

Common clinical features of pediatric multiple sclerosis in Pakistan — A report of 15 cases

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Abstract

The aim of this note is to assess the common clinical features of paediatric multiple sclerosis (PMS) in Pakistan. For this purpose, 150 MS patients with the age range of (1-72) years and mean age (34.2±11.09) years were studied during the period 2010 to 2015 from MRI centers of Pakistan. We found 15 paediatric MS cases which had clinical course relapsing-remitting MS (11), secondary-progressive MS (3) and primary-progressive MS (1). Revised McDonald criteria 2010 of MRI was used to disseminate lesions in space and time. Sensory symptoms were found 27% in PMS patients and contributed brain area of corpus callosum, brain stem, periventricle, basal ganglia, white matter and cerebellum. Optic neuritis was the second clinical feature and its prevalence was reported 20% in paediatric patients. In conclusion, Paediatric multiple sclerosis is predicted 10 % with mean age 11.2 years in Pakistan. Sensory and optic neuritis are suggested the common clinical features of paediatric multiple sclerosis in Pakistan.

Keywords: Multiple sclerosis, Pediatric, Magnetic Resonance Imaging.

Introduction

Multiple sclerosis (MS) is the most common disease of central nervous system (CNS) and research regarding clinical and radiographic features, epidemiology, treatment options, and prognosis of paediatric MS has increased significantly all over the world.¹ MS patients may exhibit any neurological symptoms as vision loss, paralysis, numbness and, walking difficulties. This is due to myelin sheath damage causing the axons to remain unprotected and signals from the brain to rest part of body are partially or amply failed. The initial clinical

presentation is suggestive of relapsing remitting multiple sclerosis (RRMS) and is termed the clinically isolated syndrome (CIS). CIS is a neurological episode caused by inflammation in one or more sites within the CNS and lasting at least 24 hours.² Multiple sclerosis in children is increasing because of the weakness of the developing brain and overall immature immune system. The paediatric multiple sclerosis (PMS) needs special attention as onset of MS disease in early age is transferred into a very long clinical course.³

Previous literature has illustrated that most of the PMS patients have been disabled for long periods from the time of onset as compared to adult patients. Mostly MS children are severely disabled, either physically or cognitively and half of them are predicted to have the secondary-progressive MS (SPMS).⁴ Little information exists regarding symptoms and disease progression of paediatric multiple sclerosis in Pakistan. The aim of this study is to assess the common clinical features of paediatric multiple sclerosis (PMS) in order to set brief report for clinical findings and severity of the MS disease.

Case Series

Data of 150 MS patients was collected from different hospitals of Pakistan with acknowledgments of radiologists, The Institute of Child Health-Diagnostic Radiology Department, Lahore and Diagnostic MRI Center, Bahawalpur Victoria hospital (BVH) during the period 2009 to 2015. MRI of Brain and Spinal cord were obtained using 1.5 Tesla (Philips, Acheiva /MR/Acheiva-DRW-1, Netherland). FLAIR and T2-W images were analyzed using DICOM workstation software (IQ Viewer). Post contrast gadolinium was also injected in few MS cases to assess the enhancing lesions in brain and spinal cord. A revised McDonald criterion 2010 was used to detect MS lesions in space.⁵

Fifteen paediatric multiple sclerosis (PMS) cases out of 150 MS patients having age (1-72) years and mean age (34.2±11.09). Gender ratio of PMS was noted as male (6%) and female (9%) with age (1-16) years and mean age (11.2±3.57) years. Clinical course was observed as relapsing-remitting multiple sclerosis (RR-MS) in 9 cases, secondary-progressive MS (4) and primary-progressive

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Table: Clinical features & brain area involved in PMS.

Clinical features	Mean Age	No of Cases	%age	Gender	Brain Area Involved
Numbness: hand, feet	6.1	4	26.6	M=1,F=3	WM,BS ,Cerebellum, CC, centrum semiovale, BG.
Trauma	16	1	6.6	M=1,F=0	Posterior and Anterior horn of ventricle
Backache/paraparesis	14	2	13.3	M=1,F=2	WM,BS, cervical cord
Headache & Fits	13.3	2	13.3	M=1,F=1	PV,BS,BG,WM, centrum semiovale
Diplopia/loss of vision	6	3	20	M=1,F=2	WM, BS, optic chiasm, MB, cerebral hemispheres, pituitary gland.
Headache & Vertigo	12	1	6.6	M=0,F=1	PV, BS, BG
Epilepsy	11	1	6.6	M=1,F=0	Left hippocampus volume loss
Transverse myelitis	10.7	1	6.6	M=0,F=1	Spinal cord
	11.2	15	100	M=6,F=9	

Abbreviation: PV: Periventricle, BS: Brain Stem, MB: Mid Brain, BG: Basal Ganglia, WM: White Matter, CC: Corpus Callosum.

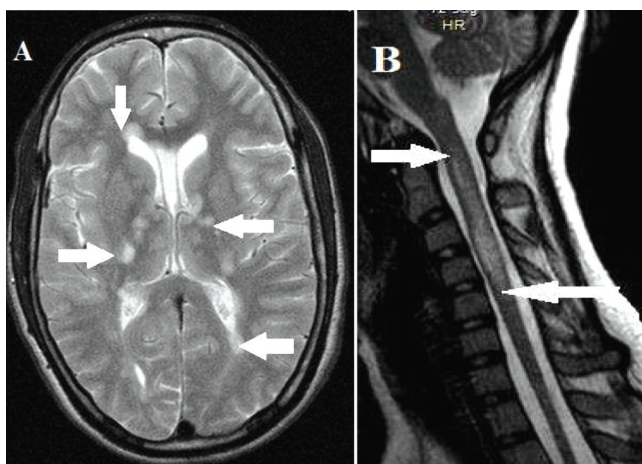


Figure: A) Periventricle, Basal ganglia, Cavum septum pellucidum (Incidental findings). B) Sagittal T2-W MRI of cervical cord C2-C4 finding of female at age 16 years.

MS (2) during follow up study. Clinical features and lesions sites in CNS of PMS are shown in Table.

Discussion

Multiple Sclerosis lesions in different sites of brain and spinal cord play a substantial role to demonstrate the disability in a MS patient. Previous literature has shown that there may be a subtle difference between adult-onset and pediatric-onset disease as both have similar relapse rates and similar MRI findings in CNS.⁶

Clinical features of PMS are assessed till the age of 17 years during a five year period (2009-2015) and the frequency of MS disease in children has been reported 10% in Pakistan. Chong et al. stated that paediatric multiple sclerosis is not a common disorder and its prevalence in children was estimated to be 12% in Asia.⁷ People with MS experience basic sensory symptoms as loss of sensation, numbness, tingling, pain, burning, pins and needles, hypersensitivity to touch and crawling

sensations. Banwell et al.⁴ reported 30% presence of sensory symptoms in Asian population which were associated with disability numbness in the feet and bilateral hand numbness.⁴ In our study, we observed sensory symptoms to be most common in paediatric patients with a frequency of 27% before the age of 10 years. During study, T2-W and FLAIR MRI images showed that maximum MS lesions were seen in brain stem, corpus callosum, periventricle, basal ganglia, cerebellum and spinal cord of PMS patients. MS lesions in brain and spinal cord of one of the SPMS cases are shown in Figure and who presented with sensory symptoms; numbness of hand and feet bilaterally in the different five relapses during follow up.

Optic Neuritis (ON) is another frequent symptom of patients with multiple sclerosis and is considered as a suggestive predictor in the diagnosis of MS. Usually, optic neuritis and transverse myelitis (TM) are common features in the progression of MS disease in children. Inflammation of the optic nerve causes loss of vision usually by the swelling and destruction of the myelin sheath covering the optic nerve. In addition, blurred vision, a change in colour perception, central scotoma, headaches, retro-orbital pain precipitated by eye movements and flashes of light or black squares (phosphenes) are characterized by optic neuritis. Hamiel P et al.⁸ studied the clinical features of juvenile cases and optic neuritis was the initial symptom of multiple sclerosis. Banwell et al. presented the 10-22% of MS children with optic neuritis.⁴ In this study, optic neuritis was the second highest clinical feature of PMS and its prevalence was reported to be 20% in Pakistan. Simone et al.⁹ explained the clinical features of MS in children and stated that the sensory symptoms were the initial prognosis of disease followed by optic neuritis. Krupp et al.¹⁰ reported that neuromyelitis optica is one of the CNS inflammatory demyelinating

disorders presenting in children which is suggestive of multiple sclerosis.¹⁰

We evaluated the most common clinical features as sensory and visual symptoms in this study. This does not imply that other neurological abnormalities are absent from the spectrum of paediatric MS in Pakistan. This study observed the pyramidal disability (13.3%) with mean age 14 years involving the cervical cord and cerebellum, corpus callosum and basal ganglia. Similarly, transverse myelitis, epilepsy, fits, headache, trauma, backache and vertigo are also clinical features of paediatric multiple sclerosis.

Conclusion

Paediatric multiple sclerosis has a frequency of 10% with mean age 11.2 years in Pakistan. Sensory and optic neuritis are suggested the common clinical features in this population.

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Conflict of Interest: There is no conflict of interest among authors.

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