

A new concept of functional integrative physiotherapy in children with Congenital Disorder of Glycosylation



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1 Conclusion

The Cologne rehabilitation program including Whole Body Vibration (Galileo-System) seems to improve motor function in children with CDG. This increase of physical fitness is supposed to have a beneficial effect on the mental function in these children.

2 Introduction

Carbohydrate-deficient glycoprotein syndrome (CDG) consists of a group of disorders with multisystemic involvement and prominent neurologic symptoms. The clinical presentation of CDG appears more severe in infants than in adults. There is a wide range in interindividual severity of symptoms. Diagnosis is based on the clinical findings of characteristic fat distribution, neurologic impairment, and developmental delay, combined with biochemical finding. The main symptoms of this rare disease are muscular hypotension, mental retardation, atrophy of the cerebellum with resulting ataxia.

3 Objective

We assessed the effect of a new physiotherapeutic concept on the mobility in patients with CDG. The rehabilitation concepts started with a training as inpatients for 2 weeks. During this time the patients received 4h of intensive physiotherapy per day. A combination of "neuro developmental treatment", physiotherapeutic fitness center, pool-therapy, treadmill-training and Whole Body Vibration (WBV) was used to improve muscle function and independency in activities of daily living. After these 2 weeks patients continued the WBV at home for 6 months. In the middle of these 6 months the patients came back to the center for 1 week to adapt the training program on their improved motor abilities.

4 Patients and Methods

6 patients with CDG participated in the Cologne rehabilitation concept [f=4; m=2; median age at start 7,23 years (5,25-17,32)]. WBV training was conducted with the "Galileo - Tilt Table" (Novotec Medical, Pforzheim, Germany). For measuring motor functions a shortened Gross motor function Measurement test (30 items [mGMFM]) was used at start and after 6 months.

Literature: Preliminary results on the mobility after whole body vibration in immobilized children and adolescents

Semler O, Fricke O, Vezyroglou K, Stark C, Schoenau E
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Fig. 1: Different positions during WBV with the Galileo

5 Results

Due to the heterogeneity of motor impairment in the patients the present results are not comparative between different individuals. All patients had an individual benefit from the rehabilitation program and an increase in the mGMFM as shown in table 1.

No patient dropped out of the program and there were no negative side effects during the training period. Beside the improvements in their motor functions the parents of the children reported an increase in mental function in their children. They had an improved interaction with their parents and relatives.

Pat. Nr	Individual benefit	mGMFM Month 0 [points]	mGMFM Month 6 [points]
1	Starts crawling, needs less help while standing	61	pending
2	Transfers from lying to a sitting position, longer unsupported sitting	68	84
3	Improves trunk stability, now using wheelchair without help	3	7
4	Less falls while walking with posterior walker	69	70
5	Able to walk longer distances with posterior walker	77	78
6	Can transfer in a sitting position, can sit unsupported longer	47	51

Tab. 1: Individual benefits and changes in the mGMFM

6 Discussion

All participating patients with CDG had an individual benefit from the training. All were able to improve their motor functions and they showed an increase in the assessments with the modified GMFM after 6 months. Additionally the parents reported that the mental functions of the children ameliorated parallel to the physical training.