Parkinson’s Disease 101: An Introduction

The Johns Hopkins Parkinson’s Disease Community Outreach and Education Center
A National Parkinson Foundation Center of Excellence

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Instructor of Neurology
Objectives

- Understand basic information about Parkinson’s Disease
- Recognize non-motor and psychological aspects of this complex illness
- Understand treatment options including medications and the value of a comprehensive team approach
- Understand the state of current research and the hope that research provides for those living with PD
History of Parkinson’s Disease

• James Parkinson wrote “An Essay on the Shaking Palsy” in 1817

• Dopamine Deficiency discovered in 1960s

• Levodopa first used successfully in 1961

• Between 1961 and 2015 additional medications discovered and used in treatment

• 1997 Surgical Treatment approved for individuals with disabling tremor

• 2002 Surgical Treatment approved for individuals with advanced illness
Essay on the Shaking Palsy by James Parkinson, M.D.

“…involuntary tremulous motion, with lessened muscular power, in parts not in action and even when supported; with a propensity to bend the trunk forward, and to pass from a walking to a running pace; the senses and intellect being uninjured.”
Parkinson’s Disease

- A progressive, chronic, complex, neurological disorder
- Caused by the degeneration of cells that produce dopamine
- **Dopamine** is a Neurotransmitter (chemical messenger)
- Dopamine is produced by the cells within the **Substantia Nigra** (black substance)
- One of the few progressive neurological diseases whose symptoms can be alleviated with medications
Dopamine System in Human Brain
Neurotransmission

Dopamine is a chemical messenger or neurotransmitter which carries messages across the synapses from one nerve cell to the next.
Parkinson’s Disease vs. Parkinsonism

- Primary or Idiopathic Parkinson’s Disease
- Secondary Parkinsonism
- Parkinson Plus Syndromes
- Heredodegenerative Disease
Idiopathic

“Cause is Unknown”
Theories of the Cause

Environmental Factors
+ Genetic Factors
+ Age

____________________

Parkinson’s Disease

* The vast majority of individuals who develop Parkinson’s Disease show no clear causative factor.
Cause of Parkinson’s Disease

*Genetics

*Environment

Pathogenesis

Oxidative Stress
Mitochondrial Dysfunction
Inflammation
Apoptosis Cascade
Protein Aggregation

Parkinson’s Disease

Incidence of Parkinson’s Disease

- Parkinson’s Disease affects about One Million Americans
- 50,000-60,000 Americans are diagnosed each year
- Average age of onset is 55-65 years of age
- 5-10% of patients are under the age of 40
- Present worldwide in all races and socioeconomic groups
- Slightly higher incidence in men
Cardinal Signs & Symptoms

• Tremor
• Rigidity
• Bradykinesia
• Impaired Balance
Tremor

- Resting tremor
- Localized to hands, feet, and or legs at rest
- Occasional chin tremor
- Described as pill rolling tremor in hands
- 30% of those diagnoses do not have tremor
- Unilateral early in the illness
- May impact dominant or non-dominant side
Rigidity

- Cogwheel Rigidity (a jerky movement felt by the physician on exam)
- Stiffness
- Present in joints such as wrist, knee, neck, elbow, etc.
Bradykinesia

- **Brady** refers to slowness
- **Kinesia** refers to movement
- May be recognized by lack of armswing
- Patient may complain that it takes longer to complete tasks
- May progress to **Akinesia** (no movement) without medication
Impaired Balance

- Unsteadiness or postural imbalance
- Occurs much later in the illness if at all
- Physician will assess balance with pull test
- Hoehn and Yahr Staging used to describe progression or stage of illness
Hoehn and Yahr Staging

- **Stage 0** – No signs of the disease
- **Stage 1** – Unilateral Disease
- **Stage 1.5** – Unilateral plus axial
- **Stage 2** – Bilateral Disease
- **Stage 2.5** – Bilateral Disease, Mild difficulty walking
- **Stage 3** – Bilateral Disease, Moderate difficulty walking
- **Stage 4** – Bilateral Disease, Severe difficulty walking
- **Stage 5** – Bilateral Disease, Unable to walk
Secondary Signs & Symptoms

• Motor Disorders
• Neuropsychological Disorders
• Autonomic Disorders / Non-Motor Disorders
• Other, including Speech
Motor Disorders

» Less Frequent Blinking
» Micrographia (Small Handwriting)
» Stooped Posture
» Shuffling Gait
» Hypomimia (Mask Like Face)
Autonomic Disorders

The Autonomic nervous system manages body functions as digestion, hormones, temperature control, bowel and bladder functioning without us being aware.

- Constipation
- Urinary Urgency, Frequency, Incontinence
- Drooling
- Heat Intolerance
- Increased Perspiration
- Dandruff
- Excessive oiliness
- Low Blood Pressure
- Sexual Functional Problems
Other Secondary Signs & Symptoms

- Fatigue
- Speech and Swallowing Difficulties
- Sleep Abnormalities
- Vivid Dreams
- Restless Legs Syndrome
- Neuropsychological Problems
  - Depression
  - Anxiety
  - Bradyphrenia (Slowness of thinking)
  - Dementia
  - Psychosis (Hallucinations and Delusions)
Psychiatric Diagnoses Also Common

Initial Psychiatric Diagnoses (n=117), PDRC Longitudinal Study

- Asymptomatic, n=38
- Depression, n=32
- Anxiety, n=13
- Psychosis, n=13
- Apathy, n=7
- Disinhibited, n=4
- Not done, n=10

Marsh, 2001
Progression of Parkinson’s Disease

- Slow
- Varies from person to person
- Secondary symptoms vary
- Anticipate a normal life span
- Minority go into Nursing Homes and reach Stage 5 of Hoehn and Yahr
Parkinson’s Disease
Goal of Therapy

• Adequately control the symptoms when
  1. Symptoms interfere with daily functioning
  2. Symptoms contribute to embarrassment
• Individualize therapy
• Treat the Secondary Signs and Symptoms
Treatment Options

- Medication
- Rehabilitation therapies
- Social work services
- Complementary therapies
- Surgery in select cases
Medication

• Relieve symptoms
• Most common starting medications:
  – Dopamine agonists (Requip®, Mirapex®)
  – Levodopa/carbidopa (Sinemet®)
• Treatment is different for each person.
• Response to medication is individual.
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<thead>
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<th>Parkinson’s Disease Medications</th>
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<tr>
<td>Mirapex</td>
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Individualized therapy involves not only the pharmacological and surgical management, but also the appropriate use of allied health professionals, assistive technologies, educational and support resources along the chronic illness continuum.
PATIENT CENTERED CARE

Patient

Family

Neurologist

Physical Therapist

Speech Therapist

Occupational Therapist

Nurse Practitioner

Nurse

Primary Physician

Dietician

Psychiatrist

Counselor

Social Worker

Support Groups
MAKE YOUR MANAGEMENT PLAN UNIQUE TO YOU!

Dr. Pontone

Dr. Mills

Arita McCoy RN
# Needs Vary with Stage of the Illness

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<th>Stage</th>
<th>Onset</th>
<th>Dx</th>
<th>Rx</th>
<th>3 Years</th>
<th>8 Years</th>
<th>15 Years</th>
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<td>Honey period</td>
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<td>Motor complications</td>
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<td>Resistant symptoms</td>
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<td>Cognitive Decline Period</td>
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Rehabilitation Therapy

**Physical Therapy**
- Exercise instruction
- Gait training
- Fall prevention

**Occupational Therapy**
- Activities of Daily Living
- Workplace adaptations
- Home Safety

**Speech Therapy** -- loudness of voice, swallowing
Social Work Services

• Help in getting social services, community resources and support
• Help with effects of Parkinson’s on the individual and family
• Support groups
• Help in dealing with depression, anxiety and other emotional changes
Complementary Therapies

- Music therapy
- Art therapy
- Therapeutic horticulture
- Aromatherapy
- Animal-assisted therapy
- Yoga
- Tai Chi

- Spiritual care
- Massage
- Healing touch
- Stress management
- Acupuncture
Family Experiences and Needs

- The entire family is affected.
- Families can experience many emotional changes.
- Need education, support and resources
- Caregiver support groups
- Training on physical aspects of caregiving
- Planning for the future
The Es of Empowered Living with Parkinson’s Disease

• Education
• Exercise
• Eating Well
• Effective Communication
• Effective Coping
• Exploring Options
HOPE

That elusive spirit in the heart of man,

With it, desires and fears will withstand.

When present and believed within the soul,

The thread of hope will keep you whole.

Becky Dunlop RN (2009)
Thanks to the Johns Hopkins Parkinson’s and Movement Disorder Team

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