Background / Objectives
- Neuroinflammation plays a significant role in the pathogenesis of chronic traumatic encephalopathy.
- Recent studies suggest that repeated concussions may increase risk for multiple sclerosis.
- Possible mechanisms include disruption of blood-brain barrier leading to exposure of CNS antigens to the peripheral immune system.
- We describe four adolescent males who were diagnosed with multiple sclerosis and were former football players.

Methods
- Retrospective chart review of four pediatric patients with history of participation in football who were diagnosed with multiple sclerosis.
- Demographic information, medical histories, neuroimaging features, and neuropsychological testing results were reviewed.

Results
- Four adolescent males who played football were diagnosed with relapsing-remitting multiple sclerosis at ages 14, 15, 16, and 17.
- Three out of the four individuals had a documented history of concussion and diagnosis of post-concussive syndrome.
- Sensory, vision, balance, and gait abnormalities were common presenting symptoms.
- Preceding history of football training or competition was a salient feature of the cases (diagnosis of multiple sclerosis occurred in months of June, September, October, November, possibly overlapping with football season).
- The patients all had a high burden of white matter lesions, and in some cases, multiple enhancing lesions that appeared similar in age.
- Neuropsychological testing or screening results were available for three of four individuals. Commonly identified areas of weakness included processing speed, memory, visual-motor integration, and attention. All three who were tested were receiving formal educational accommodations through a 504 Plan.

Conclusions / Discussion
- This case series provides examples of pediatric football players and subsequent development of multiple sclerosis.
- Prior and repeated concussions was a common theme within these cases.
- Presenting neurological symptoms and diagnosis of multiple sclerosis often occurred in the football pre-season or season.
- These patients had a relatively high burden of white matter disease and demonstrated neuropsychological deficits. Notably, all who were tested were receiving formal academic accommodations through a 504 Plan.
- This case series is limited by its retrospective nature and selection bias.
- Future directions include prospective, case-controlled studies investigating if there is a causal relationship between concussive events and risk of developing multiple sclerosis.

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