

Optimizing Exercise Regimes for the Amelioration of Restless Legs Syndrome Symptoms in Hemodialysis Patients

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The uremic etiology restless legs syndrome (RLS) is a disorder affecting ~30-40% of patients receiving hemodialysis (HD) therapy. The syndrome is very much undiagnosed. We have recently shown that four months of aerobic exercise training during the hemodialysis session ameliorates RLS symptoms by 42% and improves functional capacity and parameters related to quality of life. Since then, we have initiated three different studies to investigate the underlying mechanisms.

In the first study, we compared 46 non-RLS HD patients to 28 RLS-HD patients on parameters related to quality of life, sleep, functional capacity and body composition. The RLS-HD group performed worse in all parameters examined, however, functional capacity and body composition differences did not reach the conventional statistical level.

In the second study, we investigated the acute effect of an exercise bout on restlessness during a 4-hour HD session in 18 HD patients. We employed the polysomnography electromyography system to investigate restlessness (PLMw) during the HD session using three different protocols: no exercise, light and heavy single exercise bouts, on three different weeks, on the 2nd HD session of each week. All patients participated in the three protocols, which took place on the first hour of the HD session, while the recording of leg movements lasted for the three last hours. The data showed that **RLS-HD** patients (n=8) benefited from both light (34% reduction in PLMI, p<0.05) and heavy (30% reduction in PLMI, p<0.05) single bout of exercise, while no statistical change in the PLMI was recorded for the non-RLS patients.

The third study is an ongoing randomized sham-controlled trial to investigate the effect of six months exercise training during HD sessions on the amelioration of RLS symptoms. Patients were randomly assigned into two groups. In the exercise group patients cycled for 45 min, 3 times a week, at 60-70% of maximal work capacity, while the sham-exercise group cycled with no resistance for the same period of time. To date, 10 patients have completed the study. Our preliminary data show that the exercise group (n=5) had a reduction in the International Restless Legs Scale (IRLS) scale of 58% (p=0.04) while the sham-exercise group (n=5) showed a mild reduction (15%) with no statistical significant differences. At the time of writing, functional capacity has only improved in the exercise group, while the quality of life score (SF-36) has improved in both groups. In conclusion, chronic and acute exercise reduces RLS-induced discomfort and improves quality of life. Exercise is a safe and effective way to ameliorate untreated RLS symptoms in hemodialysis patients.