Integrative approaches to Parkinson’s Disease

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An Evolution
The Integrative Approach

• Nature vs. Nurture

• *Epigenetics*: environmental factors that change the expression of our genes

• *Integrative medicine* approach seeks to harness this knowledge of epigenetics
The Integrative Approach

- Neutraceuticals
- Lifestyle change
- Hormone optimization
The Common Enemy

Inflammation: The Slow Burn of Aging
The Common Enemy

Inflammation: *localized* protective tissue response to injury—*dolor*, *calor*, *tumor* and *functio laesa* (loss of function)

What happens when the inflammation is *chronic* and *widespread*?
The Common Enemy

Mitochondria: powerplants of cells

Extremely susceptible to damage from inflammation

Damage = NO ENERGY FOR CELLS
Inflammation and aging

- Inflammation
- Free Radical Production
- Oxidative Stress
- Cell death due to loss of cellular energy
- Cellular (mitochondrial) damage
Inflammation leads to insulin resistance

- Inflammation produces **cytokines** – Chemical messengers affect cells

- Pro-inflammatory cytokines **interfere with insulin activity** which leads to **insulin resistance**
Inflammation and aging

• Many of the diseases of “aging” are associated with inflammation/oxidative stress

• Coronary and Cerebral vascular disease
• Type II Diabetes
• Hypertension
• Obesity
Markers of Inflammation

What are YOUR levels?

- **C-Reactive Protein**
  - High-sensitivity/Cardiac
  - <1.0 (0.5 being ideal)
- **Homocysteine**
  - Vitamin B₁₂/B₆
  - <9 umol/L ideal
- **25-hydroxycalciferol (Vit D)**
  - 50-60 ng/ml ideal
Inflammation and aging

• Inflammation and Neurodegenerative Disorders

• Alzheimer’s disease
  – Plaques indicative of oxidative stress
  – Insulin resistance
  – Type III Diabetes
Inflammation and aging

• Inflammation and Neurodegenerative Disorders

• Parkinson’s disease
  – mitochondrial damage heavily implicated in selective neuronal loss in PD
    • Lewy Bodies
  – PD dementia highly associated with insulin resistance
Inflammation and aging

- **SNC** particularly vulnerable to oxidative stress
  - Uniquely high iron content
    - leads to dopamine metabolism to hydroxyl free radicals
  - MPTP model induces mitochondrial damage associated free radicals
The Integrative Approach

• Neutraceuticals
  – Vitamins and nutritional supplements
• Lifestyle change
  – Exercise
  – Meditation/Sleep
• Hormone optimization
Neutraceuticals and PD

• Neutraceuticals
  – Reduce Inflammation
  – Promote optimal cellular energy
    • Reduce Insulin Resistance
Neutraceuticals and PD

• **Reduce Inflammation**
  • Omega-3 FA
  • Vitamin D
  • B6/B12/Folate
  • Curcumin
  • Melatonin
  • R-Lipoic Acid
  • N-acetyl Cysteine
  • Vitamin C & E
Neutraceuticals and PD

- Promote optimal cellular energy
- Caloric Restriction
  - CoQ10
  - Creatine
  - Acetyl-L-Carnitine
    - Sinai (1991) prevents MPTP induced Parkinsonism in primates
- Green Tea (Epigallocatechin gallate EGCG)
  - COMT inhibition
- Green Coffee
- Resveratrol
Neutraceuticals and PD

- Japanese
- Mediterranean
- CR diet
- French Paradox

Let your food be your medicine, and your medicine be your food.

- Hippocrates
Neutraceuticals and PD

- CoQ10: 1,200 – 2,400 mg as ubiquinone, or 200 – 300 mg as ubiquinol
- Creatine: 1,000 – 2,000 mg daily
- Omega-3 Fatty Acids (from fish oil): 2,000 – 4,000 mg daily
- Vitamin D: 5,000 – 8,000 IU daily (depending on blood test results) B-Complex vitamins: Per label instructions
- Acetyl-L-Carnitine: 1,000 – 2,000 mg daily
- Green Tea; standardized extract: 725 – 1,450 mg daily
- Green Coffee; standardized extract: 400 – 1,200 mg daily
- Trans-Resveratrol: 250 – 500 mg daily
- Probiotics: Per label instructions
- Curcumin: 400 – 1,200 mg daily
- Melatonin: 1 mg – 5 mg daily
- N-acetyl Cysteine: 600 – 1,800 mg daily
- Lipoic Acid (as R-Lipoic acid): 300 – 900 mg daily

**Recommendations ONLY! PLEASE CHECK WITH YOU PHYSICIAN BEFORE STARTING ANY NEW MEDICATION!!!!**
Neutraceuticals and PD

• Poor bioavailability of most neutraceuticals
  – One of the explanations of the lack of evidence in studies
• Interactions with PD related medications and other medications
Neutraceuticals and PD

- **Interactions with PD related medications and other medications**
  - Creatine (kidney function)
  - Omega-3 (anti-platelet; anti-coag)
  - B-complex (may enhance L-DOPA metabolism)
  - Acetyl-L-Carnitine (may be too stimulating at night)
  - Vit D (hypercalcemia; certain medical conditions; active CA)
  - Curcumin (gallbladder problems/gallstones; anti-platelet/coags)
  - Resveratrol (anti-platelet/coags)
  - N-Acetyl-cysteine (drink plenty of water—rare incidence of kidney stones)
  - Lipoic acid (caution if taking blood-sugar reducing drugs)
Lifestyle and PD

• **Exercise**
  – Aerobic
    • Decrease insulin resistance
    • Decrease inflammation
  – Resistance Training
    • Decrease insulin resistance
    • Increase Bone Density

• **Meditation/SLEEP**
  – Great ways to control insulin resistance and obesity
Hormone Optimization and PD

• “Pause”
  – Phases of loss of hormone production that occur with aging
    • Menopause (40-50)
    • Andropause (30-40)
    • Thyropause (30-40)
    • Somatopause (60)
Hormone Optimization and PD

- **Menopause (40-50)**
  - Increased insulin resistance
  - Increased heart disease
  - Osteoporosis

- **Andropause (30-40)**
  - Fatigue/decreased energy
  - Depression/anxiety
  - Decreased lean muscle mass
  - Increased insulin resistance
  - Hypercholesterolemia
Hormone Optimization and PD

- Thyropause (30-40)
  - Weight gain
  - Hypercholesterolemia
  - Increased Insulin resistance
  - Osteoporosis
  - Increased CRP and homocysteine (inflammatory markers)

- Somatopause (60)
  - Decreased strength/lean muscle mass
  - Decreased exercise tolerance
  - Dyslipidemia
  - Osteopenia
Hormone Optimization and PD

• Things to consider
  – No active CA
  – Requires surveillance blood work
  – Women’s Health Initiative (1991-ongoing)
    » Increased MI, Stroke, blood clots, breast CA
    » Fewer fractures
    » Decreased colon CA
    » WHY? NOT BIO-IDENTICAL HORMONES! Premarin (estrogen analogue from horse urine) and Progestin (analogue related to testosterone)
Integrative Approach to PD

• The healthier you are the better your PD will be in the long run

• The better you will be in the long run