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Hydrotherapy as a therapeutic modality for treating pain and improving mobility in adults with Mucopolysaccharidosis type II

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INTRODUCTION

Mucopolysaccharidosis type II (MPSII) is a lysosomal storage disease affecting multiple organs, including musculoskeletal system. The symptoms progress over time and limit patients' mobility and impact their quality of life. The current treatment with enzyme replacement therapy (ERT) does not sufficiently control pain.
Hydrotherapy, an exercise therapy in warm water delivered by a physiotherapist. It can improve movement of stiff or swollen joints, provide relaxation, strengthen weak muscles and alleviate aches and pains. However, there is limited high quality evidence currently to support its use as a routine part of care for patients with MPS.

The aim of this study was to assess the effectiveness of hydrotherapy in the management of joint pain, improved mobility, and quality of life in our patients with MPSII.

METHODOLOGY

This was a cross-over study of five adult MPSII patients (mean age 32.6yrs; 3 treated with ERT/2 treatment naïve); group 'A'- hydrotherapy arm first (12 weeks) and group 'B' received the observational arm first (12 weeks), before switching over to the opposite arm for a further 12 weeks. Assessments at baseline, 6 weeks and 12 weeks in both arms included questionnaires and physiotherapy assessment. The clinical trial has been funded by a grant from CSAC within MPS Society.

RESULTS

Patients reported an improvement in pain control, fear of pain and reduction in reliance on pharmacological analgesia. There was a clinically significant change in the pain catastrophizing scale, PHQ9 and GAD 7 scores. A significant overall improvement in 6-minute walk test distance (Fig 1.) and more modest improvement in timed 10 metre walk test has been observed (Fig 2). The S-LANSS score has remained low and stable throughout. The Brief Pain Inventory score for Question 9a – 9g showed a significant decline in pain after 12-weeks of hydrotherapy (Fig 3). Tampa score has also demonstrated significant improvements, indicating that fear of pain with movement has decreased (Fig 4). Muscle strength also increased across 8 muscle groups in all patients.

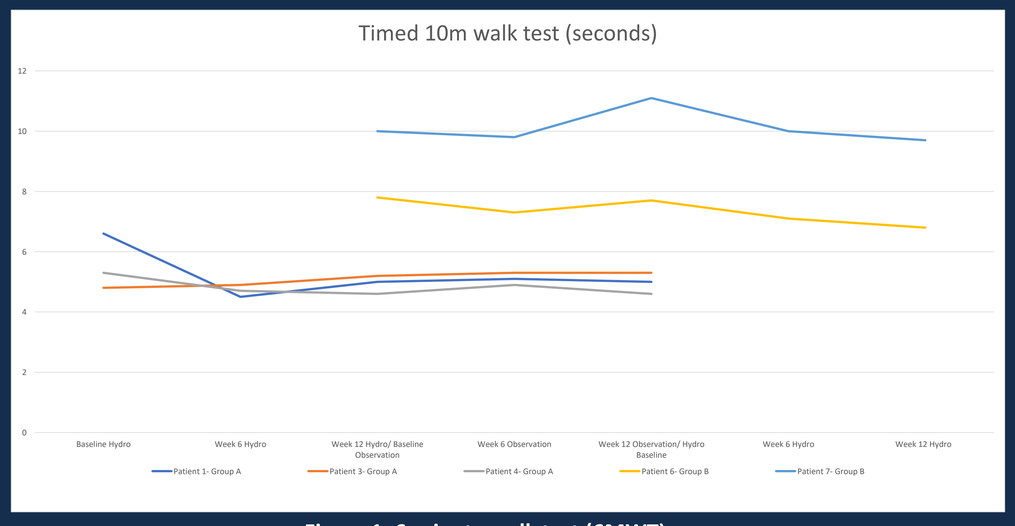

Figure 1. 6-minute walk test (6MWT)

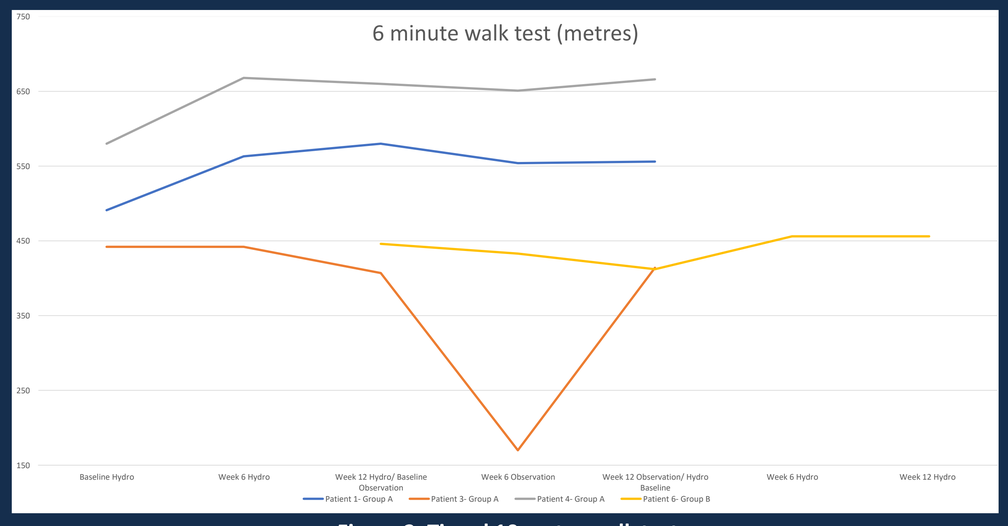

Figure 2. Timed 10 metre walk test

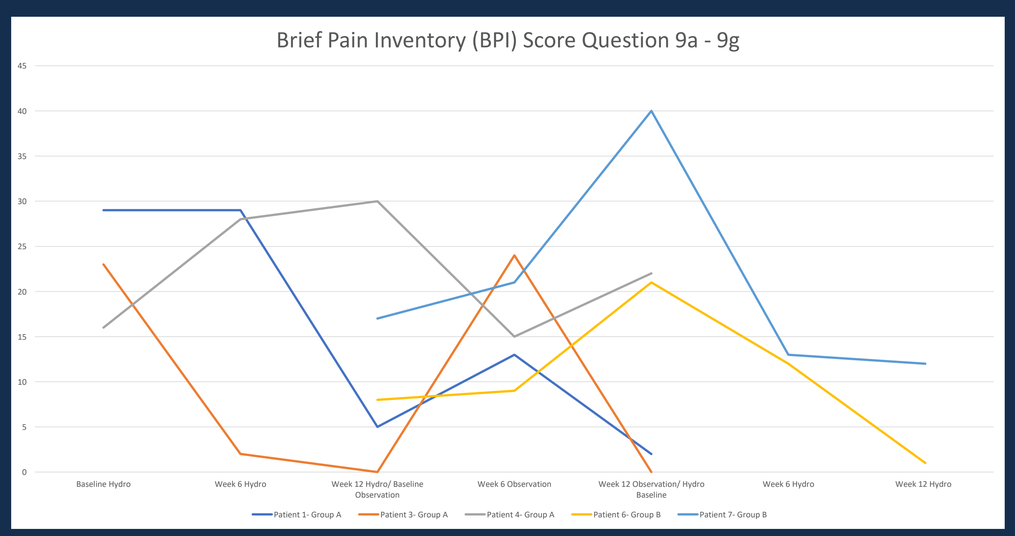

Figure 3. Brief Pain Inventory Question 9a – 9g.

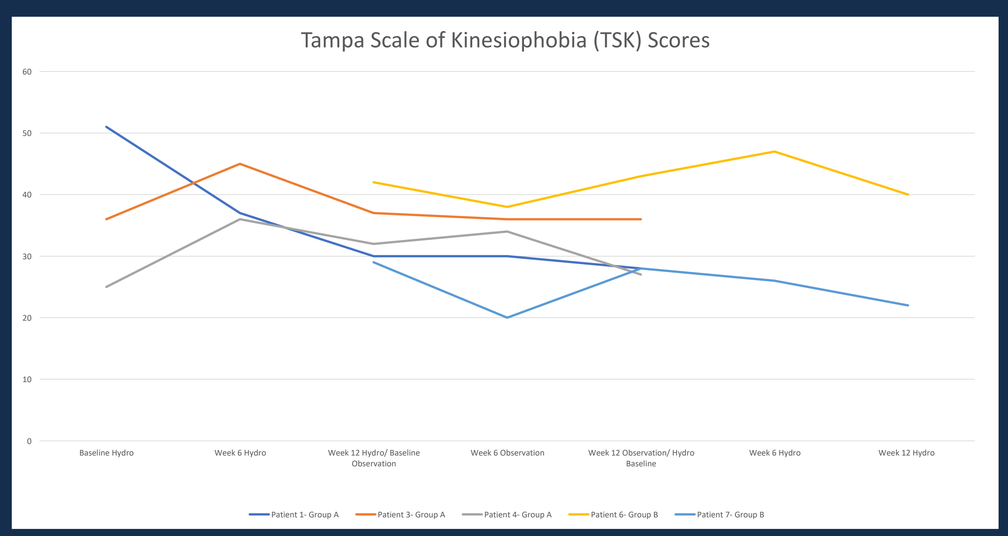

Figure 4. Tampa Scale of Kinesiophobia (TSK)

CONCLUSION

This is the first clinical trial to demonstrate clinically significant benefits of hydrotherapy in adults with MPSII. Aquatic therapy has proved to reduce musculoskeletal symptoms, non-neuropathic type pain, improve walking performance and muscle strength. The next step is to increase accessibility of the hydrotherapy pool for MPS patients through further work with the MPS Society.

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