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The effect of extracorporeal shock wave therapy in hemodialysis Patients; A randomized controlled trial

Kyu Sang Yun¹, Younkyung Kee², Hayne Cho Park¹, Young Ki Lee¹, Do Hyoung Kim²

¹Department of Internal Medicine-Nephrology, Kangnam Sacred Heart Hospital, Korea, Republic of

²Department of Internal Medicine-Nephrology, Hangang Sacred Heart Hospital, Korea, Republic of

Objectives: Muscle wasting is a common feature in the hemodialysis (HD) patients and associated with comorbid complications, poor quality of life, frailty and premature death. Extracorporeal Shock-Wave Therapy (ESWT) is able to relief pain, as well to positively regulate inflammation (probably as immunomodulator), to induce neangiogenesis and stem cells activities, thus improving tissue regeneration and healing, and has the advantages of easy application, and minimal risks for these patients. This study aimed to evaluate the effects of intradialytic ESWT.

Methods: This was a single center, prospective, randomized controlled trial. Seventeen HD patients were randomly assigned to either the ESWT group or the control group. The ESWT group received intradialytic ESWT over a 12-week period. Measurement of body composition using a dual energy X-ray absorptiometry, the handgrip strength test, gait speed test, five time sit to stand test, and the timed up and go test for physical function assessment, and blood tests were performed before and after the intervention period.

Results: The ESWT group demonstrated significant improvement compared with the control group in main functional parameters: decreased time in gait speed test (5.5 ± 13.3 vs. -0.5 ± 1.3 sec), five time sit to stand test (3.9 ± 10.7 vs. -1.4 ± 2.8 sec), and the timed up and go test (6.9 ± 17.8 vs. -3.1 ± 4.2 sec). After treatment, lipopolysaccharide concentrations were reduced, and glutathione peroxidase concentrations were increased significantly in ESWT group. However, there was no significant difference in muscle mass and other blood tests.

Conclusions: The ESWT group showed improvement after intervention in physical function test, and oxidative stress parameters. ESWT could be an effective treatment tool for HD patients with either muscle wasting, weakness, or sarcopenia.