

Hydrotherapy for severe hemophilia patients in Korea

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Objectives

Hydrotherapy is one of the useful methods in treating painful or stiff joints and muscles after an acute hemarthrosis, muscle bleeds and chronic arthropathy. However, there are neither sufficient nor accessible reports for hemophilia. This study aims at evaluating the effect of hydrotherapy on hemophilic arthropathy.

Methods

We have conducted hydrotherapy for 8 weeks from Aug. 2011 to Jul. 2013. Nineteen patients with severe hemophilia (HA:17, HB:2) were enrolled and divided into two groups (hydrotherapy group vs. control group) Each groups were composed of 9 and 10 patients, respectively. Hydrotherapy is composed of aquatic exercise and Bad Ragaz Ring Method. Hydrotherapy also consisted of 2 or 3 sessions having 40min period per a week. Control group is getting general home exercise 3 times a week. Depth and temperature of water pool was 110cm and 31°C. We evaluated quadriceps muscle strength, gait speed and balance ability of patients before and after exercise.

Process of exercise program

There are three main stages in hydrotherapy program, initial, intermediate and final level. The goal of Initial level is Improving of ROM, proprioception, strengthening and restore normal gait patterns. The intermediate level develops muscle strength and ROM, moderate progressive resistance exercise using aquatic principle. The final level is functional strengthening and conditioning.

Initial Level



Leg swing & raise(forward)



Balance activities



Weight shift Training

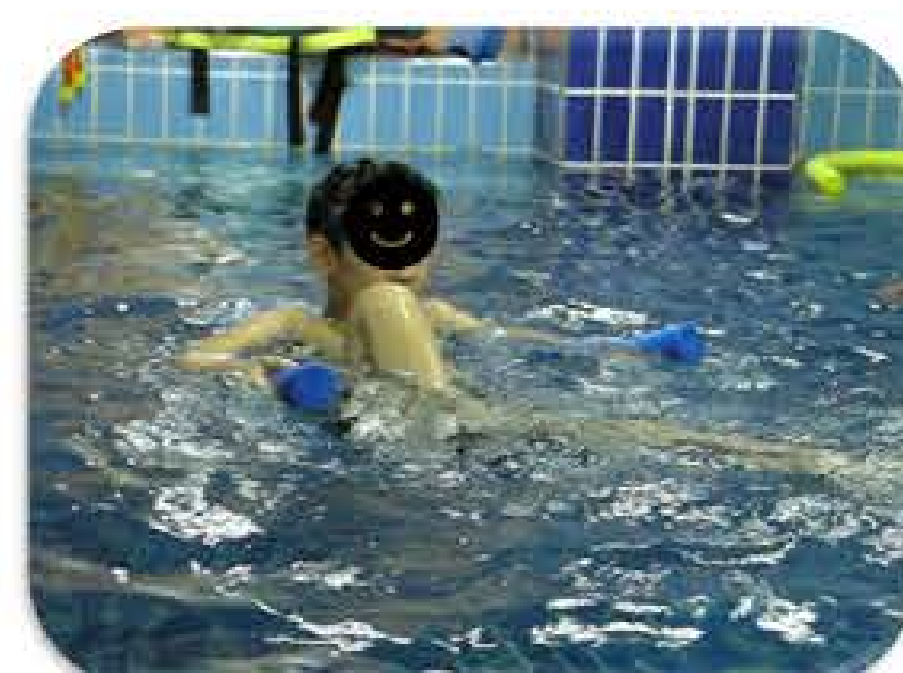
Intermediate Level



Aqua noodles Exercise & BRRM



Final Level



Functional Strengthening & continue BRRM



Initial Level



- 1-2 weeks
- Improve of ROM, Strengthening, Gait exercise

Intermediate Level



- 3-5 weeks
- Develop Strength and ROM

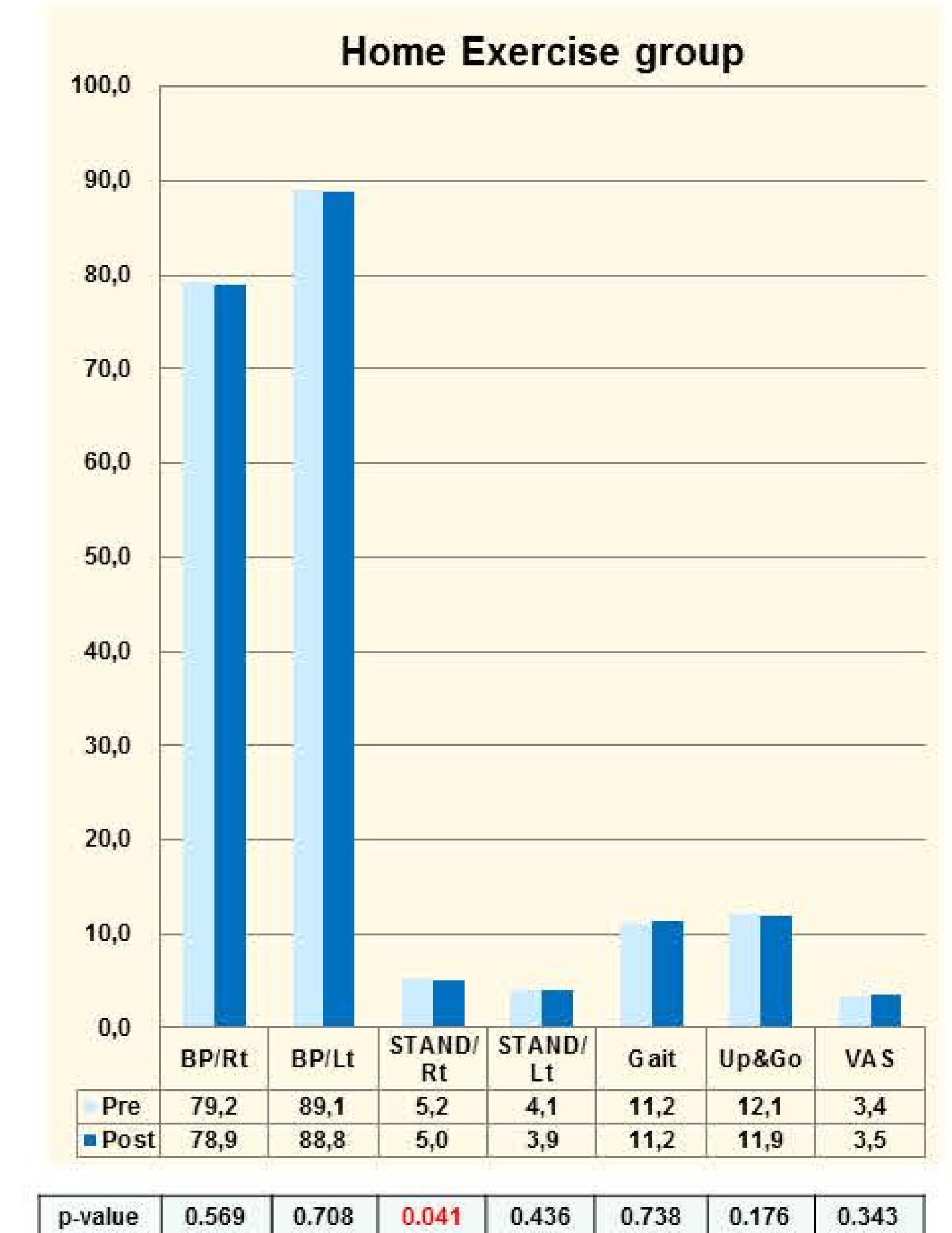
Final Level



- 6-8 weeks
- Functional Strengthening and Conditioning

Results

The hydrotherapy group showed the improved quadriceps muscle power (left: 11.5%, right: 11.6%, $p=0.01$), One legged stance time (left: 4.48 sec to 5.65 sec, right: 3.50 sec to 5.75 sec, $p=0.05$), Timed up and go test (12.96 sec to 11.22 sec, $p=0.01$), and 10m Gait speed(12.26 sec to 10.59 sec, $p=0.05$). However, no difference can be observed between before and after exercise in the control groups.



**Pairwised T-Test

*BP: Blood pressure gauge(mmHg)

*Gait: Gait speed(sec)

*Up&Go: Timed up and go test(sec)

*Stand: One legged stance time(sec)

*VAS: visual analogue scale

Conclusions

The hydrotherapy program through our experience which was performed on hemophilia patients caused significant improvements in the musculoskeletal functions on patients with hemophilia. Because of the muscles weakness and poor range of motion are among the main problem of hemophilia patient. It is recommended that these patients do the exercise therapy in the water along with the other treatment procedures to improve their joints condition, strength and range of motion. Consequently, various hydrotherapy programs for hemophilia patients need to be developed.