Case Report: Kale and Ketamine, Subacute Dorsal Column Degeneration in a Vegan IV Drug User

Anne Goldring, MD[1,2], Matthew Oswald, MD[1,2]
[1]Department of Physical Medicine & Rehabilitation, Shirley Ryan Ability Lab; [2]McGaw/Northwestern University Feinberg School of Medicine, Chicago, IL

Case Presentation

- A 26 year-old female presented to the Emergency Room reporting 2 weeks of progressive numbness and impaired balance resulting in falls. The numbness began distally in her feet with proximal spread to the legs and pelvis followed by hands and shoulders. She denied recent trauma, procedures with use of nitrous oxide, fevers or illness. Her history included intravenous drug use (IVDU), including recent heroin and ketamine. Further questioning revealed history of veganism.
- On exam, she had mild motor deficits distally in the upper and lower extremities, reduced sensation to light touch and proprioception, left-sided pronator drift, pseudo-athetosis, and limb ataxia.
- Initial workup was significant for anemia and normal white blood cell count. Urine drug screen was positive for opiates. MRI revealed T2 cord signal in dorsal and dorsolateral columns of the cervical and thoracic spine, prompting additional workup for vitaminoses and heavy metal screening.
- Subsequent serology identified low Vitamin B12 with elevated homocysteine, methylmalonic acid, and positive intrinsic factor antibodies.
- Supplementation was initiated for Vitamin B12 deficiency with 1000 mcg of daily intramuscular B12 for 1 month.
- Functional deficits started to improve within 5 days of supplementation initiation. She presented to acute inpatient rehabilitation requiring maximal assistance. After 2 weeks, she progressed to supervision or complete independence for activities of daily living and mobility.

Imaging

Image 1: T2-weighted MRI of the cervical spine showing enhancement of the dorsal columns at C5.

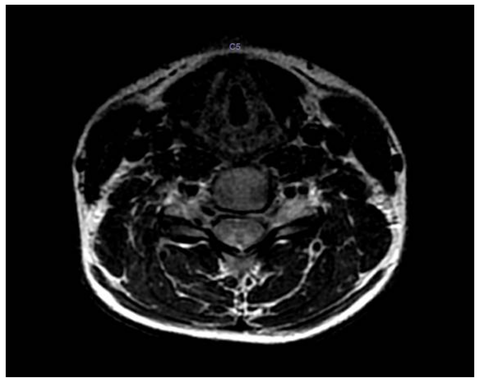
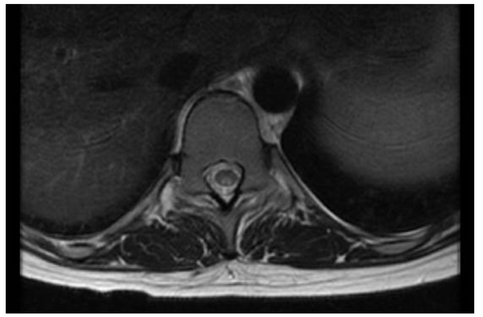


Image 2: T2-weighted MRI of the thoracic spine showing enhancement of the dorsal columns at T10.



Discussion

- This patient developed subacute combined degeneration of the dorsal and dorsolateral columns with profound neurologic deficits attributed to veganism and pernicious anemia.
- Impaired absorption necessitates lifelong Vitamin B12 supplementation which is typically administered in the parenteral form.[2] Her history of IVDU complicated safe prescription of post-hospitalization intramuscular supplementation. Instead, a higher dose of Vitamin B12 via sublingual route was favored--with current literature demonstrating equivalent efficacy.[1]
- This case was also notable for a striking functional recovery after swift, adequate B12 repletion in combination with intensive rehabilitation. Of note, improvement in neurologic symptoms and function lagged behind normalization of B12 levels.

Conclusion

- The present case demonstrates the severe complications that can arise from Vitamin B12 deficiency with rapid progression in neurologic deficits.
- Fortunately, timely diagnosis, treatment and rehabilitation can lead patients to make significant recovery.
- It is crucial to counsel patients on the importance of daily supplementation with sufficient dosing to prevent recurrence.

References

1. Butler CC, Vidal-Alaball J, Cannings-John R, McCaddon A, Hood K, Papaioannou A, Mcdowell I, Goringe A. Oral vitamin B12 versus intramuscular vitamin B12 for vitamin B12 deficiency: a systematic review of randomized controlled trials. Fam Pract. 2006 Jun;23(3):279-85. doi: 10.1093/fampra/cml008. Epub 2006 Apr 3. PMID: 16585128.
2. Devalia V, Hamilton MS, Molloy AM; British Committee for Standards in Haematology. Guidelines for the diagnosis and treatment of cobalamin and folate disorders. Br J Haematol. 2014 Aug;166(4):496-513. doi: 10.1111/bjh.12959. Epub 2014 Jun 18. PMID: 24942828.

Contact Information:
Anne Goldring agoldring@sralab.org | Matthew Oswald moswald@sralab.org