Seeing Clearly with PD: Vision Changes

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1. Why Should I Care About Vision?
Vision Is an Important Sense
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How Does Vision Work?

[Image of the retina]
How Does Vision Work?

OPTIC NERVE

MACULA

OPTIC NERVE
How Does Vision Work?

[Image of an MRI scan showing the retinas, optic nerves, and chiasm]
How Does Vision Work?
2. What is a Neuro-ophthalmologist?
What is Neuro-Ophthalmology?
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1) Afferent
   – Seeing
2) Efferent
   – Moving the eyes to see
What is Neuro-Ophthalmology?

1) Afferent
   – Seeing

2) Efferent
   – Moving the eyes to see
Where is the Problem?
3. What Visual Symptoms Should I Be Aware Of?
Visual Symptoms are Common in PD

- 78% of patients report at least one visual symptom!

PD and the Eye

Uncommon
– What we will not talk about today
  • Blepharospasm
  • Apraxia of eyelid opening
  • Vertical eye movement limitations
  • Other eye movement abnormalities
PD and the Eye

Common
– What we will talk about today
Common Visual Symptoms in PD

1) Central and color vision abnormalities
2) Blinking and ocular surface abnormalities
3) Eye movement abnormalities
4) Hallucinations
A) Central and Color Vision Abnormalities
SYMPTOMS of Central and Color Abnormalities

- Blurriness
- Images aren’t clear
- Difficulty with vision in twilight hours or when raining
- Colors looked washed out/not as vibrant
- Vision “just isn’t the same”...
DIAGNOSIS of visual symptoms?
Neuro-ophthalmology exam

Visual acuity
– Near
– Distance
DIAGNOSIS of visual symptoms?
Neuro-ophthalmology exam

Contrast sensitivity

Focusing the Brain on Better Vision, By Jan Hoffman April 6, 2015
DIAGNOSIS of visual symptoms?
Neuro-ophthalmology exam

Color vision
Other Reported Abnormalities in PD

Visual processing

Peripheral vision
Object perception
Visuospatial construction
Motion perception
Face and emotion recognition

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Visual Symptoms and Gait?

- Visual deficits are frequently associated with postural instability
Deficits in visual acuity, contrast and color are **at least partly due to retinal dopamine deficiency**

– Corrected with dopamine?

Making sure that other treatable visual issues are addressed

Each of these abnormalities are subtle/mild, but when they occur in combination…

B) Blinking and Ocular Surface Abnormalities
Why Should We Care About The Ocular Surface?

Optical clarity
Protective barrier
Decreased friction
Hydration

Why Do We Blink?

- Redistributes tear film uniformly
- Secretion of tears from tear glands
- When do we blink less?
  - Reading
  - Computer work/television
  - Driving

SYMPTOMS of Ocular Surface Irritation

- Dry eyes
- Gritty/sandy sensation
- Burning
- Redness
- Crusting on the lashes
- Eyes getting stuck shut in the morning
- Sensitivity to light

Ocular Surface and Blinking in PD

Ocular surface
– Poor tear production

Blinking
– Reduced

Result:
– Poor tear film, dry eye and irritation

Medications?
– Artane (trihexane trihexyphenidyl)
DIAGNOSIS

Thorough evaluation by an ophthalmologist or optometrist
TREATMENT

Artificial tears
– 3-4 times/day + more as needed

Prescription medications

Inflammation of the eyelids (blepharitis)
– Hot compresses or lid scrubs
C) Eye Movement Abnormalities
DOUBLE VISION
DIAGNOSIS of Diplopia

1) Monocular (non-neurologic)
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DIAGNOSIS of Diplopia

1) Monocular double vision in the left eye *(NOT NEUROLOGIC)*
DIAGNOSIS of Diplopia

2) Binocular (neurologic)
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2) Binocular (neurologic)
   • Eyes misaligned → neuro-ophthalmology
TREATMENT of Diplopia

Acutely
TREATMENT of Diplopia

Subacute-chronic (press-on or ground in)

Strabismus surgery (unusual in PD)

http://www.theblaze.com/stories/2013/01/25/the-medical-issue-that-closeup-pictures-of-hillarys-glass-may-reveal/
CONVERGENCE
INSUFFICIENCY
SYMPTOMS of Convergence Insufficiency

- Double vision
- Headaches
- Eye strain
- Blurred vision
- Loss of place while reading
  - Excessive tiredness while reading
  - Covering of one eye while reading
  - Complaints of the words moving on the page
  - Short attention span for reading
  - Constant adjusting of the distance of a book or other to see better

Convergence Insufficiency

[Diagram showing eye alignment]

L  R

L  R
Convergence Insufficiency

Near point of convergence
DIAGNOSIS of Convergence Insufficiency

• Eye movement examination performed by neurologist, ophthalmologist, or neuro-ophthalmologist
TREATMENT of Convergence Insufficiency

Home exercises
– “Pencil push-ups”

Therapy or computer exercises
– Vision therapy

Covering one eye, or putting Scotch tape or satin gift tape over one lens

Prisms placed in reading glasses ONLY
D) Hallucinations
Hallucinations

In Parkinson’s disease patients, associated with:
– Daytime somnolence or insomnia
– Moderate-severe cognitive issues
– Longer duration of PD
– Associated with reduced acuity

What about medications?

### PD Medications

<table>
<thead>
<tr>
<th>Medication</th>
<th>Hallucinations</th>
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<tbody>
<tr>
<td>Levodopa/carbidopa (Sinemet)</td>
<td>+</td>
</tr>
<tr>
<td>Levodopa/carbidopa, entacapone (Stalevo)</td>
<td>+</td>
</tr>
<tr>
<td>Amantadine</td>
<td>++</td>
</tr>
<tr>
<td>Entacapone (Comtan)</td>
<td>+</td>
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<tr>
<td>Rasagiline (Azilect)</td>
<td>+</td>
</tr>
<tr>
<td>Selegiline (Eldepryl)</td>
<td>+</td>
</tr>
<tr>
<td>Pramipexole (Mirapex)</td>
<td>++</td>
</tr>
<tr>
<td>Rotigotine (Neupro)</td>
<td>++</td>
</tr>
<tr>
<td>Ropinirole (Requip)</td>
<td>++</td>
</tr>
</tbody>
</table>
Objects, commonly insects and small animals in the periphery

Illusions

• Again related to peripheral visual perception?

Complex Hallucinations

Usually animate objects
Often in center of vision in dim lighting

https://explorecuriocity.org/Explore/ArticleId/188/why-is-it-that-light-reflects-off-of-animal-eyes-at-night-but-not-humans-188.aspx
TREATMENT of Visual Hallucinations

If mild with preserved insight
– Reassurance
– Evaluate/remove certain medications

If moderate to severe or bothersome
– Evaluate/remove certain medications
– Certain neuroleptic medications
  • Pimavanserin (Nuplazid)
    – First drug approved to treat hallucinations and delusions in PD
CONCLUSIONS

• Dopamine is present in the visual system, and lack of dopamine contributes to visual complaints in PD
• The eyelids and ocular surface protect the eye and optimize the clarity of what we see
• Convergence insufficiency is a common eye movement abnormality seen in PD
• Many of these abnormalities are relatively mild, but in combination…
• The earlier symptoms are addressed, the earlier treatment can be initiated and quality of life improved
Register Today for ATTP!

Allied Team Training for Parkinson’s Disease (ATTP®)

March 27-30, 2019
Iowa City, Iowa
Resources

National Helpline
Available at 1-800-4PD-INFO or Helpline@Parkinson.org
Mon- Friday 9 am to 8 pm ET

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

Fact Sheets and Publications
Get the resources and information you need to start living a better life with Parkinson’s.

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