COMMON VISUAL CHALLENGES AND FUNCTIONAL IMPAIRMENTS IN A CONDITION WITH ATYPICAL PARKINSON AND ITS MANAGEMENT THROUGH VISION THERAPY : A CASE REPORT

CARING VISION

CARING VISION THERAPY & NEURO-VISION REHABILITATION CENTER

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Introduction

Atypical Parkinson disorders (APD), which include progressive supranuclear palsy (PSP), multiple system atrophy (MSA), and corticobasal degeneration (CBD), are parkinsonian syndromes that differ from idiopathic Parkinson's disease (PD) by presenting with early postural instability and frequent falls, poor response to levodopa, rapid disease progression, and early pronounced visual and cognitive dysfunction. Visual impairments in APD result from involvement of the midbrain, brainstem, and cerebellar pathways, with oculomotor abnormalities such as vertical gaze palsy, slow saccades, pursuit dysfunction, and impaired vestibulo-ocular reflexes being especially prominent in PSP, thereby worsening postural imbalance, impairing reading and navigation, and reducing independence. Despite their impact, visual disturbances in APD remain unaddressed in standard neurological care; however, neuro-optometric vision therapy, a rehabilitative approach targeting ocular motor skills, binocular coordination, and visual-perceptual integration, shows promise in mitigating functional decline and improving patient outcomes, as highlighted in this case.

Phase	Focus Area	Therapies Implemented	Description	Achieved Clinical Outcomes
Phase 1	Ocular Calisthenics, Eye-Hand & Motor Coordination	• Ocular calisthenic exercises (horizontal, vertical, diagonal eye stretches) • Eye-hand coordination tasks (ball toss, pegboard activities) • Motor coordination (cross-crawl, bilateral body integration)	Initial activation of extraocular muscles, enhancement of proprioceptive awareness, and priming of ocular-motor pathways. Builds foundational control before higher-level visual tasks.	• Increased ocular muscle flexibility • Better gross motor & bilateral coordination • Improved attention & initiation of movements • Reduction in rigidity and bradykinesia effects on eye movements
Phase 2	Eye Movements Training (Monocular → Binocular)	• Monocular saccades & pursuits • Transition to binocular control • Sanet Vision Integrator (SVI) modules: reducing latency, increasing speed, improving accuracy	Retrains eye movement initiation, accuracy, and visual tracking. Progression from monocular to binocular improves coordination, speed, and latency reduction.	• Reduced latency in saccades • Improved pursuit smoothness • Enhanced binocular coordination • Better reaction time and accuracy on visual tasks
Phase 3	Fusional Vergence Training	• Convergence training • Tranaglyphs (red-green disparities) • Vectograms (step & smooth vergence) • VTS-4 computerized vergence training	Develops fusional vergence reserves to stabilize binocular vision. Enhances depth perception, reduces diplopia, and improves visual endurance.	• Increased convergence ranges • Reduced visual fatigue & asthenopia • Decreased occurrence of diplopia at Near
Phase 4	Visual-Vestibular Integration	• Balance training on foam pad • Eye-movement tasks during unstable posture • Rotational movement integration • Cognitive-balance training on posturography board (dual-tasking)	Combines visual, vestibular, and proprioceptive systems for multisensory integration. Trains adaptability of balance under dynamic and cognitive load conditions.	• Improved postural stability • Reduced dizziness/imbalance • Better integration of visual and vestibular inputs • Enhanced multitasking with balance and cognition
Phase 5	Gaze Stabilization & Fixation Training	• Gaze stabilization with head movement (VOR adaptation) • Laser-guided fine eye movement training • Multi-axial head rotation tasks	Final refinement stage: strengthens fixation stability, precision eye movements, and dynamic visual focus during motion. Reduces dizziness and oscillopsia.	• Increased fixation stability • Improved gaze holding during head rotations • Reduced oscillopsia & dizziness • Better dynamic visual acuity and functional mobility

Parameter	Pre-VT	Post-VT
Visual Acuity (BCVA)	OD: 6/6; OS: 6/6	OD: 6/6; OS: 6/6
Near Visual Acuity	N6 (both eyes) with strain	N6 (both eyes)
Ocular Alignment (Cover Test)	44Δ Exotropia at distance 20Δ Exotropia at near	23Δ Exotropia at distance 11Δ Exophoria
Near Point of Convergence (NPC)	Break- 31 cm, Recovery-39 cm	Break- 19 cm, Recovery-23 cm
Stereoacuity (Titmus fly Test)	Not recordable	140 arc sec
Worth Four Dot Test	Distance- Diplopia Near- Diplopia	Distance- diplopia Near- Fusion with strain
Reading Speed (words/min)	95 wpm	165 wpm
Advanced Romberg Test	Grade 4	Grade 1

Case Summary

A **61-year-old male** with a clinical diagnosis of **Atypical Parkinson's Disease** presented to Caring Vision Therapy Center with chief complaints of:

- Restricted eye movements, especially noticeable during reading and computer work
- Severe **eye fatigue** after short periods of near tasks
- Difficulty with reading continuity, frequent loss of row sequence, and severe reading speed
- Poor handwriting and challenges in writing legibly
- Increasing postural instability and unsteady gait
- Frequent near-miss collisions due to impaired peripheral awareness

Past Medical History

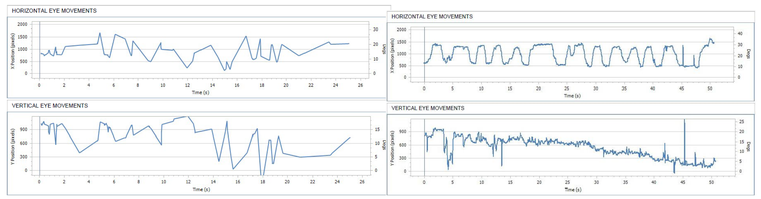
- Recently diagnosed with Atypical Parkinson's Disease (neurologist suspected PSP based on clinical features and MRI findings).
- On dopaminergic medication with minimal improvement.
- No history of ocular surgery or trauma.

Clinical Examination

- **General Neurological Status:** Rigidity, bradykinesia, impaired postural reflexes.
- **Ocular Motility:**
  - Severe limitation in elevation and depression bilaterally.
  - Restricted abduction and adduction movements.
  - Slowed saccades with hypometric amplitudes.
  - Deficient smooth pursuit movements.
- **Binocular Vision:** Poor binocular coordination, intermittent diplopia at near. Impaired depth perception, narrowed peripheral visual field awareness.
- **Balance:** Instability while standing and walking, worsened with dual-tasking.

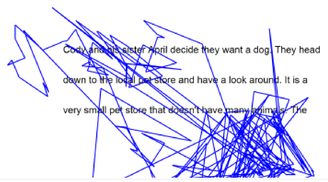
Investigations

MRI Brain: Revealed **atrophy of the midbrain** with **flattening of the colliculi**, along with **diffuse cerebral and cerebellar atrophy**, consistent with APD spectrum disorder.



Letter Saccades (Pre-Vt)

Letter Saccades (Post-VT)



Reading (Pre-Vt)

Reading (Post-VT)

Discussion

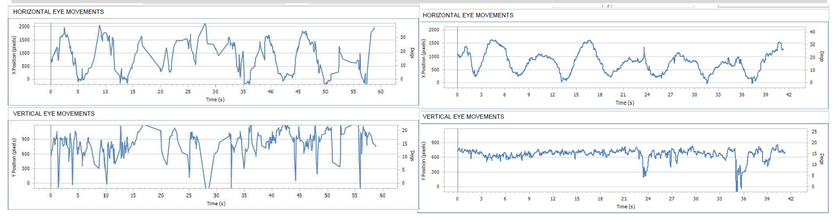
This case illustrates the **complex interplay between neurodegenerative pathology and visual dysfunction** in APD. The patient's deficits aligned with known pathophysiological changes, particularly midbrain atrophy impacting vertical gaze centers and cerebellar involvement leading to oculomotor dysmetria [4].

While pharmacological therapy offers limited benefit in APD, **rehabilitative interventions** such as vision therapy provide a non-pharmacological pathway to improve quality of life. Similar benefits have been reported in PSP patients, where structured visual training improved gaze control and functional independence [5].

The **key insight** from this case is that even in progressive disorders, **targeted visual rehabilitation can yield measurable functional improvements**, supporting the integration of vision therapy into multidisciplinary care protocols for APD.

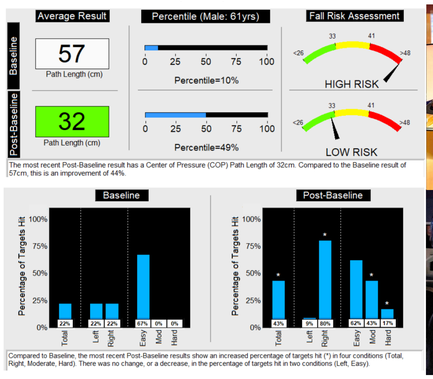
Conclusion

Visual dysfunction is a prominent but often underappreciated feature of Atypical Parkinson disorders. Comprehensive neuro-optometric assessment and structured vision therapy can alleviate visual fatigue, enhance ocular motor performance, improve postural stability, and promote functional independence. This case supports the incorporation of vision rehabilitation as an essential adjunct in managing APD.



Pursuits (Pre-Vt)

Pursuits (Post-VT)



References