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Centering prayer in the treatment of Parkinson's disease preliminary quality-of-life research

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Abstract

Parkinson's Disease (PD) affects nearly a million Americans, a number that will increase over the coming decades. L-DOPA has been the most effective treatment. While available medical therapies help control symptoms during the initial years following diagnosis, higher doses are required over time, increasing side effects and decreasing control of symptoms. As a result, patients suffering from PD become refractory to conventional treatments.

The authors anecdotally observed a significant symptom reduction in a patient who practiced Centering Prayer (CP), taught by Hesse. As a last choice, the experience led the authors to apply teaching CP to four current patients to improve their quality of life. We studied these patients before and after practicing CP, assessing tremors by electromyography records and applying the Unified Parkinson's Disease Rating Scale (UPDRS).

A control group of four PD patients with high UPDRS, who were not trained in CP, were also selected. During the active phase of PD symptoms, electromyography (EMG) testing was conducted before and 30 minutes after the CP session in the test group. EMG testing was also done on the control group during the active phase of symptoms, and the groups were compared for a reduction in EMG amplitude. All patients showed a significant reduction in EMG amplitude after the CP session. There were significant UPDRS score decrements at 30 and 45 minutes, lasting up to 60 minutes. These important clinical and EMG results were not found in the control group. With these results, our group plans to collect greater samples of PD patients for proposing CP practice as an alternative treatment for this Disease.

Keywords: Parkinson's Disease (PD); Centering prayer (CP); Tremor; Rigidity; L-DOPA; Unified Parkinson's Disease Rating Scale (UPDRS)

1. Introduction

Parkinson's Disease (PD) was named after an English doctor, James Parkinson, who published the first detailed description in "*An Essay on the Shaking Palsy*" in 1817. Public awareness campaigns include "*World Parkinson's Day*" (on the birthday of James Parkinson, 11 April) and the use of a red tulip as the symbol of the Disease.[1]

PD affects nearly a million Americans, a number projected to increase over the coming decades.[2] While available medical therapies are effective for controlling symptoms initially, over time, higher doses of multiple agents are required, causing dose-related increasing side effects without complete control of symptoms. Although these treatments provide initial hope, they do not address the underlying disease cause or PD's inevitable biological progression. Typical disease progression gradually worsens over a decade or more, corresponding to ongoing neuronal loss, which affects cells in

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the pigmented nuclei of the brain, particularly in the substantia nigra. There is a long "preclinical" phase preceding diagnosis, during which loss of these dopaminergic neurons progresses until the threshold for clinical symptoms is reached, estimated to be between 70% to 80% loss at the time of diagnosis. Given this prolonged course of progressive neuronal loss, strategies to reduce the rate of neuronal loss or dysfunction (i.e., clinical neuroprotection or disease modification) are particularly important in treating this disorder.[3-6]

Sequential testing of single agents is no longer considered the best approach to expeditiously reducing disability from PD, as many potential neuroprotective interventions are currently available. Clinical trial designs in which several agents are compared to a single control group have the advantage of participant acceptance because:

- Assignment to control is less likely and,
- Because of the reduced possibility of comparing the active interventions directly.

Statistical power to define interactions may be limited, factorial designs in which some participants may receive more than one active intervention offer the potential to assess the effects of combinations of neuroprotective agents that work by different mechanisms. Large, simple clinical trials focused on limited goals and a few key outcomes facilitate the participation of large numbers of investigators, supplementing streamlined protocols, and subsets of participants in large, simple trials at selected sites can be more intensively investigated.[7-11]

L-DOPA, also known as levodopa and l-3, 4-dihydroxyphenylalanine, is an amino acid made and used as part of some plants and animals' normal biology, including humans. Humans, and a portion of other animals that utilize l-DOPA, make it via biosynthesis from the amino acid l-tyrosine. L-DOPA is the precursor to the neurotransmitters dopamine, norepinephrine (noradrenaline), and epinephrine (adrenaline), collectively known as catecholamines. L-DOPA mediates neurotrophic factor release by the brain and CNS. L-DOPA can be manufactured and, in its pure form, is sold as a psychoactive drug with the INN levodopa; trade names include Sinemet, Pharmacopa, Atamet, and Stalevo. As a drug, it is used in treating PD and dopamine-responsive dystonia.[6, 12-17] L-DOPA has been the most effective treatment.

As is true for many molecules, the human body produces only one of these isomers (the L-DOPA form). The enantiomeric purity of L-DOPA may be analyzed by determining the optical rotation or by chiral thin-layer chromatography (chiral TLC).[4, 18-20]

Despite the substantial disability due to PD, few interventional studies have evaluated agents that might impede disease progression. Previous investigators-initiated trials supported by NINDS to evaluate Deprenyl, Tocopherol Antioxidative Therapy of Parkinsonism (DATATOP), selegiline (Deprenyl), and vitamin E as treatments for PD. Vitamin E was found ineffective, and selegiline has not become widely used because of uncertainty about a neuroprotective vs. symptomatic effect due to an initially unsuspected dopa-agonist action.[19, 21]

1.1. Parkinson's Disease has four main symptoms

- Tremor (trembling) in hands, legs, jaw, or head.
- Stiffness of the limbs and trunk.
- The slowness of movement.
- Impaired balance and coordination, sometimes leading to falls.

1.2. Parkinson's Disease is often accompanied by these additional problems, which may be treatable

- Thinking difficulties.
- Depression and emotional changes.
- Swallowing problems.
- Chewing and eating difficulties.
- Sleep problems and sleep disorders.
- Bladder problems.
- Constipation.

2. "On-off" Phenomenon

"Off" time is when levodopa is no longer working well, and symptoms such as tremors, rigidity, and slow movement re-emerge. As Parkinson's progresses, the" on-off" swings become less closely related to the timing of a dose of Levodopa.[21, 22]

2.1. Centering Prayer

Most faith traditions have two forms of prayer, discursive and contemplative. Most believers practice discursive prayer. Medical research[23] has shown the statistical healing effects of discursive prayer, but there is considerably less research on Contemplative prayer (CP). The Abrahamic faiths have practiced it for centuries: Judaism's Kabbalah,[24] Christianity's mysticism,[25] and Islam's Sufism.[26] Because they are wordless forms, they can be taught on an interfaith basis called Oneness Prayer (OP). CP is taught as a vehicle to open oneself up to the gift of contemplative prayer.

Hesse reports a method of teaching CP by asking a volunteer to follow these quoted phases:

- ACQUAINTANCESHIP is when I meet someone. It is more formal with the introduction of names. Taking Bill as my volunteer's name, I asked about his interests and agreed to meet again.
- FRIENDLINESS is my next meeting with Bill when we are less formal and on a first-name basis. We talk about having shared a meal since we both enjoy food.
- FRIENDSHIP is my next meeting with Bill, at which we pretend Bill is very ill. I offer to do anything to help, as I know he would do the same for me. The acronym sometimes refers to them as ACTS, meaning adoration, contrition, thanksgiving, and supplication. The last, supplication, has been the most common for me over the years, the shortest of which is "help."
- UNION is my final meeting with Bill when we remain silent and embrace in a heartfelt hug. We know each other so well that no words are necessary. Words would get in the way.

The authors observed anecdotal evidence in four patients who did not know each other and suffered PD refractory to conventional treatments. Therefore, we decided to study these patients in detail before and after practicing CP, assessing tremors by electromyography records and applying the Unified Parkinson's Disease Rating Scale (UPDRS). A control group of four PD patients with high UPDRS who were not trained in CP were also selected.

3. Material and methods

According to the Unified Parkinson's Disease Rating Scale (UPDRS), we selected four patients who complained of PD and trained them in CP. [27] Four other PD patients not trained in CP were considered the control group.

The patients received training in CP for 15 days. Once the patients were trained, five sessions were applied during the ON period of symptoms, focusing on the release of tremors. Two neurologists independently assessed the patients by the UPDRS before and after 10 minutes of the CP session. Videos were recorded before and after the CP session. Two neurologists independently analyzed the videos, and the UPDRS scores.[28]

We used the following CP methodology as the successive steps for CP training

- STEP 1

Choose a sacred word to symbolize your intention to consent to God's presence and action within.

- STEP 2

Sitting comfortably with eyes closed, settle briefly; silently introduce the sacred word.

- STEP 3

When engaged with thoughts, return ever-so-gently to the sacred word.

- STEP 4

At the end of the prayer period, remain silent with eyes closed for a couple of minutes.

3.1. Electromyographic (EMG) evaluation of patients.

EMG was used to observe the effects after CP practice. Before attaching the EMG electrodes, the surface of the skin beneath was cleaned with ethanol-wetted cotton pads. Disposable Ag/AgCl surface electrodes were placed on top of the left and right biceps brachii muscle, below the belly of the muscle, with an interelectrode distance of 3 cm. The reference electrode was placed at an inactive point on the lateral side of the brachium, 6–7 cm from the recording electrodes. The whole measurement was done without detaching the electrodes in between. The signals were recorded with wireless sensors (Neuronic, S. A.), with a sampling rate of 1,000 Hz and a resolution was 1 μV for EMG acquisition.

4. Results

Figure 1 shows EMG records before and 30 minutes after the CP session. A significant reduction in EMG amplitude was shown for all patients.

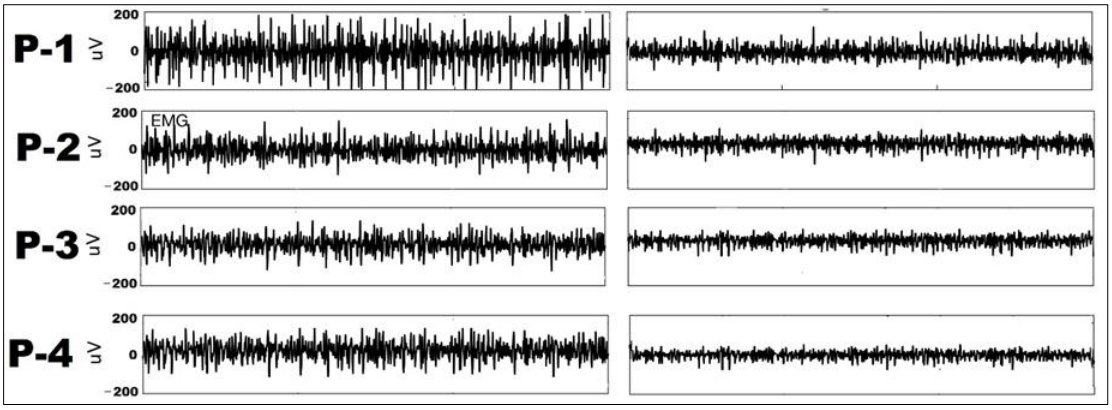

Figure 1 EMG records before and after 30 minutes after the CP session

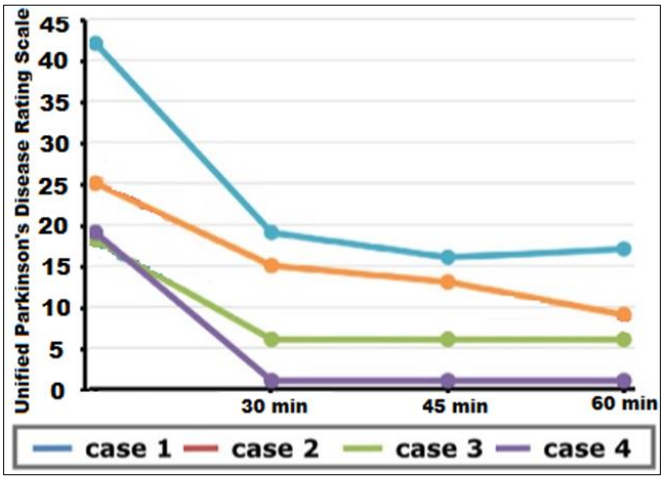

Figure 2 Unified Parkinson's Disease Rating Scale (UPDRS) scores after 30, 45, and 60 minutes of the CP session

5. Discussion

For over 50 years, the treatment of PD has relied on dopaminergic therapies, which are highly effective, especially in the early years of the condition, but ultimately are limited by the development of side effects related to the nonphysiological stimulation of dopamine receptors, including in nonstriatal areas. Nonetheless, several symptoms remain refractory to dopaminergic therapy in the evolution of this complex neurodegenerative disorder.[23,25] Hence, finding treatment alternatives is a challenge for neuroscience. Several reports indicate that the contemplative state is associated with noticeable hemodynamic and neuroelectric deviations in several brain regions involved in positive emotions, visual mental imagery, attention, or spiritual experiences. [29-34] In clinical applications, Laureys et al. have investigated the benefits of meditation, hypnosis, and meditation interventions to improve available therapeutic options in oncology. These authors also affirm that further neurophysiological and neuroimaging studies, such as the ones focused on default mode network activity on larger samples, would be useful better to understand the neural basis of these specific meditation states.[35-40]

This proposed preliminary study recognizes limitations, principally the small number of participants. Nonetheless, the EMG records and significant UPDRS scores after CP sessions demonstrated important clinical improvements in PD patients, which were not found in the control group. These preliminary results led us to plan future studies, including a greater number of patients, to evaluate the CP practice as an alternative PD treatment.

6. Conclusion

All patients showed a significant reduction in EMG amplitude after the CP session. There were also significant UPDRS score decrements at 30 and 45 minutes, lasting up to 60 minutes. These important clinical and EMG results were not found in the control group. With these results, our group plans to collect greater samples of PD patients for proposing CP practice as an alternative treatment for this Disease.

Compliance with ethical standards

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Disclosure of conflict of interest

The Authors report no conflicts of interest.

Statement of ethical approval

Written informed consent was obtained from each subject using a form approved by the IRB of the Institute of Neurology and Neurosurgery, Havana, Cuba

Statement of informed consent

Informed consent was obtained from all individual participants included in the study.

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