A Tingling Suspicion: Pediatric Multiple Sclerosis

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Introduction

Pediatric MS is defined as onset of MS before the age of 18 and affects girls more than boys with a female to male ratio of 2.8 in children ≥12 years of age. The overall incidence of pediatric-onset MS ranged from 0.05 to 2.85 per 100,000 children, with most of the studies reporting incidence rates of <1 per 100,000; the overall prevalence ranged from 0.7 to 26.9 per 100,000 children (Lotze & Gonzalez-Scarano, 2007)

Case Report

A 12 y/o female, presented to the family medicine clinic with a 6-month history of headaches, numbness, and tingling. Initially, she was seen by an optometrist who reported her vision was normal and gave her reading glasses. Her headaches did not improve. Several weeks later, the patient developed a positive L'hermitte sign. At that time, she endorsed episodes of full body numbness, tingling, and pain from the neck down with blurry vision. On two occasions, these episodes included horizontal diplopia lasting for a few minutes. She took naproxen and Tylenol for the pain. Patient denied difficulty swallowing, no respiratory distress, no bowel or bladder dysfunction. These episodes did resolve for several weeks. Known risk factors for MS were investigated. Serology showed evidence of remote EBV infection and vitamin D deficiency at 19 ng/dL. There was a remote family history of MS, but a stronger family history of type 1 diabetes and lupus.

Discussion

Differential diagnosis of pediatric multiple sclerosis

Inflammatory disease	ADEM/MDEM, NMOSD, SLE, PACNS, APS, Sjögren syndrome, Behçet syndrome
CNS malignancy	Lymphoma, high grade glioma
Leukodystrophy	Metachromatic leukodystrophy, X-linked adrenoleukodystrophy, Alexander disease
CNS infection	Acute bacterial or viral infections, Lyme disease, West Nile virus, syphilis, HIV
Vitamin deficiency	B12, folate
Granulomatous disease	Neurosarcoidosis, granulomatosis with polyangiitis (Wegener)
Mitochondrial disease	Leber hereditary optic neuropathy

ADEM: acute disseminated encephalomyelitis; APS: antiphospholipid syndrome; CNS: central nervous system; HIV: human immunodeficiency virus; MDEM: multiphasic disseminated encephalomyelitis; NMOSD: neuromyelitis optica spectrum disorders; PACNS: primary angiitis of the central nervous system; SLE: systemic lupus erythematosus.

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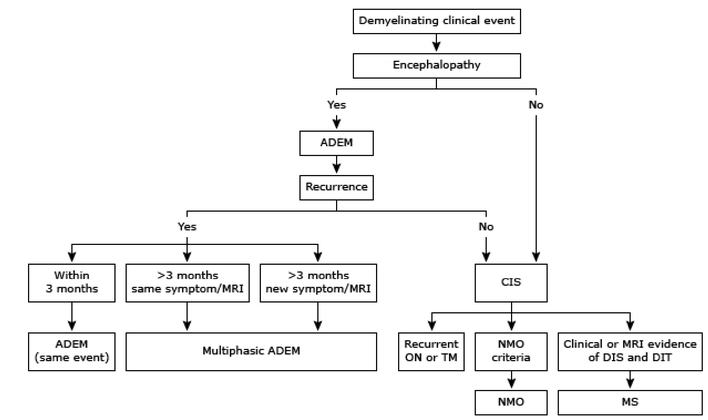
Current Diagnostic Algorithm

Diagnosis of demyelinating clinical event



ADEM: acute disseminated encephalomyelitis; CIS: clinically isolated syndrome; ON: optic neuritis; TM: transverse myelitis; NMO: neuromyelitis optica; DIS: dissemination in space; DIT: dissemination in time; MS: multiple sclerosis.

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Case Report (continued)

She was seen by outpatient neurology. MR imaging and spinal tap were obtained. CSF showed oligoclonal bands, spine MRI showed single lesion at C3/C4, and brain MRI showed multiple lesions in locations typical of MS. A diagnosis of relapsing-remitting MS was made after her first attack met 2017 McDonald criteria. She was placed on oral Gilenya in 09/2018 which she tolerates well, she has not had any recent MS attacks, denies fatigue, Uhtoff symptom, and has no current neurologic deficits. She has no numbness, tingling, or weakness. Bladder and bowel control are normal. She still suffers from headaches and leaves school several times per month as a result, she has been able to cut back on Tyelenol for this and is being managed on cyproheptadine.

Conclusions

- The presentations, diagnostics, treatment, and prognosis in pediatric MS have relatively few studies and can differ from the adult form
- In the context of family history of autoimmunity as well as new onset sensory and visual changes, brain/spine MR imaging is warranted in an otherwise healthy pediatric patient

References

1. Lotze, T. E., & González-Scarano, F. (2007). Pathogenesis, clinical features, and diagnosis of pediatric multiple sclerosis. *Up to date*.