Complementary and Alternative Medicine
For Parkinson’s Disease

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Presentation Outline

- Assessing Therapies: Benefit/Risk (Safety)
- Acupuncture and Tai Chi
- Stress and the Brain
- Supplements
- Conclusions

Assessing Complementary Therapies
• Is it Safe?
• Is it Beneficial?
• Is it Cost Effective?
• Practitioner Training and License

OK
High Benefit – Safe – Low Cost
Unknown Benefit - Safe – Low cost

Probably OK
Unknown Benefit – Safe – High cost

Question
Unknown benefit – Unknown Safety – High cost
Acupuncture/Acupressure

Background

- Thin Needles
- One of the Oldest Medicinal Practices
- 3.4 million Americans report using
Types of Acupuncture

- Traditional Chinese Medicine
- Medical Acupuncture
- Electro-Acupuncture
- Auricular
- Scalp
- Japanese Acupuncture
- Acupressure

Safety

The FDA regulates acupuncture needles for use by licensed practitioners

Although millions in the U.S. have received acupuncture the FDA has received very few reports of adverse effects
Meridians

How does it work?
Meridians and Health

- Meridians are pathways where Qi flows
- Qi is what nourishes the body
- Problems occur when there is Qi blockage
- Acupuncture uses needles to unblock Qi
- Acupuncture points are not anatomical structures
- We still do not know how acupuncture works
Acupuncture in PD

- Review of randomized clinical trial in PD
- Three RCT did not show an improvement (UPDRS)
- Three RCT found scalp acupuncture plus conventional therapy better than conventional therapy alone (UPDRS)
- Authors also conclude that further studies for acupuncture in PD are warranted

Acupuncture in PD

- Pilot study evaluating acupuncture effects on brain function in PD

- Twenty PD subjects randomized to acupuncture (GB34) or sham acupuncture (placebo).

- Outcomes fMRI and motor function (finger tapping)

- Acupuncture group showed significant improvement in motor function

- Authors conclude that acupuncture may facilitate improvement in motor function by acting on specific areas in the brain


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Tai Chi

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Tai Chi is a Chinese system of slow, meditative movements designed for relaxation, balance, and health

In the US it is a type of Mind-Body Medicine
Mindfulness and Mind-Body Medicine

Therapies that integrate the brain, mind, body, and behavior with the intent to use the mind to affect physical functioning and promote health

National Center of Complementary and Alternative Medicine

Mindfulness is a kind of nonelaborative, nonjudgmental, present-centered awareness in which each thought, feeling, or sensation that arises in the attentional field is acknowledged and accepted as it is.

OR

You can’t stop the waves but you can learn to surf

Jon Kabat-Zinn
Mindfulness Practices

- Yoga
- Meditation
- Body Scan
- Tai Chi
- Qi Gong
- Mindfulness Based Stress Reduction (MBSR)

Mind-Body Use in United States

30% in US report doing yoga, meditation, deep breathing
Tai Chi in PD

• Goal was to determine if Tai Chi improved postural stability (balance) compared to stretching or resistance training

• 195 PD subjects randomized. All interventions were for 60 mins twice a week for 24 weeks.

• Subjects in Tai Chi group had reduced balance impairment when compared to stretching and resistance training groups

• Improvements maintained 3 months after intervention

Li et al. NEJM 2012
The Stress Response is Designed to be Protective

Fight or Flight
Adrenaline and Cortisol are Released

- Increases Heart Rate
- Increases Respiration Rate
- Increases Blood Pressure
- Increases Glucose

The Positive Effects

- Increases Stamina
- Increases Strength
- Increases Reaction Time
- Enhances Focus and Mental Acuity
Fight or Flight
UC Berkely News Center 2013
When Fight or Flight Goes Awry

Chronic Stress
Adrenaline and Cortisol are Released

- Increases Heart Rate
- Increases Respiration Rate
- Increases Blood Pressure
- Increases Glucose

Long-term
Stress and The Brain
Nerve Cells

Grey Matter

White Matter

Brain Atrophy

Normal

Atrophy
White Matter Damage

The Brain is Vascular Rich

- 400 miles of blood vessels
- Uses 20% of total oxygen
- Uses 10% of total glucose
Stress Can Affect Metabolism in Brain
We are not doomed

There are many ways to reduce stress
To Improve Brain Resilience

Mindfulness Based Stress Reduction (MBSR)

An 8-week program created by Jon Kabat-Zinn that combines meditation and yoga and is a secular practice.

- Guided instruction in mindfulness meditation practices
- Gentle stretching and mindful yoga
- Group dialogue and discussions aimed at enhancing awareness in everyday life
- Individually tailored instruction
- Daily home assignments
Resilience

- Resilience is the capacity to adapt when faced with trauma and stressful events
- Mindfulness training has been shown to increase resilience

MBSR Practice Reduces Stress and Changes Brain Structure

Holzel BK et al. Psychiatry Res 2011
MBSR training Influences Brain Connectivity

Meditation May Be Neuroprotective

Pagnoni G and Cekic M. Neurobiology of Aging 2007
Mindfulness Affects Cerebral Blood Flow

Important Points

• Not all Stress is Bad

• Chronic Stress has adverse brain effects

• The Brain is Resilient and Mindfulness Training is Neuroprotective
Mindfulness Therapies are Empowering, 
You don’t need a prescription

Supplements

- Omega-3 Fatty Acids
- Vitamin D
- Mucuna Pruriens
Omega-3 Fatty Acids

What is an essential fatty acid?

- Cannot be made in body
- Must be obtained through diet
- Omega-6 and Omega-3 Fatty Acids
Omega-3 Fatty Acid

Foods high in linolenic acid (omega-3)

• Soybean oil, canola oil, walnut oil, flaxseed oil

Foods high in DHA and EPA (omega-3)

• Cold water fish (mackerel, herring, salmon, tuna, trout)

• Linolenic acid does not contain DHA or EPA
10 g. of linolenic acid (flaxseed oil) = 1 g. EPA/DHA

Omega-3 Fatty Acids in PD

Very limited studies of omega-3 fatty acids in PD

Limited data suggest that brain fatty acids are altered with levadopa tx
Omega-3 Fatty Acids in PD

One prospective cohort (n=5,289) study found that diet-derived omega-3 fatty acids significantly decrease risk of PD by 35%

de Lau et al. Neurology 2005

Omega-3 Fatty Acids in PD

One animal study found that DHA (100 mg/kg) along with levadopa significantly decreased levadopa-induced dyskinesias compared to animal receiving levadopa alone

Vitamin D

PD patients may have lower vitamin D levels when compared to controls
## Dietary sources

<table>
<thead>
<tr>
<th>Item</th>
<th>IU/serving</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cod Liver oil (1 tablespoon)</td>
<td>1,360</td>
</tr>
<tr>
<td>Salmon (3.5 ounces cooked)</td>
<td>360</td>
</tr>
<tr>
<td>Tuna fish (3 ounces canned in oil)</td>
<td>200</td>
</tr>
<tr>
<td>Nonfat Milk (1 cup, vit. D fortified)</td>
<td>98</td>
</tr>
<tr>
<td>Cereal (1 cup, vit. D fortified)</td>
<td>40</td>
</tr>
<tr>
<td>Egg (one)</td>
<td>20</td>
</tr>
<tr>
<td>Swiss cheese (1 ounce)</td>
<td>12</td>
</tr>
</tbody>
</table>

## Mucuna Pruriens
Mucuna Pruriens in PD

- Ayurvedic herb from India that contains L-dopa
- 12 week open label (n=60)
- 26 on L-dopa therapy, significant improvement in Honen Yahr and UPDRS scores
  (HP-200 PD study group, JAMC 1995)

Mucuna in PD

- Blinded cross over study (n=8) in PD participants that had a short L-dopa response and dyskinesias
- Challenged with 200/50 L-dopa/carbidopa and then given 15g or 30g mucuna
- Three challenges within one week
- “On” time for medication significantly increased by mean of 37 minutes with 30 g of mucuna
- No difference in dyskinesias
- Side effects mild, nausea, dizziness, stomach ache

Mucuna Summary

- Having carbidopa before mucuna increased l-dopa absorption
- Studies suggest that adding mucuna to l-dopa may be safe
- Longest study with mucuna 84 days, not sure what side effects for long-term therapy

Conclusions

- Safe and low cost therapies best
- Acupuncture, Tai Chi, and Mind-body Stress Reductions Therapies may benefit PD and will not have drug interactions
- In proper doses some supplements may benefit PD, drug interactions should be checked
Thank You

Questions