

CASE REPORT

Atypical Anterior Optic Neuritis Resembles Anterior Ischemic Optic Neuropathy : A Unique Case Report

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ABSTRACT

Purpose : We present a unique case of atypical anterior optic neuritis resemble anterior ischemic optic neuropathy

Methods : This was a single case study, with a patient was followed up for 2 months. Visual acuity, visual field, color vision, intraocular pressure, and ocular anatomy, were examined.

Results : A female patient 54 y/o with chief complain sudden blurred vision on both eyes after woke up in the morning without redness and tearing 4 days before day of visit. History of systemic and ocular diseases were denied. Visual acuity was 0.5/60 (superior) right eye and 1/60 (superior) left eye, couldn't be corrected. Relative afferent pupillary defect was observed in right eye. Biomicroscopic examination of anterior segment and intraocular pressures were normal. Funduscopy revealed ill defined margin at optic nerve head for both eyes suggested papilledema. At the present we couldn't examined color vision. Visual field examination showed inferior altitudinal defect (more severe in right eye). Consultation to internal medicine and laboratory examination such as: complete blood count, lipid profile, blood glucose, and electrocardiogram were done to confirm our diagnosis. Clinically, the diagnosis of the disease more likely to be the anterior optic neuritis. Follow-up after 2 months has normal visual acuity, visual field, and color perception after steroid treatment.

Conclusion : Anterior optic neuritis might have a very similar clinical presentation of anterior ischemic optic neuropathy upon early manifestation.

Keywords: *anterior optic neuritis, anterior ischemic optic neuropathy, neuro-ophthalmology*

Clinically, anterior ischemic optic neuropathy (AION) is marked by sudden decreased vision without pain and associated with edema and pallid optic disc. AION have poor prognosis. On the other hand, optic neuritis have good visual acuity prognosis ($\pm 65\%$), but with multiple sclerosis risk. Both have very similar sign and symptom in acute phase and it's

important to distinguish because of different prognosis.

PURPOSE

We present a unique case of atypical anterior optic neuritis resemble anterior ischemic optic neuropathy.

METHODS

This was a single case study. We follow up one patient from August 2016 to September 2016 diagnosed as anterior ischemic optic neuropathy upon early presentation and discover that it was anterior optic neuritis. We examine visual acuity, visual field, color vision, intraocular pressure, and ocular anatomy for follow up.

RESULT

First presentation

A female patient 54 years old with chief complain sudden blurred vision on both eyes after woke up in the morning without redness and tearing 4 days before day of visit. Pain on head and eye, redness, and tearing were denied. History of hypertension, diabetes mellitus, and cardiovascular disease were denied.

History of trauma and surgery were denied. Visual acuity (VA) right eye 0.5/60 (with inferior altitudinal defect) and left eye 1/60 (with inferior altitudinal defect). Patient has decreased direct and indirect pupillary light reflect and no RAPD noticed as both eyes in similar condition. Anterior segment was normal, but posterior segment showed ill defined margin optic nerve head (ONH) suggested edema of ONH (figure 1). Intraocular pressure (IOP) and ocular movement within normal limit. Color vision could not be assessed due topoor VA.

Visual field on both eyes using Goldmann manual perimetry showed absolute inferior altitudinal defects with maximal depression of remaining superior visual field. Clinically, we diagnosed this patient as AION on both eyes. ECG, complete blood count, and random blood glucose within normal limit. Patient has high triglyceride and total cholesterol and has consulted to department of internal medicine. We gave this patient high dose

steroid intravenous, mecobalamin, and folic acid.

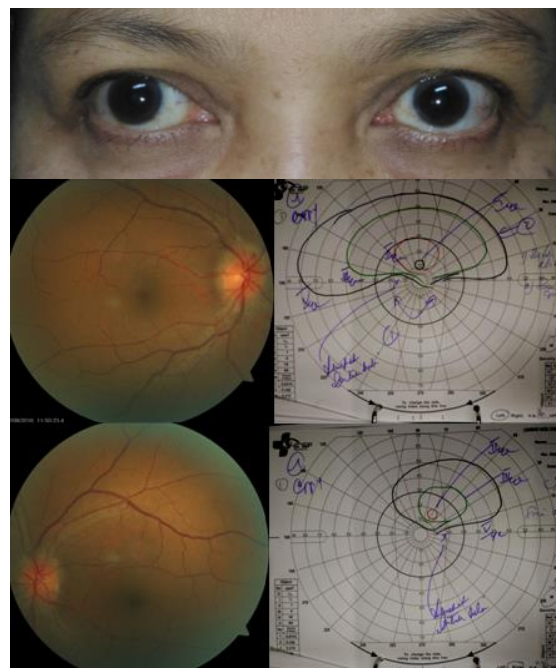


Fig 1. Right and left eye upon early presentation. Anterior segment within normal limit. ONH showed ill defined margin suggested edema.

Two Weeks Follow up

After follow up for 11 days we questioned our early clinical diagnosis as the course of the disease more likely became anterior optic neuritis. Follow up day +18 showed VA right eye 6/18 cc S+0.75 became 6/6 and VA left eye 6/7.5 cc S+0.75 became 6/6, normal anterior segment, normal ONH with improved visual field (VF) (figure 2). IOP and ocular movement within normal limit. Ishihara and amsler grid test within normal limit.

First Month Follow up

VA right eye 6/9 cc S+0.75 became 6/6 and VA left eye 6/6, normal anterior segment, normal ONH with improved VF (figure 3). IOP and ocular movement

Second Month Follow up

VA right eye 6/9 cc S+0.75 became 6/6 and VA left eye 6/6, normal anterior segment,

normal ONH with improved VF.IOP and ocular movement within normal limit. Ishihara and amsler grid test within normal limit.

DISCUSSION

Neuritis optic and AION are the most common etiology of blindness in elderly and have many similar characteristic upon acute presentation.^{1,2} AION have poor prognosis. On the other hand, optic neuritis have good visual acuity prognosis ($\pm 65\%$), but with the risk of multiple sclerosis.^{2,3,4}

Diagnosis as both eyes AION

AION should be differentiated between arteritic or non arteritic (table 1). NAAION (non arteritic anterior ischemic optic neuropathy) has characteristic younger age (mean age 60 years old), equal in male and female, hyperemic and edema of optic nerve, associated with systemic condition such as hypertension, diabetes mellitus, and hyperlipidemia, normal erythrocyte sedimentation rate and C-reactive protein, and with fluorescence angiographic show disc delay. On the other hand, AAION (arteritic anterior ischemic optic neuropathy) has characteristic older age (mean age 70 years old), female more often, pallid edema of optic nerve, increased of erythrocyte sedimentation rate and C-reactive protein, with fluorescence angiography show disc delay and choroidal delay, and usually associated with giant cell arteritis. Biopsy of temporal artery could be used to differentiate between them definitely.^{1,2}

History of painless sudden blurred vision after woke up in the morning was typical for AION. Our patient is female, 54 years old, with edema of optic nerve but not pallid and VF showed inferior altitudinal defect, with abnormal lipid profile, so we thought of non arteritic type at the moment.

Table 1. Characteristic of NAAION and AAION^{1,2}

	AAION	NAAION
Age	Mean age 70 years old	Mean age 60 years old
Sex	Female > male	Female = male
Additional Symptoms	Headache, jaw claudication, transient visual loss	Usually none
Optic nerve	Pallid disc edema Normal cup	Hyperemic disc edema Small cup (disk at risk)
Erythrocyte sedimentation rate	70 mm/hour	20 mm/hour
C-reactive protein	Elevated	Normal
Fluorescein angiography finding	Delayed disc filling danchoroidal filling	Delayed disc filling

Diagnosis as both eyes anterior optic neuritis

Demyelinating optic neuritis and AION is the most common etiology of visual loss in elderly. Both of them resemblance each other on sign and symptom especially on acute period, but have very different visual prognosis. Optic neuritis have very high tendency to recover visual symptom, but with risk of multiple sclerosis.⁴ However AION have poor visual prognosis³. Therefore, it's important to distinguish each other. In most cases, this can be done by considering the circumstances of optic disc edema or pain, age, onset, and some other features (table 2).

Literature mention the provision of steroid therapy and surgery (decompression) in anterior ischemic optic neuropathy is not significant for improvement of vision³. After series of treatment, VA and VF on our patient greatly improved. Given these improvements in the patient, it was concluded that the patient's diagnosis of

AION was in doubt, and we began to think in the direction of optic neuritis.^{4,5}

Table 2. Clinical symptoms of anterior non-arteritic ischemic neuropathic neuropathy and optic neuritis^{2,4}

	NAION	Optic neuritis
Age	> 50 years	< 40 years
Pain	Rare	With ocular movement
Visual field defect	Altitudinal	Central
Optic nerve	Edema 100%, May be pallid	Edema 33%; Hyperemic
Retinal hemorrhage	Often	Rare
Fluorescein angiography finding	Delayed disc filling	No delayed disc filling

Based on ONTT, after 15 years of followup, 92% of patients with optic neuritis had recovery of visual acuity to 20/40 or better; 20/200 or worse visual outcome occurred in 3% patient. Visual recovery tends to occur at 1 month after onset and the majority recovers within 1-3 months.⁵

CONCLUSION

Anterior optic neuritis may have a very similar clinical presentation of anterior ischemic optic neuropathy upon early manifestation. Visual prognosis of both disease is very different so we need to distinguish especially in acute case. Although there were no clear boundaries, circumstances of optic disc edema or pain, age, onset, and some other features can help to distinguish between these

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