Complimentary and Alternative Therapies in Parkinson’s Disease

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Overview

Cardinal Symptoms
- Bradykinesia
- Rigidity
- Tremor
- Postural Instability

Non-Motor Symptoms
- Fatigue
- Cognitive Disorders
- Hypophonia
- Depression
- Anxiety
- Constipation
How do we treat PD?

Traditional Therapies

- Carbidopa/Levodopa
- Stalevo
- Pramipexole (Mirapex)
- Ropinirole (Requip)
- Rotigotine (Neupro)
- Bromocriptine (Parlodel)
- Rasagiline (Azilect)
- Amantadine (Symmetrel)
- Selegiline (Eldepryl)
- Zydis Selegiline (Zelapar)
- Entacapone (Comtan)
- Trihexyphenidyl (Artane)
- Benztropine (Cogentin)
- Apokyn (Apomorphine)
Sinemet

- Levodopa induced dyskinesias
- Motor Fluctuations
  1. Wearing off
  2. Sudden offs / unpredictable offs
  3. Dose failures/ “dud pills”

Dopamine Agonists

Sites of action of common therapies for Parkinson's disease

- Levodopa increases L-Dopa levels
- Selegeline inhibits MAO-B
- ComT inhibitors block degradation of DA and L-Dopa
- Acetylcholine inhibitors block action of ACh in striatum

Tyrosine

- Stimulates release of DA
- Inhibits reuptake

DA Agonists

- Bind to DA receptors

DA Receptors
Pramipexole (Mirapex)

- Good when used in combination with levodopa
- Can reduce motor fluctuations
- Lots of side effects
- Higher costs

Pramipexole Side Effects

- Somnolence – Sleep attacks
- Nausea
- Vomiting
- Hypotension
- Edema
- Impulse control disorders
- Punding
**Ropinirole (Requip)**

- Similar side effect profile
- Dopamine agonist
- Immediate release is dosed 5 times daily
- Available in an extended released form dosed once daily

**Rotigotine (Neupro)**

- Transdermal patch
- Novel delivery method
- Dosed once daily
- Avoids peaks and troughs
- Compliance improved
- Similar side effects
- Red Squares
Apokyn

- Apomorphine (injection)
- Almost immediate effect (3-5 min)
- Only works for a short time
- Particularly helpful for dose failures, morning akinesia and sudden offs
- Apokyn pump available overseas
- Lots of nausea, vomiting and hypotension

COMT Inhibitors

Sites of action of common therapies for Parkinson's disease

- Tyrosine
- L-Dopa
- Dopamine
- MAO-B
- Selegeline
- Aromatic L-Amino Acids
- DA Agonists
- DA Receptors
- COMT Inhibitors
- Acetylcholine Inhibitors
Entacapone (Comtan)

- COMT inhibitor
- Only works when dosed with levodopa
- Increases the availability of levodopa in the brain
- Prevents breakdown of levodopa
- Allows levodopa to last for longer time (60-90 min)

Comtan

- Helpful in motor fluctuations
- Orange colored urine and sweat
- Diarrhea
- Worsening dyskinesias
Stalevo

- Carbidopa/ levodopa/ entacapone
- Side effect profile is the same as Sinemet plus Comtan
- Combination pill

Amantadine

Sites of action of common therapies for Parkinson's disease
Amantadine (Symmetrel)

- Previously used in early stage PD before the era of levodopa
- Helpful for levodopa refractory tremor
- Reduces dyskinesias
- Inexpensive
- Lots of side effects: confusion, hallucinations, dry mouth, fatigue, livedo reticularis rash, swelling, nightmares

MAO Inhibitors

Sites of action of common therapies for Parkinson's disease
MAOIs

- Selegiline, rasagiline (Azilect)
- Small improvement in the UPDRS
- Has been used for freezing
- Package insert warns of food and drinks with tyramine
- Interactions with Demerol, pseudoephedrine, dextromethorphan, halothane
- Can be helpful for motor fluctuations
- NOT NEUROPROTECTIVE

Surgical Treatments

- Deep Brain Stimulation
- Duodenal Pumps
Deep Brain Stimulation

- One or 2 devices are implanted to deliver electrical stimulation to parts of the brain involved in Parkinson’s disease.
- Electrical current delivered by the device disrupts abnormal activity in the brain caused by these diseases.
- The DBS can reduce or eliminate tremor, rigidity, and bradykinesia

Best Candidates

- Medication refractory tremor
- Moderate PD
- Side effects to medications especially dyskinesia
- Younger
- Most bothersome symptoms are treated with levodopa
- 20%
DBS IN PD

- **D**oes not cure
- **B**ilateral DBS not necessarily needed
- **S**mooths out ons/ offs
- **I**mproves tremor, stiffness and dyskinesia in most cases but does not eliminate
- **N**ever Improves symptoms that don’t respond to your best on (ex tremor)
- **P**rogramming visits required
- **D**ecreases medications

Levodopa Intestinal Gel

- **Duodopa**
Continuous Apomorphine

- CAI
- Subcutaneous infusion of apomorphine
- No surgical PEG tube required
- Needle changed daily
- Can cause skin breakdown and abscesses
- Requires co treatment with an anti-nausea medication.

APO-GO
Complimentary treatments

- Supplements
- Herbs
- Botulinum toxin
- Yoga
- Tai Chi
- Active lifestyle

Popular Herbs & Supplements

- Coq10
- Caffeine
- Fava beans
- Nadh
- Mediterranean diet
- Coconut oil
- Tumeric
- Ginko
- Mucuna Pruriens
- Creatine
### CoEnzyme Q 10
- Coq10
- Possibly neuroprotective
- Low doses are ineffective at slowing disease progression
- It is possible that higher doses may be more effective
- Greater than 2400 mg/day

### Caffeine
- Non-motor symptoms
- May be helpful for fatigue
- Some suggestion that there is improvement in cognitive impairment
- Constipation treatment

### Fava beans
- Mediterranean diet
- Low doses of l-dopa
- Natural, plant-based levodopa
- Treats motor symptoms

### Creatine
- Has been studied as a possible neuroprotective agent
- Not beneficial
- Safe
- NIH recently discontinued the study looking for neuroprotection
HERBS

Mucuna Pruriens
- Velvet Bean
- Cowitch
- Cowhage
- Contains levodopa, serotonin, nicotine
- Available in multiple formulations

Ginko
- Claims to improve blood flow to the brain
- Improvement in both motor and non-motor symptoms
- Aid in the dopamine delivery to the neurons

Green Tea
- Suggested that this helps preserve neurons
- Possibly slows death rates of brain cells
- Limited neurology studies and so can’t be called “neuroprotector”
Brahmi

- Suggestion of improvement in both motor and non-motor symptoms
- Stimulates dopamine receptors in the brain
- Anti-inflammatory properties