International Journal of Science and Research (IJSR)
ISSN: 2319-7064
SJIF (2022): 7.942

A Case of Unilateral Optic Neuritis in a 17-Year-Old Girl

Dr. Meenal Aggarwal[1], Dr. Nupur Suman[2]

[1]PG Resident, Department of Ophthalmology, Saraswathi Institute of Medical Sciences, Hapur, Uttar Pradesh – 245304, India
Email: *meenalaggarwal23[at]gmail.com*

[2]HOD and Professor, Department of Ophthalmology, Saraswathi Institute of Medical Sciences, Hapur, Uttar Pradesh – 245304, India
Email: *nupursuman31[at]gmail.com*

Abstract: ***It is widely known that in children, optic neuritis usually occurs following a febrile illness, tend to affect both eyes and frequently associated with swollen discs with good visual outcomes. We report a case of a 17 - year - old girl who presented with 3 days history of blurred vision in right eye and pain with eye movements. Slit lamp examination was normal. Fundoscopy of right eye showed blurred disc margins with haemorrhages on its margin, torturous vessels and foveal reflex dull. Investigative work up for infectious, autoimmune, and neoplastic was negative. Magnetic resonance imaging (MRI) of the brain and orbit was normal with a high T2 signal. A diagnosis of papillitis was made and patient was started on intravenous methylprednisolone for 3 days, followed by oral prednisolone for 14 days. She had excellent visual recovery and remained asymptomatic for 1 year.***

Keywords: Childhood; Optic neuritis, Unilateral

Abbreviations

MRI: Magnetic Resonance Imaging MS: Multiple Sclerosis
NMO: Neuromyelitis Optica
ADEM: Acute Disseminated Encephalomyelitis

1. Introduction

Optic neuritis refers to inflammation of the optic nerve. It is referred to as papillitis when the optic disc is swollen and retrobulbar neuritis when the disc appears normal. Most patients are between the ages of 20 and 50 years. Women are affected more commonly than men. The clinical presentation of this pathology usually includes sudden loss of visual acuity which may be unilateral or bilateral, visual field defects, painful eye movements, dyschromatopsia and a relative afferent pupillary defect [1, 2].

2. Case Report

A 17 - year - old Girl presented in Ophthalmology OPD at Saraswathi institute of medical sciences, Pilkhuwa, Anwarpur, Hapur, Uttar Pradesh with blurring of vision in her right eye for the past 3 days. Patient also complained of pain during eye movements. The girl and her family were natives to this place. There was no history of preceding febrile illness. There was no significant family history.

On examination, right visual acuity was 6/24 with no improvement with pinhole and 6/6 in the left eye. Colour vision (Ishihara) at presentation was normal in both eyes. Ocular movements were full range but associated with pain.

No conjunctival congestion or lid swelling was noted. A relative afferent pupillary defect (RAPD) was noted in the right eye. Anterior segment of both the eyes was normal. Fundoscopy of right eye showed blurred disc margins with haemorrhages on its margin, torturous vessels and foveal reflex dull (figure 1) and of left eye was normal. Rest of systemic and neurological examination were normal.

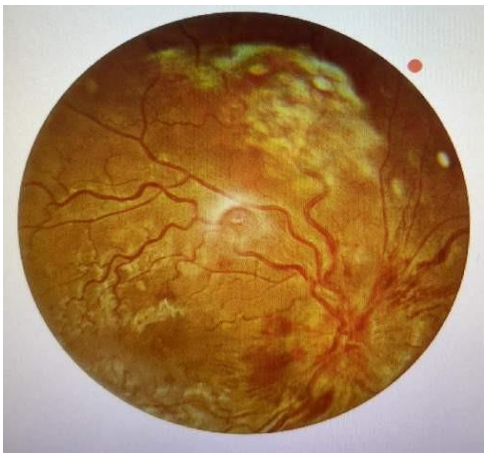
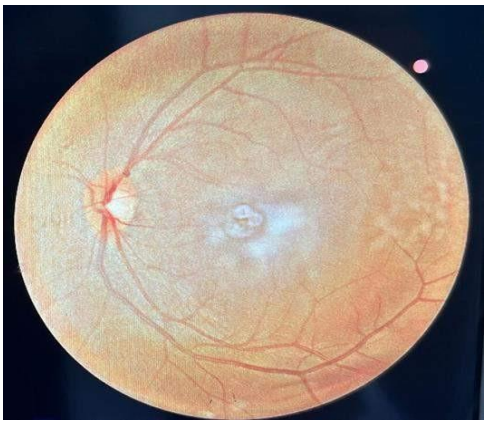


Figure 1: Fundus photograph of Right eye with papillitis



Fundus photograph of left eye - Normal

Chest X ray and Mantoux skin test was negative. Blood inflammatory markers were normal and blood analysis was negative for infectious pathology. Magnetic Resonance Imaging (MRI) of the brain and orbit was normal with a high T2 signal (Figure 2 and 3). Brain parenchyma and left optic nerve were normal. A diagnosis of isolated unilateral

papillitis was made.

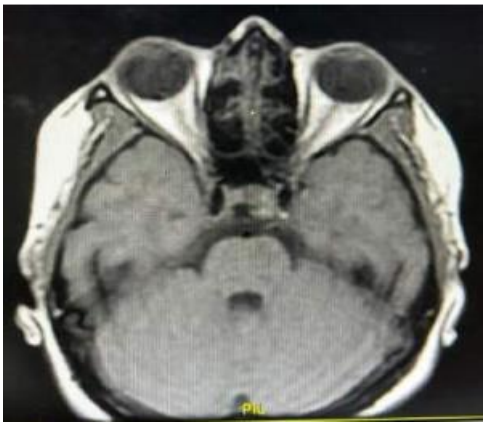


Figure 2: Axial T 1 MRI was normal

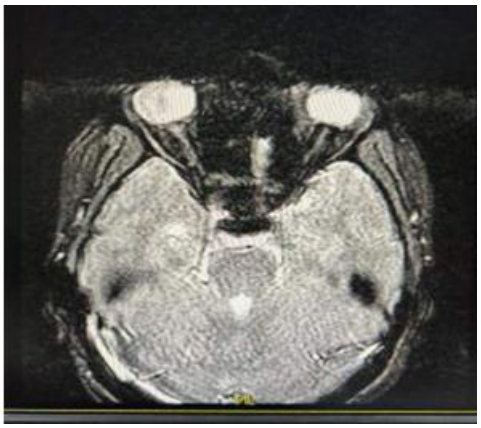


Figure 3: Axial T 2 MRI was normal

She was started on 1gm Intravenous Methyl prednisolone for 3 days followed by oral steroids 40mg for 11 days with 3 days tapering in consultation with paediatrician and physician.

After first dose of Intravenous Methyl prednisolone patient's vision in the right eye had improved to 6/9 and colour vision test using Ishihara plates was normal. Relative Afferent Pupillary Defect Grade I was present.

After second dose of Intravenous Methyl prednisolone patient's vision in the right eye had improved to 6/6 partial and colour vision test using Ishihara plates was normal. Relative Afferent Pupillary Defect Grade I was present.

After third dose of Intravenous Methyl prednisolone patient's vision in the right eye had improved to 6/6 and colour vision test using Ishihara plates was normal. Relative Afferent Pupillary Defect Grade I was present.

3. Discussion

Optic neuritis affects children less commonly than adults. The presentation is typically bilateral and frequently has optic nerve head swelling. The prognosis is generally good. Paediatric optic neuritis may occur following infection or vaccination, or in association with a systemic demyelinating diseases such as Multiple Sclerosis (MS), Neuromyelitis Optica (NMO) or initial manifestation of Acute Disseminated Encephalomyelitis (ADEM) [3, 4].

Neuromyelitis Optica (NMO) is a central nervous disorder with features of optic neuritis, myelitis, as well as brainstem and cerebral signs and is further categorized by AQP4 - IgG status. ADEM is a polyfocal CNS disease with encephalopathy, usually occurring in young children [5].

Papillitis was more frequent than retrobulbar neuritis and prognosis was good [6]. Systemic steroids were found to benefit paediatric patients with optic neuritis in another study in India. (7)

Initial assessment should be directed toward ruling out those diseases for which delay in treatment can result in permanent vision loss or other neurologic impairment. The following blood tests are recommended such as Complete Blood Count (CBC), Anti - Neutrophil Cytoplasmic Antibody (ANCA), Anti - Nuclear Antibody (ANA), Angiotensin - Converting Enzyme (ACE), and anti - AQP4 - IgG levels. Chest X - ray and Mantoux test may be done in case of suspicion of pulmonary disease.

Other diagnostic tests include MRI of the brain and orbits with fat suppression and gadolinium enhancement, Optical Coherence Tomography (OCT) and Visual Evoked Potential (VEP) testing [8].

Optic Neuritis Treatment Trial (ONTT) was a multicentre trial supported by the National Eye Institute that assessed the benefit of corticosteroid treatment and investigated the relation between optic neuritis and multiple sclerosis (MS).

Brain MRI is the most powerful predictor of subsequent MS risk in monosymptomatic patients. The presence of one or more white matter lesions was associated with a 56% risk of MS after 10years, while the risk was only 22% if the MRI results were normal [9]. This study, however, did not include paediatric patients.

The Paediatric Optic Neuritis Prospective Outcomes Study is being done to study this rare disease in children and provide knowledge regarding the etiology, management, and prognosis of optic neuritis in children (10)

Our patient presented with unilateral papillitis optic neuritis with no lesion in brain. Her systemic and neurological examination was normal. The prognosis is relatively good in such children. Our patient promptly responded to systemic steroids and had excellent visual recovery.

There are no clear guidelines regarding treatment in paediatric population with isolated optic neuritis without central nervous involvement. Treatment in the paediatric population consists of 30 mg/kg per day intravenous methylprednisolone, maximum 1 g daily, for 3 - 5 days followed by oral corticosteroid taper over (2 - 4) week. Treatment with systemic steroids helps in quicker visual recovery although they do not alter the final visual outcome.

4. Conclusion

Optic neuritis in children presents with different clinical manifestations than in adults. The risk of evolving MS is reported to be less than in adults. It is important to rule out

any serious neurological disorder through a thorough history, physical examination, and imaging. Neuroimaging year follow up study should be done to rule out any demyelinating lesion or any intracranial pathology. The pathogenesis of paediatric optic neuritis is not well understood. Prospective studies are required to enlighten us regarding diagnosis and management in cases of paediatric optic neuritis.

References

[1] Yanoff F, Duker JS (2014) Inflammatory Optic Neuropathy. Ophthalmol - ogy, 4" edn.
[2] Yeh EA, Graves JS, Benson LA, Wassmer E, Waldman A (2016) Pediatric optic neuritis. Neurology 87: 53 - 58.
[3] Singh D, Phuljhele S, Sharma R, Saxena R, Sharma P, et al. (2017) Clinical spectrum of pediatric optic neuritis in indian children. Ophthalmol Open J 2: 20 - 26.
[4] Rafael José Pérez - Cambrodi, Aránzazu Gómez - Hurtado Cubillana, MaríaL. Merino - Suárez, David P. Piñero - Llorens, Carlos Laria - Ochaita (2014) Optic neuritis in pediatric population: Areview in current tendencies of diagnosis and management. J Optom 7: 125 - 130.
[5] Chang MY, Pineles SL (2017) Pediatric Optic Neuritis. Semin Pediatr Neurol 24: 122 - 128.
[6] Khadse R, Ravindran M, Pawar N, Maharajan P, Rengappa R (2017) Clinical profile and Neuroimaging in pediatric optic neuritis in Indian population: A case series. Indian J Ophthalmol 65: 242 - 245.
[7] Kumar KVP, Chiranjeevi P (2017) Optic neuritis in indian children: a one year followup study. Opth Clin ther 1: 3 - 5
[8] Borchert M, Liu GT, Pineles S, Waldman AT (2017) Pediatric Optic Neu - ritis: What Is New. J Neuroophthalmol 37: 14 - 22.
[9] Cleary PA, Beck RW, Anderson MM, Kenny DJ, Backlund J, et al. (1993) Design, methods and conduct of the Optic Neuritis Treatment Trial. Control Clin Trials 14: 123 - 142.
[10] Pineles SL, Liu GT, Waldman AT, Lazar E, Kupersmith MJ, et al. (2016) Pediatric Optic Neuritis Prospective Outcomes Study. J Neuroophthalmol36: 115 - 117.