Hydrotherapy Effect on Cytokine Responses in Multiple Sclerosis Diseases

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Abstract: Multiple Sclerosis is a chronic and progressive autoimmune disease of central nervous system that affects the brain and spinal cord and marked with destruction of myelin sheath of nerve cells and formation of scars causing disorder in the flow direction of action potentials. The main cause of this disease is unknown. At present the disease has reached ages of less than 20 years with an escalating trend among women being twice more prevalent in woman than in men. The present study aims to explore the effect of 10 weeks hydrotherapy on EDSS and Interleukin 10 (IL10) in female MS patients. The statistic population consists of 30 MS patients whose MS has been confirmed by a neurologist. They divided into two groups based on inclusion criteria. Experimental group consisted of 15 and the control group consisted of 15 people with ages ranging from 22 to 51. Experimental group was exposed to hydrotherapy for 10 weeks and after that the EDSS and IL10 were measured. The results showed that EDSS decreased in the experimental group after 10 weeks hydrotherapy. But no significant difference was seen in IL10 in two groups. Lack of physical activity tends to increase muscle weakness and fatigue. In the other hand, regular physical training, especially in water, can benefit people with MS. Keywords: Multiple sclerosis, Hydrotherapy, IL10, EDSS, women

INTRODUCTION

Multiple Sclerosis (MS) is a chronic and progressive autoimmune disorder of central nervous system that affects the brain and spinal cord. It is marked with the destruction of myelin sheath of nerve cells and formation of scars that causes disorder in the flow direction of action potentials. The main cause of MS is unknown. The symptoms of MS appear between the ages of 20 to 40. At present it has reached ages of less than 20 years with an escalating trend among women being, twice more prevalent in woman than in men. The prevalence of MS is different in terms of geographical location. It increases from the equator towards the pole. It is twice more prevalent in woman than in men. The present study aims to explore the effect of 10 weeks hydrotherapy on EDSS and Interleukin 10 (IL10) in female MS patients. The statistic population consists of 30 MS patients whose MS has been confirmed by a neurologist. They divided into two groups based on inclusion criteria. Experimental group consisted of 15 and the control group consisted of 15 people with ages ranging from 22 to 51 and the weight of 58.9 ± 9.3 kg, height of 153.5 ± 15.6 cm. According to the descriptive statistics EDSS decreased in the experimental group after 10 weeks hydrotherapy. But no significant different was seen in IL10 in two groups. Lack of physical activity tends to increase muscle weakness and fatigue. In the other hand, regular physical training, especially in water, can benefit people with MS.

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expects to reach significant benefit on patients after selected aerobic exercises in water [1].

MATERIALS AND METHODS
The present study aims to explore the effect of 10 weeks hydrotherapy on EDSS and Interleukin 10 (IL10) in female MS patients. The type of research is applied research, and the methodology is semi-experimental, which due to the limitations, the research plan included testing the experimental and control groups before and after the tests the results of which were analyzed. The statistical population consists of 30 MS patients whose MS has been confirmed by a neurologist. They divided into two groups based on inclusion criteria. Experimental group consisted of 15 and the control group consisted of 15 people with ages ranging from 22 to 51 and the weight of 58.9 ± 9.3 kg, height of 153.5 ± 15.6 cm. Patients had no Cardiovascular disease history- final diagnosis of MS confirmed by a neurologist, no history of epilepsy, no history of metabolic diseases, not pregnant, no history of regular exercise during the past three months. All participants had physical disability scale (EDSS) between 1-5. One day before starting the hydrotherapy program the patients involved in the study came together in the desired location and were briefed on how to do the exercise – the intensity of exercise - the number of repetitions in each session and then the experimental and control groups participated in the pretest and at this stage, physical disability scale test developed by a specialist neurologist, and gave blood sample for analyzing IL10. Hydrotherapy program for the experimental group was implemented for 10 weeks, 3 sessions per week. After completing the training the program both groups were given tests and the results were analyzed.

RESULTS
The main purpose of this research was the effect of 10 weeks hydrotherapy on IL10 and EDSS in MS patient. This study found that ten weeks of hydrotherapy had a significant impact on the EDSS among M.S patients. According to the descriptive statistics, presented in table 1, EDSS decreased in the experimental group after 10 weeks hydrotherapy. But no significant different was seen in IL10 in two groups (table2).

<table>
<thead>
<tr>
<th>Variable</th>
<th>Experimental Pre-test</th>
<th>Control Pre-test</th>
<th>Experimental Post-test</th>
<th>Control Post-test</th>
</tr>
</thead>
<tbody>
<tr>
<td>EDSS</td>
<td>3.8 ± 0.8</td>
<td>3.4 ± 0.3</td>
<td>3.1 ± 0.2</td>
<td>3.5 ± 0.6</td>
</tr>
</tbody>
</table>

By demyelination of certain nerves "visual disturbances". Secondary symptoms: caused by primary symptoms like an early form of paralysis can bring about the secondary problem of muscle atrophy that results in inactivity. Tertiary symptoms: are mental, psychological and social complications that are caused by primary and secondary symptoms.

As definite treatment is lacking, exercise can be useful for MS Patients for improving physical health, emotions, functional status and quality of life [8] and there is rare worsening of symptoms in MS patients by exercise [9].

Hydrotherapy is of remarkable significance as exercise in water increases physical fitness. Patients’ weights are considerably reduced in water. Circumferential water resistance brings about balance in the patient and also prevents increase of body temperature. It also brings about increased maintenance and strength of muscles, oxygen supply to brain, promotion and maintenance of range of motion, reduction of muscle rigidity, development of muscle control, promotion and development of balance, increased quality of life and wellbeing and amplified vitality [10]. Obviously any program to be effective must be based on patients’ needs. Exercise programs are valuable once they can fulfill the needs of MS patients. But if the exercise programs are not appropriate it may result in intensification of MS symptoms [11]. Therefore, laborious physical exercise is not recommended as it can increase body temperature.
and worsen the MS symptoms and intense fatigue can contribute to aggravating factors of the disease [8].

In view of the said points, various therapeutic exercises are recommended: “Hydrotherapy, Aerobic exercise, yoga and swimming” to alleviate fatigue; improve the quality of life, increase walking speed and endurance and to enable the patients to overcome the disease and increase the level of balance and to control it [1].

The results of IL10 show that IL10 as immune-endocrine parameters is not one mediator of beneficial training effects specially in MS patients.

**CONCLUSION**

Lack of physical activity tends to increase muscle weakness and fatigue. In the other hand, regular physical training, especially in water, can benefit people with MS.

**REFERENCES**


