

# Vision Changes in Movement Disorders and Their Management



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## **Defining Movement Disorders**

Parts of your body that move when you don't want them to

If you have a movement disorder, you experience this kind of impaired movement.

Dyskinesia: an abnormal uncontrolled movement

Common symptom of many movement disorders.

Tremors are a type of dyskinesia

## **Types of Movement Disorders**

Parkinson's Disease

Related forms of Parkinsonism

Dystonia

Huntington's Chorea

Tourette's Syndrome

Tremor and essential tremors

Myoclonus

Stiff person syndrome

Ataxia

Gait disorders

Restless leg syndrome

Parkinson's Disease

## **Parkinson's Disease**

An idiopathic, slowly progressive, degenerative disorder

Hallmarks:

Resting tremor

Stiffness (rigidity)

Slow and decreased movement (bradykinesia)

Gait and/or postural instability

Affects about 0.4% of people > 40 yr

1% of people  $\geq$  65 yrs

10% of people  $\geq$  80 yrs

Mean age at onset is about 57 yrs

Diagnosis is clinical

Treatment goal to restore neurotransmitter function in the brain

levodopa plus carbidopa

But eye problems can also occur

Can interfere with the quality of life

Frequently complain of poor vision

Especially as the disease progresses

Problems with contrast sensitivity

Progressive deterioration of color vision

Later stages of the disease

## **Why?**

Deficient dopamine levels in the retina

Abnormal eye movements

Poor blinking

Other factors....

Only temporarily improved by drug therapy

“Off & “On” meds periods

## **Staring & Blinking problems**

Infrequent blink

Results in poor tear layer

Can lead to dry eyes

Symptoms:

Burning

Itching

Redness

Blurred vision, improves with blinking!

Good news! Easily treated

## **In Most cases:**

Artificial tears

Lubricant ointments

## **In Severe cases**

Punctal occlusion

Small silicone plug

## **Visual Hallucinations**

Occur in 30-60% of treated patients

Flickering lights precede colorful images

Risk factors: Impaired vision

[Matsui et al. Impaired visual acuity as a risk factor for visual hallucinations in Parkinson's disease. J Geriatr Psychiatry Neurol 2006; 19: 36-40](#)

Parkinson's patients have difficulty fixating on objects and following them as they move.

Reported in 75%

Do not always cause functional problems

Difficulty looking up

Parkinson's patients can experience double vision

Lack of eye muscle coordination

may cause double vision

2 images usually side-by-side

May be present only when looking in certain directions.

*Most commonly, this occurs with near tasks like reading*

Convergence insufficiency (CI)

Very common (30%)

### **Symptoms?**

Eyes tire quickly when you read

Words run together

Blurred or double vision associated with reading

Images side by side

Headache

### **Treatment?**

More good news...

Exercises

Traditional

Computer

Orthoptics

Prism in your glasses

Temporary press-on

Permanent ground-in

Single-vision reading glasses with prism

Occlusion

Pirate-type patch

Interferes with vision

Attracts attention

Scotch “satin” tape

Patients with Parkinson Disease are *not* immune from other age-related diseases of the eye

Cataract

Glaucoma

Age-related macular degeneration

Diabetic retinopathy

### **Progressive Supranuclear Palsy (PSP)**

A rare Parkinsonism type of brain disorder that causes a number of progressive, and potentially serious problems

Balance problems

Rigidity of limbs, neck

Slowness of movements

Loss of coordination / jerky eye movements

Memory difficulties

Slurring of speech

Difficulty swallowing

Pneumonia

Depression in later years

Clinically similar to PD

Distinguishing between PSP and PD can be difficult

Especially in the early stages of the disease

*3 Clap test*

**Eye findings:**

“I can’t see” despite normal visual acuity

Inability to aim the eyes properly

Jerky eye movements

Difficulty looking down

Begins slowly and continues to get worse (*progressive*)

*Supra-nuclear* refers to higher centers in the brain where the damage occurs

Causes weakness (*palsy*)

Currently no effective treatment for PSP

Slowness, stiffness, and balance problems may respond to anti-parkinsonian agents in some patients



Levodopa - effect temporary

## **Dystonias**

A disorder characterized by involuntary muscle contractions

Cause slow repetitive movements or abnormal postures.

Can affect many different parts of the body

Symptoms are different depending upon the form of dystonia

Movements may be painful

Some individuals may have a tremor or other neurologic features

My affect only one muscle, groups of muscles, or muscles throughout the body

Some forms are genetic but the cause for majority of cases is not known

Dystonia typically is not associated with problems thinking or understanding

Depression and anxiety may be present

What are the eye symptoms?

*Blepharospasm*, the second most common focal dystonia

Involuntary, forcible contraction of the muscles controlling eye blinks

First symptoms may be increased blinking usually both eyes

Spasms may cause the eyelids to close completely, causing “functional blindness” even though the eyes are healthy and vision is normal

## **Blepharospasm**

Involuntary closing of the eyelids

## **Chorea & Huntington's Disease**

Chorea - From the Greek word “dance”

Characterized by brief, abrupt, irregular, unpredictable, non-stereotyped movements

Milder cases may appear purposeful

The patient often appears fidgety and clumsy

Can affect various body parts

Interfere with speech,

Swallowing

Posture and gait

Slowed, jerky eye movements

May worsen with anxiety and voluntary movements

Subsides during sleep

Chorea may also occur with other abnormal movements such as dystonia.

## **Huntington's Disease**

A hereditary neurodegenerative disorder

Each child of an affected parent has a 50% chance of developing the disease

Onset typically between 30-54 years

But can manifest as early as 4 years old and as late as 80 years

Clinically characterized by a triad of symptoms:

1. Motor (muscle)
2. Cognitive
3. Psychiatric

Motor features:

Impairment of involuntary (chorea) and voluntary movements

Reduced manual dexterity

Surred speech, swallowing difficulties

Balance problems and falls

Parkinsonism and dystonia in the young (termed the Westphal variant)

Cognitive features are characterized initially by

Loss of speed and flexibility in thinking

Later become more global

Psychiatric features may include:

Depression (most common), mania, obsessive-compulsive disorder, irritability, anxiety, agitation, impulsivity, apathy, and social withdrawal

## **Huntington's Disease**

Diagnosis is through genetic testing

Genetic counseling is required for asymptomatic individuals with a family history.

Eye findings:

Slowed commanded gaze movements

Poor following of moving objects

Fixation instability / poor sustained vision

## **Myoclonus**

A movement disorder that typically affects the upper half of the body

Affected individuals experience quick, involuntary muscle jerking or twitching (myoclonus)

Usually affects their arms, neck, and trunk

The legs are involved less frequently

Symptoms usually appear in childhood or early adolescence

Myoclonus is typically the initial symptom

Can be triggered by movement or stimulation of the affected body area, stress, sudden noise, or caffeine. In its simplest form, a muscle twitch followed by relaxation

A hiccup is an example of this type of myoclonus

After stroke or traumatic brain injury, an assortment of eye movements

Palatal myoclonus

## **Tourette's Syndrome**

A neurodevelopmental disorder which is usually diagnosed in early childhood or adolescence

Affecting males 3-4 times more often than females

Symptoms are involuntary movements and sounds called tics

Tics are repetitive, sudden and often misdiagnosed and misunderstood

Associated with:

Obsessive-compulsive disorder

Attention-deficit/hyperactivity disorder

**Eye findings:** frequent blinking

Tics often worse with excitement or anxiety and better during calm, focused activities

Can be a chronic condition with symptoms lasting a lifetime

But most affected people experience their worst tic symptoms in their early teens

Improvement occurring in the late teens and continuing into adulthood

A personalized treatment plan usually includes a combination of psychotherapy and medication

## **Tremor and Essential Tremor**

Essential Tremor (ET)

A non-life-threatening chronic, progressive, neurologic disorder

Men and women are equally affected

The most common adult movement disorder

As much as 20 times more prevalent than Parkinson's disease.

Affecting between 1 and 220 people per 1000

Estimates of prevalence of ET range widely from 0.08 to 220 cases per 1000 persons

a 2750-fold difference

Defined as a rhythmic involuntary movement

Usually bilateral, involving the hands, but the voice, tongue, face, head, trunk, and legs may also be affected.

Eye findings are subtle:

Shaking of vision (oscillopsia)

Subtle compensatory shaking of the eyes (nystagmus)

Due to absence of vestibulo-oculo-reflex (VOR)

Current research shows up to 20% of patients with ET may develop PD, and 10% of people with ET report a family history of PD

The eye findings of Parkinson's disease may or may not be present

### **To Summarize....**

There are a number of vision problems associated with movement disorders

Educate yourself about what they are.....

And who is available to help you

Ask your doctors!

**Thank You!**

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