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Case Study

New Medicine: New Therapeutic Approach for Cerebral Palsy: The Use of Tadalafil 5 Mg Daily, Magnesium, and Zinc as a New Medical Hypothesis

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Abstract

This study represents a study case of a male, 13 years old, diagnosed with cerebral palsy. In general, the child suffered from growth failure as compared with his peers, he also suffered from movement inability, a wheel chair is required for movement. Eating disturbances were reported by his mother. Sleeping disturbances were also reported by the mother. The child was seen in many clinics in the public, military and private sectors. The final diagnosis with cerebral palsy was confirmed. Conservative convenient treatments were prescribed. No improvements in the total outcomes were observed. As the child grows up, his needs increased in terms of care, and other social issues. The mother asked for untraditional advice. Based on recent reports, tadalafil 5 mg daily upregulates the expression of heat shock protein 70 in the nervous system, which improves the depression status among patients with erectile dysfunction. From previous experience, we are aware of the importance of upregulation of HSP70 in nervous system. We also used the treatment of magnesium, zinc, and chromium for epilepsy. Taken together, we based our therapeutic hypothesis: "upregulation of HSP70 in nervous system and improvement of micro-environmental chemistry of nervous tissue through providing magnesium, zinc, and chromium, is a new therapeutic approach for cerebral palsy". This approach has been so far applied for two months with the following results according to reports of child's mother: good movement with self-dependence, no more food disturbances, and no sleep disturbances. Taken together, the prescribed therapeutic approach was successfully applied.

Keywords: *Cerebral Palsy; Tadalafil; Magnesium; Zinc; Chromium; Hypothesis*

Introduction

The term cerebral paralysis (CP) alludes not to a particular illness substance, but instead to a gathering of conditions with variable seriousness that has certain formative highlights in normal [1]. The conventional definition of CP is that: "Cerebral paralysis portrays a gathering of lasting issues of the advancement of development and stance, causing movement constraint, that are credited to non-reformist unsettling influences that happened in the creating fetal or newborn child cerebrum. The motor problems of cerebral paralysis are regularly joined by unsettling influences of sensation, discernment, comprehension, correspondence and conduct, by epilepsy and by auxiliary musculoskeletal issues" [1].

What interfaces all individuals with CP are the clinical and practical beginning of indications in early turn of events, the high likelihood that the manifestations have an impact all in all life course and the current absence of a conclusive fix. Practically all kids with CP make due to adulthood. Indeed, endurance rates among even the most practically undermined youngsters with CP have amazingly improved in the course of the last not many decades, as shown by populace [2,3].

Treatment of CP mainly depends on psychological support from family members and health professionals [4], as well as physical rehabilitation [5]. However, oral medications for CP have been described to be simply utilized, but the development of side effects has its

impacts in using such treatments [6]. Subsequently, they are generally fitting for kids who need as it were gentle tone decrease, or who have inescapable spasticity. Most investigations on the viability of these drugs are old and didn't have great examination plans like those pre-owned today. Accordingly, the decision of various meds is generally founded on close to home insight or experimentation instead of proof based medicine [7]. Most oral drugs, counting benzodiazepines, dantrolen, baclofen, also, tizanidine, can be utilized in mix with one another. On account of the intricacy of spasticity, it is impossible that one medication can be of benefits for all patients. The purpose behind blend treatment is to improve the clinical impact and diminish outcomes of CP. Oral antispasticity meds can likewise be utilized with other treatment, for example, neuromuscular impeding specialists and intrathecal baclofen. Understanding their instruments, side effects and impediments is fundamental for treatment of spasticity [6].

Tadalafil belongs to the family of phosphodiesterase-5 inhibitors, and its use for the treatment of erectile dysfunction (ED) is popular because of its long acting properties [8]. Tadalafil exerts antioxidant activities [9-12]. Choi., *et al.* [13] reported the benefits of daily tadalafil 5 mg including increased regional cerebral blood flow (CBF) and increased cognitive function. The study of Barroso., *et al.* [14] found positive influences of using tadalafil treatment in improving cognitive function of patients with Alzheimer Disease (AD). In our previous study, we showed that in rat diabetic model, heat shock protein was downregulated in the white matter [15,16].

Study Objectives

The main objective of this study is to introduce a novel therapeutic option for cerebral palsy of a child aging 13 years, diagnosed with cerebral palsy since he was 6 years.

Case Study

A male child, 13 years old, diagnosed with CP, was referred by his mother seeking for other therapeutic options following conventional treatments in various hospitals in Jordan, public and private sectors. This patient was diagnosed with CP since he was 6 years. The diagnosis was made by pediatric neurologists and neurosurgeons in different hospitals. The diagnosis was made based on magnetic resonance imaging (MRI), and electroencephalogram (EEG).

Actually, during 7 years of suffering, the child was exposed to different treatments, and he was also diagnosed by pediatric neurologists in different hospitals. Our suggested treatment was initiated after 7 years of experiencing various therapeutic approaches and physical rehabilitation. Furthermore, this therapeutic approach is unique and has not been reported before up to the best knowledge of the author.

Due to previous experience in neurological treatment of case studies. As an example, we have previously published an article about treating case with epilepsy using a new approach employing administration of magnesium, zinc, and calcium in treating epilepsy successfully [17] and based on our previous hypothesis that "disease progression depends on downregulation of Heat Shock Protein 70 (HSP70) and upregulation of inducible nitric oxide synthase (iNOS): a new medical hypothesis". We also employed our previous experience in treating prediabetes using tadalafil 5 mg daily [18]. Taking into account the previous considerations, we reached to the therapeutic strategy in which the administration of tadalafil 5 mg daily and each of magnesium, zinc, chromium will help the patient. Therapeutic duration was two months. The results showed improvements in health conditions of the patient. As an example, the child has developed the ability of self-dependent movement, no eating disturbances were ore observed, no sleeping disturbances were reported as compared with the period before the treatment has been initiated. The new therapeutic strategy was easily followed, cheep, and effective. Finally, the quality of life has been improved for the whole family.

Discussion

New medicine, or new thoughts to establish new school of medicine, is the main axis I am working on to find new therapeutic strategies that are characterized by efficacy, simplicity, and affordability.

In the present study, we showed an illustrating example on how new medicine gives new therapeutic strategies for CP. We employed our previous experience to develop this strategy. This therapeutic option was selected for the following reasons: Choi., *et al.* [19] conducted a study in which they found that daily use of tadalafil 5 mg improved cerebral blood flow in addition to cognitive function improvement among patients who have erectile dysfunction and cognitive impairment. In a previous study, Barroso., *et al.* [14] reported beneficial effects of using tadalafil (5 mg) in Alzheimer disease. Taken together, our perception is to improve micro-environmental conditions by supplying tadalafil 5 mg and other mentioned supplements to overcome CP conditions.

In general, we think that white matter plays a significant role in controlling the disease [15,16]. Our previous hypothesis showed that controlling a disease including neurological disease is possible if HSP70 is upregulated [20]. The simple combination used in this study is promising and paves the road for further studies.

Conclusion

The use of daily 5 mg tadalafil and the supplementation with magnesium, zinc, and chromium improves the micro-environmental conditions that help in treating neurological conditions such as CP. A novel therapeutic strategy is introduced and further studies are required to confirm our results.

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