Hydrogalvanic bath therapy in the treatment of patients with lumbosacral radiculopathy

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Introduction. Hydrogalvanic baths is a method of combined application of warm fresh water and electric current. Mechanism of therapeutic action is based on synergistic effect of two therapeutic agents. The first mention about therapeutic use of hydrogalvanic baths dates back to 1802. Afterwards, both technique and technical equipment of the method were developed. Several studies have shown the efficacy of hydrogalvanic baths for the treatment patients with rheumatoid and gouty arthritis, fibromyalgia, ankylosing spondylitis and diabetic angiopathy. Nevertheless, an amount of scientific publications and also clinical researches is very scant. At the moment one of the most prospective applications is treatment of lumbosacral radiculopathy due to degenerative disc disease.

Patients and methods. For the moment 49 patients with lumbosacral radiculopathy lasting more than 3 months due to degenerative disc disease have been included in a prospective, randomized, comparative study. The mean (range) age of patients was 43 (25-65) years. These patients were randomly allocated to 2 groups: a group of active treatment (hydrogalvanic baths) and a control group in which patients received conventional medications. Patients with a emerging infection diseases, a pacemaker or other metal implants, as well as concurrent pregnancy, malignancy or physiotherapy during the study, were excluded. The medical history and previous treatments were documented (drugs, physiotherapy, or a combination of therapies). All participants gave written informed consent to take part in the study, which was approved by the local ethics committee. The patients of active group (n=31) received 10 consecutive procedures (excluding 2 days of weekend). During treatment, the patients were immersed into full bath of fresh medium-temperature water (37-38 Celcius degrees). A procedure was provided by current flow originating from 3 pairs of electrodes. Electrodes are placed onto inner bath wall transversally. The generator created diadynamic currents with a frequency of 100 Hz. The current intensity was gradually increased up to the limit of tolerability as indicated by the patient (average 200-350mA). Patients were treated daily for 15 min. A DN4 questionnaire, PainDetect, Oswestry Disability Index (ODI), the Short Form-36 (SF-36), Beck Depression Inventory (BDI) and a visual analogue scale

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(VAS) were completed at baseline, at the end of the treatment (the last day of treatment) and 3 months after the end of treatment. The patients of control group (n=18) received conventional medication therapy.

Results. All patients were able to attend all sessions. 1 patient discontinued participation in the hydrogalvanic baths treatment because of respiratory infection. Pain syndrome of 27 patients of active group was significantly reduced clinically. It was confirmed by questionnaires analysis. All patients noticed sensory improvement. The therapeutic effect was observed after the 3^{d}-4^{th} procedure. No one experienced adverse events. Variables were checked for abnormal distribution using nonparametric tests. The Wilcoxon's matched pairs test was used to examine differences between baseline and the end of treatment (14^{th} day) with $p<0.05$ considered statistically significant in all analyses. Median (25%-75%) was calculated for each of the primary and secondary variables. The VAS score (typical pain level) was reduced from 5 (4-5) to 3 (0,5-5,5). The VAS score (pain level for the point of completion of the questionnaire) was reduced from 4 (2,5-4,5) to 2 (0-3). Changes of DN4 questionnaire were from 4 (3-5,5) to 2 (0,5-3). Changes of PainDetect were from 8 (6,5-9,5) to 6 (2,5-10). The BDI score was reduced from 13 (4-16,5) to 9 (3-11). The ODI changes between baseline and the end of treatment were from 32% (22-44) to 15,5% (8-36).

Conclusion. From the these results, hydrogalvanic baths seemed effective and safe method of treatment for patients with lumbosacral radiculopathy due to degenerative disc disease. It is necessary to continue clinical research and evaluate long-term results in comparison with control group patients for proving of treatment efficacy.