A Case of Myelin Oligodendrocyte Glycoprotein (MOG) Optic Neuritis

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INTRODUCTION

- Myelin Oligodendrocyte Glycoprotein (MOG) optic neuritis is a rare autoimmune disorder involving an immune-mediated attack on the MOG protein, resulting in damage to the myelin sheath surrounding the optic nerve.[1]
- Symptoms suggestive of MOG optic neuritis include bilateral and recurrent episodes of optic neuritis.
- MOG is most commonly diagnosed in children and young adults, with no gender predilection.
- The diagnosis requires a combination of clinical findings, laboratory results, and imaging tests.
- Treatment includes high dose corticosteroids and plasmapheresis to reduce inflammation and immunosuppressants to prevent relapse.[2]

CASE PRESENTATION

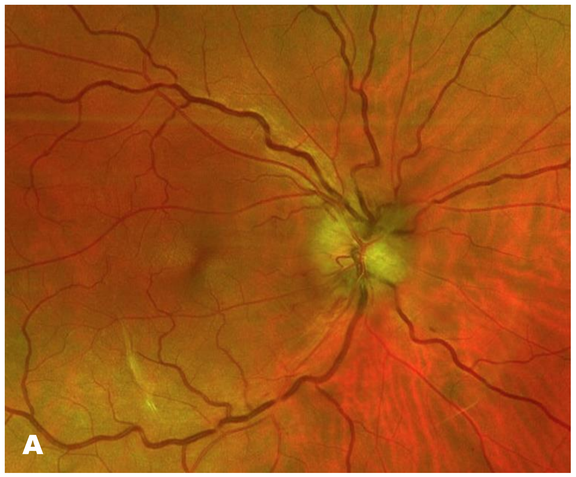
- A 32-year old male presents with ocular pain and decreased vision OU.
- At presentation, BCVA OD: CF 2ft.,OS: 20/40 -2, pain with extraocular movements, +APD OD and dilated fundus exam was notable for bilateral optic nerve head edema.
- Review of systems was negative for any infectious or inflammatory conditions.

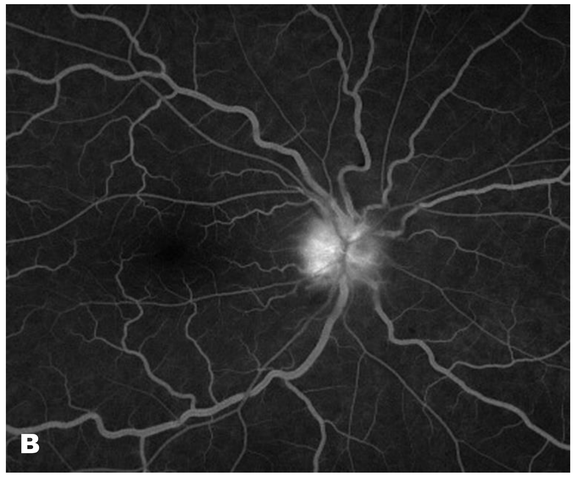
- Workup:
  - MRI brain: Normal
  - MRI orbits: Bilateral optic nerve hyperintensity extending more than 50% the length of the nerve
  - CSF studies: Positive for MOG antibodies titer and elevated IgG index. Normal opening pressure.

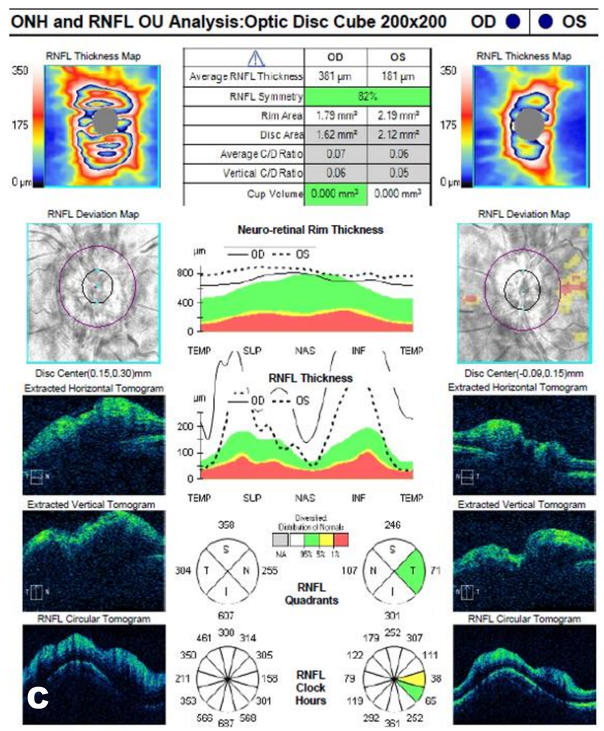
- Treatment:
  - While in the hospital, the patient received IV steroids and plasmapheresis. After 5 days, the patient's visual acuity returned to 20/30 OD and 20/30 OS.

- Outcome:
  - 14 days after presentation, the patient had complete visual recovery and resolution of optic nerve head edema.

IMAGING







	OD	OS
Average RNFL Thickness	381 µm	181 µm
RNFL Symmetry	82%	
Rim Area	1.79 mm²	2.19 mm²
Disc Area	1.62 mm²	2.12 mm²
Average C/D Ratio	0.07	0.06
Vertical C/D Ratio	0.06	0.05
Cup Volume	0.000 mm³	0.000 mm³

Figure A: Fundus photo of the right eye demonstrating prominent optic nerve head edema.
Figure B: Intravenous Fluorescein Angiogram imaging showing leakage at the optic nerve head.
Figure C: OCT RNFL at presentation with evidence of bilateral optic nerve head swelling, OD > OS.

DISCUSSION

- Though the clinical presentation of optic neuritis secondary to multiple sclerosis (MS) is similar to MOG optic neuritis, the presence of MOG antibodies can help distinguish the two.
- MOG optic neuritis has distinct MRI scan findings including extensive, often more than 50%, involvement and enhancement of the optic nerve. MOG optic neuritis and can also present with perineural enhancement while MS enhancement tends to be homogeneous and accompanied by other brain lesions such as periventricular or juxtacortical lesions.[3]
- MOG optic neuritis is more likely to show a contrast-enhancing lesion in the posterior part of the optic nerve, whereas MS optic neuritis is more likely to show a contrast-enhancing lesion in the anterior part of the optic nerve.[4]
- A slow steroid taper is recommended to reduce the risk of early relapse.

CONCLUSION

- MOG optic neuritis may present with similar features to other central nervous system involving autoimmune disorders, such as multiple sclerosis (MS) and neuromyelitis optica (NMO).[5]
- The visual outcome of MOG with traditional MS therapy is often very poor.
- MOG optic neuritis has a more monophasic course than MS and NMO, and relapses are less frequent.
- MOG optic neuritis patients may respond better to high dose IV steroid immunosuppressive therapies and plasmapheresis than to traditional treatments for MS or NMO.
- This case raises physician awareness of the clinical and radiological features, laboratory testing for antibodies and treatment modalities for MOG optic neuritis.

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