Chiropractic Care of a Patient with Parkinson’s Disease Utilizing Chiropractic Biophysics: A Case Study

Abstract

Objective: To report on the subjective and objective improvements of a patient with Parkinson’s disease, abnormal posture, and vertebral subluxations after undergoing chiropractic care utilizing Chiropractic Biophysics (CBP).

Clinical Features: A 67-year-old Caucasian male previously diagnosed with Parkinson’s disease with secondary psoriatic arthritis and lumbar radiculopathy presented for chiropractic care. Cervical radiographs confirmed a 43% loss of structural cervical lordosis.

Intervention and Outcome: Chiropractic care was provided utilizing Chiropractic Biophysics to reduce vertebral subluxations, improve postural, and spinal alignment. CBP rehabilitative corrective care was conducted over a 12-week period. There was an overall reduction in the patient’s vertebral subluxations and symptomatology with improvement in cervical lordosis, in addition to prominent enhancement in the patient’s activities of daily living.

Conclusion: This retrospective case study reports on the effectiveness of Chiropractic Biophysics in reducing vertebral subluxations and symptomatology by improving postural and spinal alignment of a 67 year-old patient with Parkinson's disease. Further research on chiropractic care correcting abnormal posture and spinal alignment with a reduction of symptomatology in Parkinson’s disease is suggested.

Key Words: subluxation, chiropractic, Chiropractic Biophysics, CBP, Parkinson’s disease, spinal rehabilitation, spinal corrective care, posture, traction

Introduction

Parkinson’s disease, second to Alzheimer’s disease, is the most common neurodegenerative disease and is the most common movement disorder in the world.1 A loss in dopaminergic neurons in the substantia nigra cause Parkinson’s disease to be a multisystem neurodegenerative disorder of the brain.2 Approximately 80% of dopaminergic neurons in the substantia nigra are lost when symptoms start to arise.3

In the U.S. it is estimated that at least one million people are affected by Parkinson’s disease and there are greater than 50,000 new cases diagnosed each year.4 The etiology of the disease remains unknown although research has hypothesized several leading risk factors such as systemic inflammatory insults, mitochondrial gene mutations, toxins, bacteria, viruses and trauma.4-8 Resting tremors of the extremities are usually the first classic sign of Parkinson’s disease followed by three other classic signs which are cogwheeling, bradykinesia, and postural dysfunction leading to improper gait and falls.9,10 Postural abnormalities in Parkinson’s patients increase the probability of falling with the incidence of falling being between 40-70%.9,10 The risk of falling increases the risk of
fractures and can lead to acute or chronic musculoskeletal conditions.11 Postural abnormalities seen in Parkinson’s patients are antecollis or extreme neck flexion, camptocormia or thoracic hyperkyphosis, and Pisa syndrome which is lateral plane thoracolumbar tilting.12,13 Proprioceptive impairment is shown to contribute to abnormal postural control.12,13 Thoracic hyperkyphosis has been shown to play an important role in the pathogenesis of intrathoracic stomach.14 Abnormal posture especially in moderate and severe stages of Parkinson’s disease prevents the patient from being able to perform activities of daily living that require the patient to reach.9

Since Parkinson’s disease is a multisystem disorder that affects motor function it also causes organ symptoms in the patient.15 It has been shown that as a Parkinson’s patient ages and the disease advances then the quality of life decreases.16 Parkinson’s disease not only affects the patient it also affects the caregivers as well.15,16

It is recommended that late stage Parkinson’s patients have some type of supportive care such as physical therapy, rehabilitative therapy, occupational therapy, speech therapy, and nursing care.10 Supportive rehabilitative care could prolong the patient’s activities of daily living and also help reduce symptoms such as pain and falls.10 The ideal recommended amount of time a Parkinson’s patient should spend in therapy is three times per week for 30-40 minutes each time.10 Patients that become immobile and bedridden can have complications associated with decubitus, contracture, pain, and pneumonia.10 Pneumonia and respiratory infections are the main causes of death for a Parkinson’s patient that suffer from infectious diseases.6,17

Case Report

Patient History

A 67-year-old Caucasian male previously diagnosed with Parkinson’s disease with secondary psoriatic arthritis and lumbar radiculopathy presented into a private practice seeking chiropractic care. The patient’s primary reason for seeking care was low back and hip pain associated with left leg pain, bilateral leg cramping and tendency to falling down.

The patient reported being under the medical care of a neurologist that diagnosed him with Parkinson’s disease about three years prior to presentation. SOAP notes were reviewed from the previous visit to the neurologist. The patient noted more difficulty dressing, doing buttons, tying shoes, fastening a seat belt, using eating utensils and swallowing during a meal. The patient reported right shoulder stiffness, left hand tremor, chronic right knee pain and episodes of falling mainly to the left side.

The patient said he had a good appetite but had lost weight because he had more difficulty preparing food. The neurologist noted mild cogwheeling, rigidity in both upper extremities, and resting tremor of the left hand. A grip test showed grip strengths of the right at 19kg and the left 17kg. The neurologist’s impressions were that the Parkinson’s disease was slightly worse with no etiology of the disease, abnormal MRI of the brain, psoriatic arthritis, high blood pressure, hyperlipidemia, Valium allergy, weight loss, difficulty swallowing and coughing during or after a meal - rule out recurrent aspiration, daytime sleepiness due to Mirapex which is slightly worse with Azilect, daily headaches twice a week, and a left foot bunionectomy. The neurologist declared the quality of life had decreased to the point that Stalevo was reasonable to prescribe to the patient.

Previous MRI of the brain revealed “numerous fossa of increased T2 signal in the white matter of both cerebral hemispheres, probably due to moderately extensive chronic ischemic change.” MRI of the cervical spine revealed “multilevel disc protrusions and degenerative disc disease without mass effect on the spinal cord or central canal stenosis, foraminal stenosis at multiple levels, severe left C4-5, severe right C5-6, and moderate left C6-7.” Previous radiographs were taken of the hip bilaterally, anteroposterior pelvis and lateral pelvis that showed mild degenerative spurring in the roof of the acetabular regions bilaterally and degenerative disc at L2-L5. A lumbar MRI was reported negative.

The patient’s medication list consisted of Sulfazine EC 500mg 4x/day, Etodolac 400mg 2x/day, Lisinopril/HCTZ 20mg/12.5mg 1x/day, Carvedilol 12.5mg 2x/day, Lovastatin 40mg 1x/day, CoQ10 200mg 1x/day, SloNicacin 500mg 1x/day, Mirapex 0.5mg 2x/day, Azilect 1mg 1x/day, Prilosec OTC 1x/day, Aspirin 81mg 1x/day, Bausch & Lomb Ocuvite vitamin 1x/day, Cloretasol Propionate 0.05%, and Fluocinonide ointment USP 0.05%.

Chiropractic Examination

The initial chiropractic exam included health condition ratings, observation, postural evaluation, cervical and thoracolumbar spine range of motion, static palpation, motion palpation, sensory and deep tendon reflexes, muscle testing, orthopedic testing, cervical and lumbar radiographs which included: anteroposterior and lateral views.

Chiropractic Biophysics’ primary focus is on restoring the patients posture and spinal alignment to normal while also making note of improvements in signs and symptoms of different health concerns.18 The patient had a total of 13 different health conditions or symptoms that consisted of moderate neck pain 3/10, double vision, headaches, lack of energy, unexplained weight loss, right hand weakness, bilateral knee arthritis, difficulty breathing while walking up/down stairs, moderate low back pain 3/10, mild left hip pain 5/10, bilateral calf cramping, urinary incontinence, and erectile dysfunction.

Chiropractic Biophysics (CBP) technique relies on postural assessment in congruence with radiography to determine the alignment of the spinal column.18-21 Normal postural position (outside alignment) and normal spinal position (inside alignment) are essential in a method for controlling risk factors for spinal dysfunction.18-21

Plumb line analysis was used to assess the patient’s posture. Posture has been studied with patient’s side lying, sitting, standing, lifting, working, walking, and engaging in daily activities.22-24 This assessment is used to determine posture of the spine from the head to the feet to get an overall picture of the patient’s posture.22-24
Postural stress has been correlated with scoliosis, office work, lifting injuries, driving, sports injuries, and back pain. Posture is universally accepted by almost all health care sciences as a valid outcome of care. There is high interobserver and intraobserver reliability reported in the majority of these studies. It has been shown that patient’s with intrathoracic stomach have an increased thoracic kyphosis which suggests that spinal alignment plays a role in the pathology of intrathoracic stomach.

Motion palpation is believed to be a successful evaluation for normal and abnormal spinal range of motion. This evaluation has been shown to detect areas of motion restriction or joint dysfunction and has been found to be responsive following a chiropractic adjustment of the cervical spine. Static palpation is believed to improve the clinician’s ability to distinguish the sites of pain or tenderness in order to establish the correct regions of the spine in which a spinal subluxation may be present. The inter- and intraexaminer reliability of the clinician’s ability to locate painful and tender points along the spine and sacroiliac joints has been determined to be high.

Orthopedic tests were performed to evaluate the cervical and thoraco–lumbar spine. These tests included Cervical compression, Cervical distraction, Shoulder compression, Jackson’s compression, Max cervical compression, Minor’s sign, Kemp’s, Straight leg raiser, Patrick’s, Milgrams, Brudzinski’s, Ely’s, and Yoeman’s.

Radiographic assessment of the spine is commonly used in CBP technique for the use of a biomechanical line drawing analysis on pre and post management x-rays to measure segmental and global spinal subluxations. It is essential to know the spinal alignment of the patient so that the chiropractor can use the correct mirror imaging adjustments along with spinal exercises and traction to help control spinal postural distortions. The x-ray line drawing analysis used for the CBP technique has been studied and proven reliable and repeatable.

Cervical and lumbar radiographic films were obtained on the initial exam and manual line drawing analysis was performed on the films. A set of post digital x-rays were obtained approximately three months later and were analyzed using Posture Ray digital line drawing software. Standard CBP radiograph positioning procedures were followed. All radiographs were taken with the patient standing barefooted, with the feet femur head width apart.

For the lateral cervical radiographs, the patient’s shoulders were positioned perpendicular to the radiographic bucky with the left shoulder against the buckle. The patient was instructed to flex and extend the head twice while having his eyes closed and come to a resting neutral position. The neutral resting posture is what the patient perceived his head to be looking straightforward. The patient was instructed to open his eyes and not move. The patient’s abnormal sagittal plane posture was left as is. The lateral cervical was taken at the standard tube distance of 72 inches, with the central ray located approximately at the C4 level.

For the AP cervical radiographs, the patient’s shoulders were parallel with and in the center of the bucky. The central ray was placed at approximately the episternal notch with a 15° cephalad tube tilt, and with the standard tube distance of 40 inches. With the thorax centered, the patient was instructed to flex and extend the head twice while having his eyes closed and come to a resting neutral position. The patient was instructed to open his eyes and not move. Any abnormal AP posture of the head relative to the thorax was not removed toward the ideal vertical position.

For the AP lumbar radiographs, the patient’s median sagittal plane of the pelvis was centered relative to the central ray. The central ray was placed at approximately the L3 vertebral level, with the standard tube distance of 40 inches. With the pelvis centered, the patient was instructed to flex and extend the head twice while having his eyes closed and come to a resting neutral position. The patient was instructed to open his eyes and not move. Any abnormal AP posture of the thorax relative to the pelvis was not removed toward the ideal vertical position.

For lateral lumbar radiographs, the patient’s shoulders and pelvis were positioned perpendicular to the bucky with the patients left side against the bucky, the patient was instructed to flex and extend the head twice while having his eyes closed and come to a resting neutral position. The patient was instructed to open his eyes and not move. The patient was then instructed to fold his arms across his chest in such a manner so as not to displace his original sagittal plane posture of the thorax or pelvis. The patient’s abnormal sagittal plane lumbar posture was left as is. The lateral lumbar was taken at the standard tube distance of 40 inches, with the central ray located approximately at the L4 level.

Chiropractic Impressions/Diagnosis

Observation showed bilateral resting tremor of the hands, bradykinesia of upper and lower extremities, rigidity of the neck, postural instability, camptocormia, facial masking, micrographia, and drooling. Postural assessment showed a total of 6 postural distortions which included anterior head translation, right high shoulder, left thoracic translation, right thoracic rotation, anterior thoracic spine translation and right hip rotation. Cervical spine ranges of motion were as follows: flexion 40°, extension 25°, right lateral flexion 10°, left lateral flexion 5°, right and left rotation 65°. Lumbar ranges of motion were as follows: flexion 65°, extension 15°, right lateral flexion 10°, left lateral flexion 10°, right and left rotation 10°.

Motion palpation findings indicated a right fixation of C2. Static palpation revealed tension around the right C2 structure as well as hypertonic muscles spasm ranging from the upper cervical spine to the upper thoracic spine also from L4-S1. Deep tendon reflexes were absent (0) or somewhat diminished (1+). Sensory was well intact. Manual, subjectively rated strength tests were performed on some of the major spinal muscle groups.

Testing revealed a decrease in normal bilateral muscle strength indicative of subluxation based neurological dysfunction. The areas that tested weak (+2/5) during the
examination include; neck flexors, neck extensors, neck right & left lateral flexors, trunk flexors and trunk extensors. The following nine orthopedic exams were found to be positive: Cervical compression, Shoulder compression, Jackson’s compression, Max cervical compression, Minor’s sign, Patrick’s, Milgram’s, Ely’s, and Yoeman’s.

A jump sign was noted which is a sudden contraction of muscle seen as a twitch in response to stimulation of a trigger point or other area of muscular hypertonicity or spasm. This test was positive at the following eleven levels of paravertebral spinal muscles: C1, C2, C3, C4, C5, C6, C7, T1, L4, L5 and sacrum.

Cervical radiographs demonstrated degenerative disc disease with anterior spurring at the levels of C4-C7. Using the Harrison Posterior Tangent Method to measure the global angle (absolute rotational angle, ARA) of C2-C7, the ARA measured to be 24° on the lateral cervical radiograph. This means the patient had a cervical lordosis of 24° or a 57% structural cervical lordosis which is a 43% loss of normal cervical curvature of 42°. Lumbar radiographs demonstrated degenerative disc disease with anterior spurring at the levels of L2-S1.

**Intervention**

Following the initial chiropractic examination, the findings were assessed using CBP protocol and the patient’s management plan was established so care could begin immediately. The primary goal of CBP technique is optimal posture and spinal alignment while documenting improvements in pain and functional based outcomes. CBP technique is based on a postural approach model of subluxation as postural distortions lead to “global” subluxations.

Abnormal postural loads on the nervous system can result in progressive neuronal dysfunction and degenerative changes. Abnormal spinal cord stresses and strains have been linked to many conditions including but not limited to periradicular, epidural, and subarachnoid adhesions, amyotrophic lateral sclerosis, cerebral palsy, intramedullary neoplasms, syringomyelia, paraplegia and urinary incontinence. Spinal flexion for long periods of time causes the most detrimental postural loading to the spinal structures.

Flexing the upper cervical spine alone results in a significant increase in the intramedullary cord pressure, which is in the range, 10 to 20 mm Hg. required to reduce spinal cord blood flow and cord perfusion.

Research has shown that posture in the AP and lateral views should be restored or improved to normal spinal curvature to reduce stress and strain on the central nervous system. Patients with a variety of neurological disorders may benefit from improved posture.

It was advised that the patient receive pain relief care for his symptoms and restoration of functional range of motion in the cervical and lumbar spinal regions prior to receiving corrective care. Relief care is based on a segmental model of subluxation, which assesses for aberrant motion in intervertebral motion segments. Relief care consisted of diversified segmental adjusting technique of the cervical spine, Thompson drop table technique for the lumbosacral and pelvis regions, the use of a transcutaneous electrical nerve stimulation unit on the lumbar paraspinal muscles, and an ice pack on the lumbar region.

Diversified segmental adjusting technique was performed to reduce any vertebral subluxations that were detected in the cervical spine. With the patient lying supine the clinician would use slight lateral flexion coupled with slight axial rotation of the cervical spine to deliver a high velocity, low amplitude adjustment to the cervical segmental level of subluxation. The clinician’s contact point was the lateral index finger and was placed on the patients spinal lamina junction of the cervical vertebra of one side, using the other hand the clinician would stabilize the patients head on the contralateral side. Relief care consisted of ten visits, five visits per week for two weeks.

After relief care the patient was re-examined and advised on CBP spinal rehabilitation corrective care that would be three visits per week for 12 weeks. The average amount of time the patient spent each visit was 45-60 minutes. CBP corrective care protocol consists of mirror image spinal exercises, mirror image spinal adjustments, and mirror image spinal traction. CBP research has shown that using the CBP protocol of exercises, adjustments, and traction for the cervical spine, patients had decreased chronic neck pain and increased cervical lordosis in 38 visits, as indicated by reduction of segmental and global spinal misalignments (subluxations).

The patient was advised on spinal exercises for the cervical region and thoracolumbar region. The patient did warm up exercises, which consisted of active range of motion of the cervical spine for 2-3 minutes. The patient then performed cervical extension exercises using the Necksys cervical rehab starting at 30 repetitions and increasing repetitions by 10 weekly.

After the patient finished with his exercises, he was then adjusted using CBP mirror image protocol to reduce global vertebral subluxations and improve spinal postural alignment. The patient was placed prone on the drop table, the cervical, thoracic, and lumbar drops were set to the appropriate tension before CBP adjustments were applied to the patient. For each postural distortion, the patient received an opposing adjustment for that region. The adjustment consisted of 3 drops for each region.

Adjustments in the cervical region consisted of providing extension to the forehead and applying contact with the web of the hand to the posterior cervical region. For the thoracic region the clinician used a bi-hypothenar (knife edge) contact on the region on the transverse processes and applied a P-A, I-S drop. The lumbar region adjustments consisted of the clinician using a bimanual contact on the patients lumbar region with a P-A drop.

Following the adjustments, the patient was placed in mirror image traction. Traction consisted of placing the patient supine on the drop table, a wedge shape foam block was placed in the middle of the patients spine from T3 vertebral
level down. This allowed the patient’s head and cervical spine to naturally go into extension while the patient had a foam block under his skull for support. The pelvis drop piece was positioned up to allow the lumbar region to traction posterior in relation to the pelvis.

A round foam roller was placed under the patient’s knees for support. The patient was in this mirror traction position for 15 minutes. After the patient was finished with traction, he was given ice packs for his cervical and lumbar regions while sitting in a chair. To help the patient address activities of daily living we worked on tying a half Windsor knot with a tie, getting up from a seated position, walking up and down stairs, getting in and out of a car, getting keys out of his pants pocket, starting the ignition of a car, and putting on a seatbelt.

**Outcome**

Upon re-evaluation the patient reported the following improvements (in %) in health condition ratings: neck pain 30%, double vision 50%, lack of energy 40%, unexplained weight loss 20%, right hand weakness 40%, bilateral knee pain 50%, low back pain 50%, left hip pain 90%, bilateral calf cramping 80%, bladder leakage 50%, erectile dysfunction 30%. The patient also reported he had not had any headaches or difficulty breathing while walking up/down stairs.

The patient’s activities of daily living had improved in areas that included: buttoning a shirt, tying shoes, tying a tie, putting on a belt, getting in/out of a car, getting keys out of his pants pocket, starting a car, walking up/down stairs, walking more without a cane, getting up from a chair, being able to prepare meals and less problems swallowing during meals. The patient regularly stated feeling more independent and better then he did before seeking chiropractic care. He reported higher levels of energy due to getting better sleep.

Objective findings documented three postural distortions that included decreased anterior head translation, decreased anterior thoracic translation, and decreased right hip rotation. Cervical spine ranges of motion were as follows: flexion 40°, extension 35°, right lateral flexion 25°, left lateral flexion 25°, right and left rotation 70°. Lumbar ranges of motion were as follows: flexion 70°, extension 10°, right lateral flexion 20°, left lateral flexion 20°, right and left rotation 15°.

Motion palpation findings indicated a right fixation of C2. Static palpation revealed tension around the right C2 vertebra as well as L4-5. Deep tendon reflexes proved to be normal (+2). Sensory was well intact. Muscle testing revealed normal (+5/5) strength in neck flexors, neck extensors, left lateral neck flexors, and trunk flexors. Muscle testing revealed fair (+4/5) strength in right lateral neck flexors and trunk extensors.

The following five orthopedic exams tested positive: Max cervical compression reproduced pain on the right at C2, Straight leg raiser reproduced pain on the right at L5, Patrick’s reproduced pain bilaterally at L4-5 levels, Ely’s reproduced pain bilaterally at L4-5 levels and Yoeman’s reproduced pain bilaterally at L4-5 levels. Jump sign test was positive at the following five levels of paravertebral spinal muscles: C2, C3, L3, L4, and L5. Cervical radiographs demonstrated degenerative disc disease with anterior spurring at the levels of C4-C7. Using the Harrison Posterior Tangent Method to measure the global angle (absolute rotational angle, ARA) of C2-C7, the ARA measured to be 39° on the lateral cervical radiograph. This means the patient had a cervical lordosis of 39° or a 93% structural cervical lordosis which is a 7% loss of normal cervical curvature of 42°. The patient’s cervical lordosis improved 15° from 24° pre-treatment to 39° post-treatment which is a 36% improvement from 57% to 93% structural cervical lordosis.

In summary of the outcome, the findings show the patient gained increases in cervical and lumbar ranges of motion, neck flexors, neck extensors, neck lateral flexors, trunk flexors and extensors, deep tendon reflexes, and spinal alignment particularly cervical lordosis. The findings also show the patient had decreases in the number of postural distortions (6 to 3), positive orthopedic tests (9 to 5), and Jump sign levels (11 to 5). The patient had reductions in segmental and global subluxations of the spine.

**Discussion**

**Parkinson’s Disease - Pathophysiology**

The slow paced pathological process of Parkinson’s disease becomes very progressive with age with clinical symptoms arising late in the pathological progression. Degeneration of region-specific selective loss dopaminergic neurons in the substantia nigra particularly in the zona compacta is the hallmark for Parkinson’s disease giving rise to motor symptoms. However the first abnormalities start in the olfactory bulb and the vagal and glossopharyngeal nuclei, not the substantia nigra.

Lewy bodies, pale bodies and Lewy neurites are three distinctive intraneuronal inclusions that accompany nerve cell loss. Alpha-synuclein and ubiquitin-containing intracytoplasmic inclusions make up Lewy bodies that are surrounded by a halo and are more prevalent in the substantia nigra and locus coeruleus. Precursors to Lewy bodies that lack a halo are pale bodies, which are more common in the brainstem then are Lewy bodies. A neurofilament abnormality with diffuse aggregate proteins make up a Lewy neurite.

Lewy bodies found in Parkinson’s disease are located in multiple sites within the body, these sites include the nucleus basalis of Meynert, dorsal raphe, locus coeruleus, substantia nigra, dorsal motor nucleus of the vagus nerve, intermediolateral nucleus and hypothalamic nuclei. Development of dysphagia and autonomic failure are related to Lewy bodies in the sympathetic ganglia of the vagus nerve. The non-motor complications in PD include but are not limited to systems of olfaction, gastrointestinal, genitourinary, cardiovascular, integumentary, respiratory, visual, and psychiatric.

Lewy body pathology staging in Parkinson’s disease has been divided into six stages with specific anatomical regions in each stage according to Braak, Del Tredici, and co-workers. Stage 1 main location is the medulla oblongata with lesions in
the dorsal motor nucleus of the glossopharyngeal and vagus nerves and lesions in the intermediate reticular zone. Stage 2 main locations are the medulla oblongata and pontine tegmentum with lesions in the caudal raphe nuclei, gigantocellular reticular nucleus, and coeruleus–subcoeruleus complex.

Stage 3 main location is the midbrain with lesions in the pars compacta of the substantia nigra. Stage 4 main locations are the basal prosencephalon and mesocortex with cortical lesions in the temporal mesocortex and allocortex. Stage 5 main location is the neocortex with lesions in high order sensory associated areas and prefrontal neocortex. Stage 6 main location is the neocortex with lesions in the first order sensory associated areas and premotor areas.

**Traditional Treatment**

Currently there is no curable treatment for Parkinson’s disease, however the treatment that is provided to the patient is geared towards reducing symptoms, improving the quality of life and extending longevity. Traditional medical treatment involves a combination of several pharmaceutical drugs which have only been offered since the 1970’s. Initial medical treatment for a patient with PD is Levodopa in combination with a peripheral dopamine decarboxylase inhibitor. Levodopa can cross the blood-brain barrier and naturally be converted into dopamine to be stored and released onto postsynaptic receptors. Adjustments of the timing and dosage of L-dopa must be made frequently to negate the “wearing on” and “wearing off” of the drug.

The combination of acatechol–O–methyl transferase inhibitor (entacapone) or a monoamine oxidase inhibitor B (selegiline or rasagiline) with L-dopa could help to eliminate early wearing-off effects, and partial substitution with a dopamine agonist could also reduce L-dopa-induced dyskinesias.

The patient should slowly be withdrawn from the orally administered medication within 3-12 months for best results in reduction of dyskinesias and “wearing off” periods. As the disease progresses, the efficacy of L-dopa decreases. Subcutaneous infusion of Apomorphine is an option for patients with severe changes in the “wearing on” and “wearing off” of L-dopa.

High frequency subthalamic deep brain stimulation with the use of implanted electrodes has been implemented to improve drug sensitive symptoms and to reduce dyskinesias for 20 years. Other surgical interventions exist including thalamotomy and pallidotomy. However in patients with late stage PD, surgical treatment is undesirable due to age and increasingly short and long term complications.

**Alternative Treatment**

The use of complimentary and alternative medicine by patients with Parkinson’s disease in the U.S. is reported to be 40%. A pilot study showed the use of treadmill training for six weeks improved gait, decreased susceptibility to falling and increased activities of daily living in patients with Parkinson’s disease.

Rehabilitative approaches to treat disturbances of gait and equilibrium in PD include training of compensatory steps, high-resistance strength training, use of visual or acoustic sensory cues, attentional strategies, training of movement amplitude, and other strategies.

Acupuncture has been shown to be safe and tolerable in PD patients however there is no evidence of improved quality of life or ADL’s. Alternative forms of exercise such as Tai Chi and different dance forms such as the Waltz/Foxtrot and Tango have been studied in PD patients and the results showed no significant changes in health related quality of life. Speech therapy has been shown to be successful in increasing speech volume in patients with PD. It has been shown that osteopathic manipulative therapy improves stride length, cadence, and gait velocity in patients with PD.

**Chiropractic Literature**

A case study by Burton provided insight on the importance for chiropractors to detect ominous signs and symptoms of diseases such as Parkinson’s that has similar signs and symptoms of mechanical low back pain; therefore, an early referral, diagnosis, and management plan can be implemented. Considering that mechanical low back pain commonly presents with abnormal gait and slow movement especially in the elderly, Parkinson’s disease also presents with similar signs of abnormal gait and slow movement.

The study was regarding a 67 year old female patient with a 20 year history of recurrent low back pain presenting to a private chiropractic clinic in Canada and received chiropractic treatment for 10 years. Throughout the 10-year period the patient reported joint achiness in her extremities and progressively demonstrated slow movements with a mild flexed posture.

The patient gradually complained of increased motor difficulties such as cleaning the toilet and bathtub, getting in and out of a car, being able to dress and raising from a kneeling position, sleep disturbances and falling down while walking in the garden were also noted. The chiropractor referred the patient to a neurologist, neurological tests were performed and a MRI discovered a deep lobe parotid tumor.

The results of the neurological tests were conclusive of that seen in Parkinson’s disease. A diagnosis of Parkinson’s disease without a tremor was made. The patient was co managed by her neurologist and chiropractor. The chiropractor continued to provide care for low back pain and rehabilitation for her PD symptoms such as gait and balance control.

A case study by Elster assessed the management of a Parkinson’s patient with the use of International Upper Cervical Chiropractic Association (IUCCA) upper cervical technique. The study described a 60-year-old male patient that was diagnosed with Parkinson’s disease at age 53 by his neurologist. The patient had developed a tremor of his left fifth finger, he progressively developed left leg rigidity, body tremors, slurring of speech and loss of memory.

The chiropractor evaluated the patient’s symptoms with the use of observation, the patient’s subjective description of
symptoms and a Unified Parkinson’s Disease Rating Scale (UPDRS). The UPDRS classified 44 Parkinson’s symptoms on a scale of zero to four and were rated during the “on” and “off” stages of medication use.

Initial UPDRS scores (on/off) were 32/74. All treatment visits included thermal scanning as a diagnostic tool for neurophysiology, analysis from C7 to occiput measured thermal asymmetries as high as 1.13°C.\textsuperscript{30} Thermal asymmetries of 0.5°C or greater indicate abnormal neuropathophysiology. A subluxation of an atlas right laterality was detected and was adjusted using IUCCA upper cervical technique on a knee-chest table. A post adjustment thermal scan was performed 15 minutes after the adjustment and revealed a 0.1°C thermal difference which is considered normal.

The patient’s care plan consisted of three visits per week for two weeks, two visits per week for two weeks, and one visit per week for eight weeks.\textsuperscript{20} The final UPDRS was administered after twelve weeks of care and showed scores of 13/47, an overall improvement of 43% from the initial 32/74 UPDRS score. The patient reported his greatest improvements in balance, neck range of motion, sleep, energy, hand and leg agility, walking, handwriting, and arising from a chair. The patient noted he was able to ride a bike and started a exercise program with a personal trainer three times per week.\textsuperscript{30} The patient continued chiropractic care for maintenance treatment one time per month. The study reported a successful outcome of a Parkinson’s patient treated with IUCCA upper cervical technique.

A retrospective analysis by Elster\textsuperscript{71} on eighty-one patients, 44 Multiple Sclerosis patients and 37 Parkinson’s patients, provided insight on how International Upper Cervical Chiropractic Association (IUCCA) upper cervical technique can reduce subluxations and symptoms in MS and PD patients. History of head, neck, or back trauma was recalled by 95% of the Parkinson’s patients.

IUCCA protocol was utilized to examine and care for each patient which consisted of paraspinal thermal scanning, upper cervical radiographs, knee-chest adjusting posture, and post-adjustment recuperation. Initial thermal scans of all 37 Parkinson’s patients resulted in thermal asymmetry of 0.5°C or greater, indicating neuropathophysiology originating from the upper cervical spine. After determining that all 37 PD patients had subluxations, the patients were scanned and adjusted when needed over a course of five years.

Improvement of symptoms were reported by 92% of the PD patients; 44% substantial improvement, 24% moderate improvement, and 32% mild improvement. The results indicated a causal link between trauma, upper cervical injury and the onset of Parkinson’s disease. The author concluded that correcting cervical spine injury with the use of IUCCA upper cervical technique may reduce the progression of Parkinson’s disease.

**Conclusion**

This case study suggests that Chiropractic Biophysics may reduce the symptomatology found in patients with Parkinson’s disease by improving spinal alignment and posture while also aiding in improved activities of daily living. There have only been three other studies reported within chiropractic literature regarding Parkinson’s disease.

This study at the time it was documented is the first to report on the use of Chiropractic Biophysics in the management of a patient with Parkinson’s disease. Further research on chiropractic care correcting abnormal posture and spinal alignment with a reduction of symptomatology in Parkinson’s disease is suggested.

**References**


