Parkinson’s Disease Psychosis: Hallucinations Delusions and Paranoia

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Learning Objectives

Understand what behaviors and experiences fall into the category of PD-psychosis—typically a chronic and progressive condition.

Recognize that medical illnesses can cause sudden confusion, hallucinations, and psychosis, so your regular physician is the first doctor to consult.

List strategies patients and caregivers can utilize to reduce or minimize psychosis in Parkinson’s disease.

Review treatment interventions.
PD psychosis: Definitions

**Psychosis:** altered thinking with disruption of a patient’s ability to distinguish real from unreal

**Hallucinations:** a false perception, seeing, hearing, feeling or perceiving something that is NOT there.

**Delusion:** altered thinking with a fixed conviction that something is real when it is not (this house is a car dealership)

**Paranoia:** a delusion dominated by suspiciousness, fear, and concern about safety
Altered perceptions: Hallucinations or delusions that occur:
Chronically
Largely in the context of dopaminergic drug treatments

This is a different syndrome than sudden confusion with agitation and hallucinations as part of:
An acute illness
After surgery in the context of pain medications
1.2: Hallucinations and psychosis
Over the past week have you seen, heard, smelled or felt things that were not really there? [if yes, interviewer probes]

0: Normal: No hallucinations or psychotic behavior
1: Slight: Illusions or non-formed hallucinations but the patient recognizes them without loss of insight.
2: Mild: Formed hallucinations. Retained insight
3: Moderate: Formed hallucinations with loss of insight
4. Severe: Patients has delusions with or without paranoia
Survey of large series of PD patients

50% had chronic hallucinations

- 90%: Visual
  - People or animals 92%
  - Vivid coloration 90%
  - Frightening 3%
  - Nocturnal 89%
  - Repetitive and familiar 76%

Medication relationship:

- 70% developed in context of increases in: Dopaminergic or anticholinergic drugs
- 100% Improvement with reduction of: Dopaminergic or anticholinergic drugs

Goetz et al 1982,
## Risk Factors for hallucinations

<table>
<thead>
<tr>
<th>Factor</th>
<th>Sanchez-Ramos</th>
<th>Fenelon</th>
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<tbody>
<tr>
<td># PD subjects</td>
<td>214</td>
<td>216</td>
</tr>
<tr>
<td>Hallucinators</td>
<td>26%</td>
<td>40%</td>
</tr>
<tr>
<td>Cognitive problems</td>
<td>+</td>
<td>+</td>
</tr>
<tr>
<td>Depression</td>
<td>+</td>
<td>+</td>
</tr>
<tr>
<td>Sleep problems</td>
<td>+</td>
<td>+</td>
</tr>
<tr>
<td>PD duration</td>
<td>-</td>
<td>+</td>
</tr>
<tr>
<td>Age</td>
<td>+</td>
<td>-</td>
</tr>
<tr>
<td>Levodopa dose</td>
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*PD subjects* refers to Parkinson's Disease subjects.
Delusions

Occur in 3-30% of hallucinating subjects

More frequent in demented patients

Rare to occur without hallucinations (Dementia with Lewy Bodies)

Forms:
- Negative: Infidelity or persecution (paranoia)
- Pleasant, complex and elaborate
The evolution over time
Longitudinal 10 year study

89 PD patients enrolled: 29 with and 60 without hallucinations
Monitored presence and severity of hallucinations

Odds (likelihood) of hallucinating annually (p<0.0001)
Odds of continuing to hallucinate annually (p<0.0001)
Odds of worsening severity annually (p<0.0001)

At the end of 10 years, only 4/60 still never hallucinators

Outcomes of hallucinations nursing home and mortality

Case control: matched for age, gender, PD duration
– Admitted to nursing homes vs.
– Staying in community

Three putative risk factors for nursing home placement:
– Motor severity of PD: NS
– Dementia: NS
– Hallucinations: 82% vs 5%

Mortality over 2 years
– 100% nursing home patients dead vs. 33% at home

Goetz and Stebbins, 1993, 1995
Cortical Activation Patterns

**Stroboscopic:**

- **NH:** Posterior consolidation
- No anterior projection
- **H:** Less posterior activation
  - Sup frontal gyrus activation

**Kinematic:**

- **NH:** Registration in MT/V5
- **H:** Anterior activation
The “trait” of hallucinations has specific MRI correlates

Non-Hallucinators
Visual information retained posteriorly
- Occipital lobe
- Temporal lobe
- Posterior parietal lobe

Hallucinators
Visual information projects anteriorly
- Poor processing in posterior and MT/V5 region
- Marked activation, especially superior frontal gyrus
fMRI during hallucinations

66 year old man: PD 4 yrs
Levodopa for 4 years
Ropinirole added
Vivid hallucinations
  African tribesman
  Chimpanzees on the roof
  Civil war soldiers
Fully alert, cognitively normal
Discreet episodes—50/day

<table>
<thead>
<tr>
<th>Decreased cortical activity (blue)</th>
<th>Increased cortical activity (yellow)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Occipital lobe</td>
<td>Cingulate cortex</td>
</tr>
<tr>
<td></td>
<td>Middle frontal lobe</td>
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<tr>
<td></td>
<td>Insular cortex</td>
</tr>
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<td></td>
<td>Thalamus</td>
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Goetz et al, 2014
Approaching Treatment

Search for supervening medical illness
– Urinary tract infection, pneumonia
– See your family doctor immediately

Consider possible medication side effects
– New medications?
– Error in current medications?
– Check carefully
Steps to implement at home to prevent and treat hallucinations

• Encourage good sleep habits
• Keep lights on to decrease misinterpretations of shadows
• High risk of hotels, overnight visits, unfamiliar places

“Coping strategies”

• Patients: recognize that hallucinations do not mean “I am going crazy.”
• Do not react to these visions or sounds—dismiss them
• Caregivers: Correct and do not engage

(Diederich, Mov Disord 2003)
Medication Adjustments

Elimination of non-essential medications
– Anticholinergics (trihexyphenidyl, biperiden, Benadryl)
– Amantadine
– Monoamine oxidase-B inhibitors (selegiline, rasagiline)

Reduction in primary medications
– Agonists (ropinirole, pramipexole, rotigotine)
– Levodopa (carbidopa/levodopa)
MDS Evidence-Based Review

Systematic evaluation of randomized clinical trials

Divisions:
- Efficacious
- Likely Efficacious
- Insufficient data
- Unlikely efficacious
- Not efficacious

www.movementdisorders.org (2017)
Antipsychotic Agents

Clozapine – MDS-EBMR: Efficacious but with specialized monitored required
– Usual doses 6.25 to 50 mg/d
– Need to follow blood counts

Quetiapine: MDS-EBMR: Insufficient efficacy evidence
– General positive impressions of quetiapine, but inconsistent results in double-blind trials
– Usual doses 12.5-100 g/d
Antipsychotic agents

Olazapine – MDS-EBMR: Unlikely efficacious and acceptable risk: not useful
– Exacerbation of Parkinsonism

Pimavansarin: no MDS-EBMR review, but efficacious and clinically useful anticipated (2018)
– 2013: American Academy of Neurology presentation on statistically significant improvement in psychosis compared to placebo.
– FDA 2016 approval specifically for PD-psychosis.
– Usual dose 17-34 mg nightly
Non-Neuroleptics

Open-label benefit with cholinesterase inhibitors
- Donepezil, rivastigmine, galantamine

No double-blind placebo-controlled large study in PD

Conceptual framework:
- Hallucinations more common in context of PD dementia
- Better cognition enhances adaptive reserve
- Usually taken at nighttime before bed
Should we consider hallucinations as really important?

Risk factor most associated with nursing home placement

Hallucinations are progressive and disabling
– Pleasant or emotionally neutral with insight
– Confusing and bothersome without insight
– Full delusional thinking with paranoia and accusations

Demoralizing and fragmenting to home life
Protecting our caregivers

Caregiver burden and stress high when hallucinations develop

Psychotic behaviors often targeted at caregivers

Need to protect sleep and respite for caregivers

Hiring overnight supervision or “day off” staff
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Acknowledgments

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Parkinson’s Foundation as the Rush Parkinson’s Foundation Research Center of Excellence
Thank You!
Upcoming Educational Programs

**Allied Team Training for Parkinson’s Disease™ (ATTP)**
ATTP is a three-day course designed to increase knowledge of PD and build capacity for comprehensive inter-professional care in the treatment of Parkinson’s disease.
**Vancouver, BC Canada from April 4-6, 2018**
Parkinson.org/attp

**Nurse Faculty Program**
Apply to the Edmond J. Safra Visiting Nurse Faculty Program to help us prepare the next generation of nurses to care for the growing population of people with PD.
Parkinson.org/edmondjsafranursing

**Physical Therapy Faculty Program**
Learn from internationally recognized PT experts in an intimate classroom setting and help change the future of physical therapy care in Parkinson’s.
Parkinson.org/ptfaculty
Educational Resources

Order Materials
Information about Parkinson’s symptoms, medications, resources and more.
Parkinson.org/books

Aware in Care Kit
Includes tools and information for people with PD to share with hospital staff during a planned or emergency hospital stay.
Parkinson.org/awareincare

National Helpline
Available at 1-800-4PD-INFO or helpline@parkinson.org
Monday through Friday 9:00 AM – 5:00 PM ET.

Podcast: Substantial Matters
New episodes every other Tuesday featuring Parkinson’s experts highlighting treatments, techniques and research.
Parkinson.org/podcast