Evaluation of Patients Diagnosed with Optic Neuritis in Childhood: Single Center Experience

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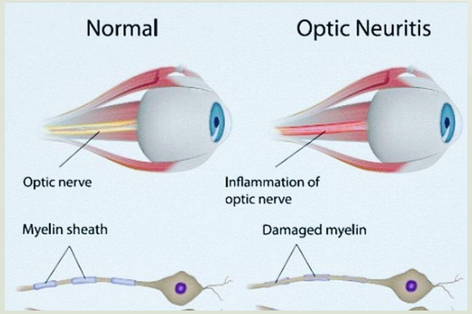
INTRODUCTİON

Optic neuritis is the inflammation of the myelin sheath surrounding nerve fibers. It is typically characterized by symptoms such as vision loss, pain with eye movements, and the appearance of colored rings. There isn't a single diagnostic method for demyelinating diseases. Typically, a diagnosis is made by considering all diagnostic methods together. The patient's history, neurological examination findings, brain and spinal cord magnetic resonance imaging (MRI) findings, sometimes cerebrospinal fluid findings, and when necessary, electrophysiological tests are all used to make a diagnosis.



OBJECTİVES

The aim of our study is to evaluate patients diagnosed with optic neuritis (ON) in our pediatric neurology clinic; to compare the demographic, clinical, laboratory, imaging methods, ophthalmologic examinations, and treatment outcomes of patients diagnosed solely with ON versus those experiencing an ON attack and subsequently diagnosed with multiple sclerosis (MS) during follow-up; and to elucidate the differences observed in clinical follow-ups and ophthalmologic examinations.

MATERIALS AND METHODS

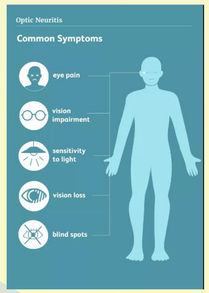
Medical files of patients diagnosed with optic neuritis and patients younger than 18 years of age who were treated for multiple sclerosis after an optic neuritis attack **at Marmara University Faculty of Medicine between January 1, 2012 and January 1, 2022 were analyzed retrospectively.**

	Optic neuritis	MS	p values
	n (%)	n (%)	
Gender			
Female	13 (68,4)	10 (76,9)	0,704[a]
Male	6 (31,6)	3 (23,1)	
Age of first onset (years)			
Mean/Median ± (Range)	11,46 ± 3,36	15,19 ± 2,48	0,001[b]
Oligoclonal band positivity			
	2 (16,7)	8 (61,5)	0,041[a]

	Increase in visual field		p values
	Optic Neuritis (n=14 eye)	MS (n=7 eye)	
0-6 months (MD)	3,24 ± 5,40	1,77 ± 1,78	0,998
0-12 months (MD)	4,01 ± 5,68	3,23 ± 2,77	0,799
6-12 months (MD)	0,77 ± 1,63	1,46 ± 2,07	0,360

Inclusion criteria for the study:
Acute visual loss, with or without pain in eye movements, resulting in decreased visual acuity
Presence of at least one of the following: relative afferent pupillary defect, abnormal visual evoked potentials (VEP), or visual field defect

Exclusion criteria for the study:
Presence of retinal lesions or any other ocular disease
Vascular, toxic, metabolic, infiltrative, compressive, or hereditary optic nerve damage
Presence of additional neurological diseases



RESULTS

A total of 35 patients were included in this study. Nineteen patients were diagnosed with isolated/idyopathic optic neuritis (ON), 13 with multiple sclerosis (MS), 2 with MOG antibody disease (MOGAD), and 1 with NMOSB.

The mean age at presentation was significantly higher in MS patients (15.19±2.48 years) compared to ON patients (11.46±3.36 years) (p=0.001).

The mean follow-up duration was longer in MS patients compared to ON patients (26.08±9.04 months vs. 18.21±10.04 months, respectively; p=0.020). Oligoclonal band positivity was found in 16.7% (n=2) of ON patients and 61.5% (n=8) of MS patients (p=0.041). Cranial/spinal lesions were detected in all MS patients on MRI imaging, which was statistically significantly higher compared to ON patients (100% vs. 5.3%, respectively; p<0.001).

The mean visual acuity levels at baseline were 0.26±0.33, at sixth month were 0.76±0.35, and at twelfth month were 0.87±0.26. Statistical analysis revealed significant improvement in visual acuity levels at all time intervals (p<0.05 for all). The mean retinal nerve fiber layer thickness (RNFL) at baseline was 117.09 µm, which decreased to 80.86 µm at 12 months, indicating a significant thinning (30%) post-attack. The temporal quadrant exhibited the most pronounced thinning.

CONCLUSIONS

In pediatric patients presenting with optic neuritis, advanced age at onset, oligoclonal band positivity, and the presence of lesions on initial cranial MRI are important parameters in terms of the risk of conversion to multiple sclerosis (MS). Our study findings were found to be generally consistent with the literature. Our results will contribute as an important data source for these two significant demyelinating diseases in childhood. More extended prospective studies will provide more efficient outcomes regarding the long-term prognosis of the disease.

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