Equipment for laser and other light therapy

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Radiant Power Determination of Low-Level Laser Therapy Equipment and Characterization of Its Clinical Use Procedures.

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Abstract Objective: The main objectives of this study were to characterize low-level laser therapy (LLLT) and the physical therapy clinical procedures for its use. Background Data: There are few scientific studies that characterize the calibration of LLLT equipment. Materials and Methods: Forty lasers at 36 physical therapy clinics were selected. The equipment was characterized through data collected from the owner manuals, direct consultation with the manufacturers, and a questionnaire answered by the users. A digital potency analyzer was used to calibrate released mean potency. Qualitative data were presented throughout the descriptive statistics and quantitative data were analyzed by the Wilcoxon/Kruskal-Wallis and Fisher tests (significance, $p < 0.05$). Results: The laser equipment was either AsGa (70.5%) or HeNe (23.5%), and 60% was analog and acquired over 5 years ago. The majority of the equipment was used 10-15 times per week and the most frequent density level used was 2 to 4 J/cm(2). Protective goggles were available in only 19.4% of the clinics evaluated. The association between the analyzed categories demonstrated that a lower mean potency was correlated both with equipment acquired over 5 years ago and analog technology. The determined mean potency was lower than the one claimed by the manufacturer ($p < 0.05$). In 30 cases, the analyzed equipment presented a potency between 3 muW and 5.6 mW; in three cases, the potency was >25 mW; and in seven cases, potency was nonexistent. Conclusion: The analyzed equipment was out-dated and periodical maintenance was not conducted, which was reflected in the low irradiated potency.

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[Equipment for low reactive level laser therapy including that for light therapy]

[Article in Japanese]

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Equipments used for light therapy include machinery used for irradiation by low reactive level laser, xenon light and linear polarized infra-red ray. Low reactive level laser is divided into two types of laser according to the medium by which laser is obtained ; semiconductor laser and helium-neon laser. Low reactive level laser has only one wave length and produces analgesia by action of light itself. On the other hands, Xenon light and linear polarized infra-red ray produce analgesia by warming effect induced by light in addition to the action of light itself. There are four methods of irradiation by these light sources; irradiation of acupuncture points, of trigger points, along nerves causing pain and of stellate ganglion area. Indication for light therapy includes various kinds of diseases such as herpes zoster, post herpetic neuralgia, cervical pain, lumbago due to muscle contracture, complex regional pain syndrome, arthralgia etc. However, we have to know that light therapy does not exert analgesic effects equally to all patients. But light therapy does not accompany pain and rarely shows any side effects. Therefore it is thought to be an alternative for patients who reject injection or patients who are not indicated for nerve block because of patients' conditions such as bleeding tendency.