Clinical Integration of Osteopathic Manipulative Medicine

Family Medicine – Parkinson’s disease

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**Intro:** Parkinson’s disease (PD) is a progressive neurologic disorder afflicting approximately 1 percent of Americans older than 60 years¹. While PD has traditionally been considered a motor system disorder, it is now recognized as a complex condition with diverse clinical features that include neuropsychiatric and other non-motor manifestations in addition to its motor symptomatology². The cardinal features of PD are bradykinesia, rigidity, tremor, and postural instability³. There are a number of neurologic conditions that mimic the disease, making it difficult to diagnose in its early stages. An accurate diagnosis of PD rests on the clinician’s ability to recognize its characteristic signs and associated symptoms, especially in the early stages³. Current medical treatment is effective in reducing motor impairment and disability, and should be started when a patient begins to experience functional impairment. The combination of carbidopa and levodopa is the most effective treatment, but dopamine agonists and monoamine oxidase-B inhibitors are also effective, and are less likely to cause dyskinesias. Deep brain stimulation is effective in patients who have poorly controlled symptoms despite optimal medical therapy. Osteopathic manipulative treatment along with physical, and speech therapy have been shown to improve patient function¹⁻³. Fatigue, sleep disturbances, dementia, and depression are common in patients with Parkinson’s disease emphasizing the need for the integration of multiple disciplines to maintain the quality of life throughout the course of the disease.

**Patient presentations:**

- **Tremor:**
  - Resting tremor (4-6 Hz) in a limb that is often asymmetric
  - Disappears with voluntary movement
  - Frequently emerges in a hand while walking and may present as pill rolling
  - May also present in jaw, chin, lips and tongue
- Bradykinesia
- Rigidity:
  - Cogwheel (catching and releasing) or lead pipe (continuously rigid)
- Postural instability
Differential diagnosis:

- Essential tremor: Bradykinesia is not present; often symmetric and occurs mostly during action or when holding hands outstretched
- SWEDD: Scans Without Evidence of Dopaminergic Deficit; isolated upper extremity resting and postural tremor resembling PD but failing to progress to generalized PD
- Dementia with Lewy bodies: characterized clinically by visual hallucination; fluctuating cognition and parkinsonism
- Multiple system atrophy: Presents with parkinsonism but with varying degrees of dysautonomia cerebellar involvement and pyramidal signs
- Progressive supranuclear palsy: Impairment in vertical eye movements (particularly downward gaze), hyperextension of neck and early falling
- Idiopathic basal ganglia calcification
- Associated neurodegenerative disorders: Late stages of Alzheimer’s disease, Huntington’s disease, Frontotemporal dementia, Spinocerebellar ataxias

Clinical pearls and diagnostic tools:

- Physicians who rarely diagnose Parkinson disease should refer patients suspected of having it to physicians with more experience in making the diagnosis, and should periodically reevaluate the accuracy of the diagnosis.
- The diagnosis of PD during life is based on clinical impression; neurodiagnostic testing is almost always unhelpful. While a clinical diagnosis of idiopathic PD may seem relatively simple, the accuracy of such a diagnosis can be as low as 75% when neuropathological examination is used as the diagnostic gold standard. On the other hand, diagnostic accuracy is increased to as high as 90% if patients are followed long-term by movement disorders specialists
- Bradykinesia, plus one of the remaining two cardinal manifestations (tremor, rigidity), should be present in order to make the diagnosis of idiopathic PD. In addition, an excellent response to dopaminergic therapy is an important criterion for the diagnosis. Other clinical features that are supportive of the diagnosis are unilateral onset, presence of a rest tremor, and a persistent asymmetry throughout the course of the disease with the side of onset most affected
- Features that are most useful for identifying patients with parkinsonism other than PD are the following:
  - Falls at presentation and early in disease
  - Poor response to levodopa
  - Symmetry at onset
  - Rapid progression
  - Lack of tremor
  - Dysautonomia
- While there are no diagnostic tests for PD, a brain MRI scan is suggested to exclude structural lesions. Striatal dopamine transporter imaging (DaTscan) may also be useful for occasional patients for whom the clinical diagnosis is unclear.

OMM Integration: Osteopathic manipulation may be an effective physical treatment method in the management of movement deficits in patients with Parkinson's disease. It has been shown that
exercise and motor training, such as those accomplished by osteopathic techniques, can improve the performance of balance-related activities in people with Parkinson's disease⁹.

**Osteopathic Structural Examination:** Osteopathic structural exam should be focused on muscle imbalances affecting postural stability. There is some evidence to suggest cranial strain patterns are important to diagnose and address in Parkinson’s disease patients¹⁰. In 2002, River-Martinez et al. showed that patients with Parkinson's disease had a significantly higher frequency of bilateral occipitoatlantal compression (87% vs. 50%; P < .02) and bilateral occipitomastoid compression (40% vs. 10%; P < .05) compared with normal controls. Treatments options:

The goals of our treatment are to stretch soft tissues, release tissue adhesions, eliminate restricted motion of carpal and metacarpal bones, increase the length of the transverse carpal ligament, increase range of motion, strengthen muscles, and reduce edema (Siu).

- Myofascial release of the wrist flexor retinaculum
- Opponens roll maneuver
- ART/HVLA to dysfunctional carpal bones
- ART/HVLA to dysfunctional metacarpophalangeal joints
- HVLA for a posterior radial head (pronation dysfunction)
- Muscle energy for supination or pronation dysfunctions
- Myofascial release of the interosseous membrane

Possible treatments options:

- Lateral translation of vertebrae in the thoracic/lumbar spine performed with the patient seated
- Active myofascial stretch to the thoracic spine with patient seated
- OA release
- Translation of cervical spine with patient seated
- Muscle energy techniques of the cervical spine
- Spencer technique applied to shoulder bilaterally
- Supination/pronation of the forearm
- Circumduction of the wrist bilaterally
- Sacroiliac joint gapping bilaterally
- Muscle energy to the adductor muscles of the lower extremity bilaterally
- Muscle energy to the psoas bilaterally
- Muscle energy to the hamstrings bilaterally
- Articulatory technique applied to the ankles bilaterally
- Muscle energy technique applied to the ankle in dorsi and plantar flexion bilaterally

**Related evidence based medicine articles:**


**Citations for paper:**

Citations:

2. Langston JW. The Parkinson's complex: Parkinsonism is just the tip of the iceberg. *Ann Neurol* 2006; 59:591