

CASE REPORT

HYDROTHERAPY FOR RETT SYNDROME

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Objective: The effects of hydrotherapy on an 11-year-old girl with stage III Rett syndrome were investigated.

Methods: The Halliwick method was used to apply hydrotherapy in a swimming pool twice a week for 8 weeks. The girl's physical abilities were assessed 3 times: before and 5 minutes after a single hydrotherapy session and after 8 weeks of hydrotherapy. The tests included analysis of stereotypical movements, functional hand use, hand skills, gait and balance, hyperactive behaviour, communication and social interaction.

Results: Immediately after hydrotherapy, stereotypical movements decreased and this decrease continued during the following 8 weeks. The girl's feeding activities and hand skills increased markedly. After 8 weeks of hydrotherapy, her walking balance was improved, interaction with her environment increased and hyperactive behaviour and anxiety decreased.

Conclusion: In conclusion, after the application of hydrotherapy, stereotypical hand movements had decreased and purposeful hand functions and feeding skills increased in this case. Whether hydrotherapy has a positive effect on the functional use of the hand in Rett syndrome should be investigated using more subjects.

Key words: Rett syndrome, hydrotherapy, occupational therapy.

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INTRODUCTION

Rett syndrome is a disorder noted to date only in females and characterized by a pervasive developmental disability following an apparently normal early infancy. There is no cure for Rett syndrome. However, a vigorous therapeutic approach, providing physical and occupational therapy, hydrotherapy, horse riding and music therapy, is recommended as a means of improving functional abilities (1–6).

The general aims of hydrotherapy are to promote relaxation, improve circulation, restore mobility, strengthen muscles, re-

educate walking, improve co-ordination and function and provide recreation (7, 8).

The aim of this study was to examine the effects of hydrotherapy on a girl in stage III of Rett syndrome.

CASE REPORT

An 11-year-old girl with classical stage III Rett syndrome (2, 4, 9), which was diagnosed when she was 5 years and 3 months of age at the Department of Paediatric Neurology, was admitted to the Occupational Therapy unit. The girl's parents gave their informed consent to this study. The developmental regression had been noted at 16 months of age. Elbow restraint splints had been applied to reduce stereotypical hand behaviour and to improve functional hand use. The girl was given a home exercise programme to improve functional activities and manipulative skills and an occupational therapy programme was applied for 3 years. Due to difficulties in accepting these programmes, however, they were ceased and hydrotherapy was begun.

METHODS

The Halliwick method was used for the application of hydrotherapy. This method is based on known scientific principles of hydrodynamics and body mechanics, and is divided into 4 phases: adjustment to water; rotations; control of movement in water; and movement in water (8). The hydrotherapy was applied in a swimming pool twice a week for 8 weeks. The programme was carried out as a one-on-one project with the same physiotherapist. The girl's physical abilities were assessed 3 times: before and 5 minutes after a single hydrotherapy session and after 8 weeks of hydrotherapy. The tests included stereotypical movement analysis, functional hand usage, hand skills, gait and balance, hyperactive behaviour, communication and social interaction. Measurement of the number of stereotypical movements was made from a 5-minute video camera recording. Hand skills consisting of grasping, holding, transferring small and large objects from one point to another, finger feeding and drinking abilities were examined. The girl's functional hand use was assessed according to her performance in eating crackers placed on the table. Picking up a cracker and putting it in her mouth was defined as successful finger feeding.

RESULTS

Before hydrotherapy, the most frequent movement was hand-to-mouth, followed by hand-squeezing movements. Immediately after the hydrotherapy session, hand-to-mouth and hand-squeezing movements disappeared, although hand wringing

movement appeared. In addition, the amount of stereotypical movements decreased immediately after the hydrotherapy and continued to decrease during the following 8 weeks. Feeding skills and hand skills in transferring objects and holding them for 10 seconds improved following 8 weeks of hydrotherapy. Before the application of hydrotherapy, gait apraxia, trunk ataxia and imbalance were found in the physical assessment. After 8 weeks of hydrotherapy, walking balance improved, interaction with the environment increased and hyperactive behaviour and anxiety decreased.

DISCUSSION

Hydrotherapy promotes balance and helps develop protective responses, as well as giving relief and pleasure to Rett syndrome sufferers (7, 8). In the case described here, the amount of stereotypical movements decreased after hydrotherapy and purposeful hand functions and feeding skills increased.

Appropriate intervention strategies using different therapeutic techniques have been described and they are effective in facilitating communication, maintaining hand function and ambulation, preventing deformities and reducing stereotypical hand movements in Rett syndrome. The elbow restraint and hand splints are effective in reducing stereotypical movements in children with Rett syndrome (10–13). However, some children with Rett syndrome react with anxiety during the application of elbow restraints and do not accept the splints. Because hydrotherapy application has a relaxing effect, the girl in our study was calm in the pool and had no stereotypical movements.

In conclusion, after hydrotherapy stereotypical hand movements decreased and purposeful hand functions and feeding skills increased in this case. Whether hydrotherapy has a positive effect on the functional use of the hand in Rett syndrome should be investigated using more subjects.

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