in 57.7% of patients.
The degree of annoyance of tinnitus was improved 55.5% of patients.

One patient in the laser group reported that his tinnitus had disappeared following treatment.

DISCUSSION:

“Non-invasive, low power laser acts very positively by enhancing oxidative activity and protein synthesis and collagen synthesis, as well as a decrease in hypoxic injury and reductive stress.”

“The effects of low power laser are reported to be biophysiological rather than thermal.”

A proposed mechanism for low power laser physiology is blood flow increase associated with suppression of the sympathetic nerve action potential.

“Low power laser has been suspected to improve local microcirculation and to increase oxygen supply to hypoxic cells.”
“The biological effect of low power laser depends strongly on its wavelength and on proper positioning of the radiator, rather than on the power output.”

In this study, a very low power laser (5mW) with a wavelength of 650 nm was used over a relatively short treatment schedule. “Our results were similar to those of studies with higher success rates.”

“In recent years, low power laser therapy has become widely used in the treatment of tinnitus.”

CONCLUSIONS:

“We performed a randomised, placebo-controlled, double-blind study to investigate the effectiveness of laser therapy for tinnitus, using a device permitting very low power laser output, on a short term treatment schedule.”

“This treatment method resulted in effective attenuation of the reported loudness (in 48.8%), duration (in 57.7%) and degree of annoyance (in 55.5%) of patients’ tinnitus.”

KEY POINTS FROM DAN MURPHY:

1) Treatment of chronic tinnitus is a difficult problem.

2) “In recent years, low power laser therapy has been widely used in the treatment of tinnitus.”

3) Low power laser is “useful for wound healing, musculoskeletal diseases and pain control.”

4) A prior study notes a success rate of 80% improvement in the relief of tinnitus with treatment with low power lasers.

5) This study used a very low powered laser (5mW) with a wavelength of 650 nm, and applied transmeatally for 15 minutes, once daily for a week (7 treatments) on patients that had been suffering from chronic tinnitus for an average duration of 8 years.

6) Results:
In the active laser group:
The loudness was improved 48.8% of patients.
The duration of tinnitus was improved in 57.7% of patients.
The degree of annoyance of tinnitus was improved 55.5% of patients.

7) Transmeatal, low power (5mW) laser irradiation was found to be useful for the treatment of chronic tinnitus.
8) “Non-invasive, low power laser acts very positively by enhancing oxidative activity and protein synthesis and collagen synthesis, as well as a decrease in hypoxic injury and reductive stress.”

9) “The effects of low power laser are reported to be biophysiological rather than thermal.”

10) A proposed mechanism for low power laser physiology is blood flow increase associated with suppression of the sympathetic nerve action potential.

11) “Low power laser has been suspected to improve local microcirculation and to increase oxygen supply to hypoxic cells.”