



AQP4-Optic Neuritis Drives the Greatest Burden Across Atypical Optic Neuritis Subtypes

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INTRODUCTION

Typical autoimmune optic neuritis (TON) is usually unilateral, shows spontaneous recovery, responds rapidly to corticosteroids, and is often associated with multiple sclerosis (MS). Atypical optic neuritis (ATON) is more often bilateral, carries a higher risk of relapse, and shows poorer visual outcomes, with no relation to MS. ATON encompasses various subtypes, each with distinct etiologies and clinical courses. In non-White populations, aquaporin4-related optic neuritis (AQP4-ON) is the most prevalent ATON subtype. This study compares AQP4-ON with other ATON subtypes regarding visual outcomes and vision-related quality of life (VRQoL).

METHODS

We randomly selected adult ATON patients who were relapse-free for at least six months. Collected data included age at onset, sex, race, presenting symptoms, bilateral involvement, annualized relapse rate, autoimmune comorbidities, color vision test, contrast sensitivity test, and scores on the Kurtzke Visual Function System (KVFSS) and Wingerchuk Optic Nerve Impairment Scale (WONISS). VRQoL was measured using the 25-item National Eye Institute Visual Function Questionnaire (NEI-VFQ-25).

RESULTS

The cohort comprised 100 ATON patients: 79 with neuromyelitis optica spectrum disorder (NMOSD)-ON, 5 with MOG-ON, 10 with relapsing idiopathic isolated ON, 3 with systemic autoimmune disease (SAD)-ON, 2 with post-infectious ON, and 1 with post-vaccination ON. The mean age at onset was 33.5±12.87 years. Females accounted for 80%, 56.5% were non-White, and 16% had an associated SAD. Isolated ON occurred in 72.6%, and myelitis was the most frequent associated symptom (25.6%).

The median KVFSS were 4 and 3, respectively. Compared with other ATON subtypes, AQP4-ON predominantly affected females (p=0.030), had a later disease onset (p=0.012), presented as isolated ON (p=0.001), and showed higher KVFSS and WONISS. NEI-VFQ-25 scores were generally reduced in ATON, with AQP4-ON exhibiting the greatest decrease.

Table 1: Visual function in eyes with AQP4-optic neuritis and other atypical optic neuritis

| | AQP4-ON (130) | Other atypical ON (34) | Total (164) | P |
|--------------------|---------------|------------------------|-------------|--------------|
| WONISS, median | 3 (1-5) | 1 (0-3) | 3 (1-5) | 0,001 |
| FM100 Hue >140 (%) | 112 (86,2) | 26 (76,5) | 138 (84,1) | 0,169 |
| LCSL > 2,5% (%) | 83 (63,8) | 13 (38,2) | 96 (58,5) | 0,007 |

Table 2: 25-Item National Eye Institute Visual Functioning Questionnaire Subscales and Composite Scores and Among All Patients

| | AQP4-ON (n 79) | Other atypical ON (n 21) | Total | P |
|--|------------------|--------------------------|------------------|------------------|
| NEI-VFQ-25 Composite score (median) | 71.2 (50.3-87.0) | 79.6 (61.3-92.7) | 71.4 (55.4-87.8) | 0.074 |
| Subscales | | | | |
| General health | 50.0 (25.0-50.0) | 75 (50.0-75.0) | 50.0 (25.0-75.0) | <0.001 |
| General vision | 60.0 (55.0-80.0) | 80.0 (60.0-80.0) | 60.0 (60.0-80.0) | NS |
| Ocular pain | 75.0 (50.0-87.5) | 75.0 (50.0-100) | 75.0 (50.0-96.9) | NS |
| Near vision | 75.0 (25.0-100) | 75.0 (50.0-87.5) | 75.0 (37.5-100) | NS |
| Distance vision | 75.0 (25.0-100) | 75.0 (50.0-100) | 75.0 (37.5-100) | NS |
| Social functioning | 87.5 (50.0-100) | 87.5 (75.0-100) | 87.5 (53.1-100) | NS |
| Mental health | 50.0 (12.5-62.5) | 75.0 (50-100) | 50.0 (25-62.5) | NS |
| Role functioning | 62.5 (25.0-100) | 75.0 (50-100) | 62.5 (25.0-100) | NS |
| Dependency | 100 (25.0-100) | 100 (62.5-100) | 100 (25.0-100) | NS |
| Color vision | 100 (75.0-100) | 100 (87.5-100) | 100 (75.0-100) | NS |
| Peripheral vision | 75.0 (50.0-100) | 100 (37.5-100) | 75.0 (50.0-100) | NS |

CONCLUSION

Early identification and treatment of AQP4-ON among the various ATON subtypes may help clinicians prevent more severe disability.

Disclosures

The authors declare no disclosures relates to this publication.