

PARKINSON'S AND THE EYE

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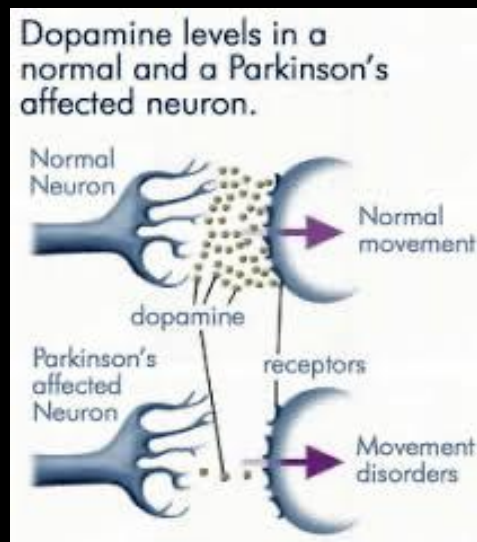


Parkinson's Disease

- Progressive neurodegenerative disease primarily effecting the basal ganglia.
 - Can effect motor or sensory functions
 - Studies suggest ocular findings may indicate disease status or progression including ocular movements, depth perception, contrast sensitivity, color vision and blink rate.
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Pathophysiology

- Decreased dopamine in the CNS
- In the eye, dopamine works in the retina to regulate cellular function including the photoreceptors



Symptoms

- Double vision (diplopia) – may make reading difficult
 - Masked faces – decreased blink rate with characteristic “stare”
 - Dry eye – decreased blink rate
 - Light sensitivity (photophobia)
 - Blurred vision
 - Oscillopsia
 - Difficulty with spatial perception
 - Apraxia of eyelid opening – can open with fingers but not by neural command
 - Blepharospasm
 - Visual hallucinations
 - Freezing in narrow spaces – hallways, thought to be based on the visual system
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Blink Rate and Dry Eye

- The ocular surface needs to be uniformly moist to provide consistent and clear vision
- Decreased blink rate allows for increased evaporation and dry eye
- Treatments:
 - *Artificial tears*
 - *Humidifier*
 - *Ointments*
 - *Warm Compresses*
 - *Sleep goggles*
 - *Punctal plugs*
 - *Prescription dry eye drops*



Dry eye and medications

- 53% of Parkinson's disease patients report ocular symptoms having moderate to severe effect on their quality of life
- In those that suffer from dry eye, depression and anxiety are 3x higher in those with dry eye than those without
- Antiparkinsonian medications associated with dry eye due to anticholinergic side effects:

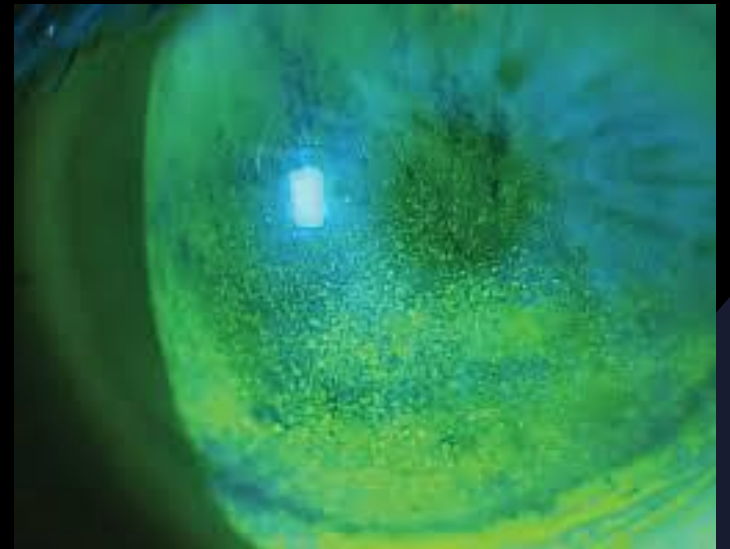
Benzhexol

Pramipexole

Levodopa

Dry Eye

EYE FOUNDS.ORG



Dry Eye Approach

Early stage	Moderate stage	Severe stage
<ul style="list-style-type: none">• Patient education• Elimination of environmental factors (e.g., air pollutants, hot and cold temperatures, and alcohol)• Elimination of precipitating medications (diuretics, beta-blockers, antihistamines, tricyclic antidepressants, antipsychotics, and antiparkinsonian drugs)• Artificial tear substitutes (cellulose ethers, carbomers, polyvinyl alcohol, sodium hyaluronate, and povidone)• Eyelid therapy (warm compresses and eyelid hygiene)• Correction of eyelid abnormalities (if present)• Treatment of contributing factors (e.g., blepharitis)• Treatment of underlying systemic disease	<p>Early-stage treatment • +</p> <ul style="list-style-type: none">• Anti-inflammatory agents (topical steroids or cyclosporin)• Supplementation with omega-3 fatty acids• Punctal plugs• Moisture chamber glasses	<p>Moderate-stage treatment • +</p> <ul style="list-style-type: none">• Oral anti-inflammatory agents (short-term corticosteroids or tetracycline)• Mucolytic agents• Autologous serum tears• Therapeutic contact lenses• Permanent punctal occlusion• Surgical intervention (tarsorrhaphy)



Nystagmus/oscillopsia

- <https://www.youtube.com/watch?v=HXOaRGNnijU>
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Apraxia of eyelid opening

- https://www.youtube.com/watch?v=m03h_LrBMUI&t=16s
 - https://www.google.com/search?sca_esv=3feead5a8523dl44&sxsrf=ADLYWIKymeS85Tobe2TOEfgVimbLJ-ipJg:l736699247657&q=apraxia+of+eyelid+opening&udm=7&fbs=AEQNm0Aa4sjWe7Rqy32pFwRj0UkWd8nbOJfsBGGB5IQQO6L3JyJJclJuzBPll2qJyPx7ESIf1S9KobXMZccIxNeTlA6IHPsOrb2ailWCtrbH230596ngvG3aiF2DARqhotSOiDc0znUQrVikpZfQYCh6WrDVcjRmLIFgf_AHuN_uWb_qf6sIIIUCBRB9R8WT2OLEFfqDlkNO-MxXFTQY83V4CGbza0C5_g&sa=X&sqi=2&ved=2ahUKEwjNlfPtzPCKAxW9q4kEHQnC KYwQtKgLegQIEhAB&biw=1077&bih=600&dpr=2#fpstate=ive&vld=cid:21579a94,vid:z-2kCLESrLE,st:0
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Masked face

- <https://www.pbs.org/video/the-mask-26524/>
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Michael J Fox

- <https://ew.com/movies/still-michael-j-fox-documentary-trailer/>





Questions?