T9 AIS B Paraplegia due to Fibrocartilaginous Embolism: A Case Report

Anisa L. Tatini, MD[1], Ohmin Kwon, MD[1], William Ide, MD[1,2], Christina Sadowsky, MD[1,2]
[1]Johns Hopkins School of Medicine, Department of Physical Medicine and Rehabilitation, Baltimore, Maryland
[2]Kennedy Krieger Institute, Baltimore, Maryland

Introduction

- Fibrocartilaginous embolism (FCE) is a a very rare cause of spinal cord injury felt to represent 5.5% of all spinal cord infarctions [1].
- The distribution is bimodal affecting the young adult population (mean age 22) and the older adult population (mean age 60) [2].
- In the pediatric population, the mean age of presentation is 14 [3]
- FCE has been most described in veterinary medicine [2]

Case Description

- A 13 year old girl with history of asthma began to have symptoms of of progressive lower limbs pain, sensory loss, urinary incontinence, saddle anesthesia, and paraplegia with onset several hours after performing strenuous yard work
- Initial lab work in the emergency department was unremarkable outside of elevated creatinine kinase and leukocytosis with predominance of neutrophilia
- MRI with contrast of the neuroaxis showed T2 hyperintensity of the ventral cord T8-12 and extensive signal abnormalities throughout the conus medullaris without enhancement
- Lumbar Puncture during admission was unremarkable for infectious or inflammatory process
- A spinal angiogram was completed and showed partial filling defect causing narrowing of proximal artery of Adamkiewicz arising from the left T10 intersegmental artery concerning for fibrocartilaginous embolism
- Patient was discharged to a pediatric inpatient rehab unit after 11 days of acute admission. Exam on discharge documented as 0/5 strength in bilateral lower extremities, intact vibration sense, and minimal proprioception in lower extremities

Imaging

Fig 1: Sagittal T2 weighted Magnetic Resonance imagining demonstrating hyperintensity of the ventral cord T8-12

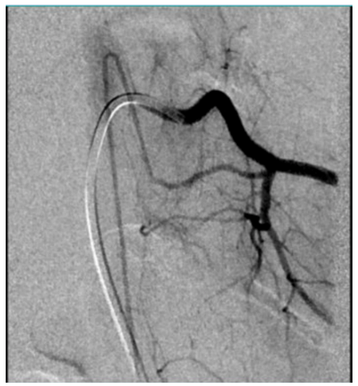

Fig 2: Spinal Angiogram at level of left T10 showing artery of Adamkiewicz

Discussion

- The exact mechanism of injury is unknown but may result from increased axial loading on the spine causing dislodged components of the nucleus pulposus to migrate into the surrounding radicular arteries [1]
- In normal individuals, the vascular channels present at birth which supply the intervertebral disc begin to regress at 2 months and disappear by age 11-16 years [1]
- Persistence of disc vascularity, as well as early degenerative changes, may have increased this adolescent's risk of FCE [1]
- Our patient's injury occurred after preforming yard work earlier in the day
- Diagnosis is made on clinical presentation and MRI findings of T2 hyperintensity of gray matter [1]
- Early MRI may be normal and definitive diagnosis can only be made on autopsy [3]

Conclusion

Fibrocartilaginous embolism is a rare etiology of ischemic spinal cord injury which may be under-recognized in pediatric patients.

References

1. AbdelRazek MA, Mowla A, Farooq S, Silvestri N, Sawyer R, Wolfe G. Fibrocartilaginous embolism: a comprehensive review of an under-studied cause of spinal cord infarction and proposed diagnostic criteria. *The Journal of Spinal Cord Medicine*. 2016;39(2):146-154.
2. Shah S, Bryant P. Fibrocartilaginous emboli in the pediatric population: The role of rehabilitation in facilitating functional recovery. *PRM*. 2018;11(1):53-56.
3. Yamaguchi H, Nagase H, Nishiyama M, et al. Fibrocartilaginous embolism of the spinal cord in children: a case report and review of literature. *Pediatric Neurology*. 2019;99:3-6.