

PPI Induced Hypomagnesemic Hypoparathyroidism Leading to Posterior Reversible Encephalopathy Syndrome.

Anam Malik MD

Lehigh Valley Health Network, Anam.Malik@lvhn.org

Shannon Davis DO

Lehigh Valley Health Network, Shannon.Davis@lvhn.org

Yehia Y. Mishriki MD

Lehigh Valley Health Network, Yehia.Mishriki@lvhn.org

Follow this and additional works at: <https://scholarlyworks.lvhn.org/medicine>



Part of the [Internal Medicine Commons](#), and the [Medical Sciences Commons](#)

Published In/Presented At

Malik, A. Davis, S. Mishriki, Y. (2017, October 28). *PPI Induced Hypomagnesemic Hypoparathyroidism Leading to Posterior Reversible Encephalopathy Syndrome*. Poster Presented at: The American College of Physicians Pennsylvania Eastern Region Abstract and Doctor's Dilemma Competition, Harrisburg, PA .

This Poster is brought to you for free and open access by LVHN Scholarly Works. It has been accepted for inclusion in LVHN Scholarly Works by an authorized administrator. For more information, please contact LibraryServices@lvhn.org.

PPI Induced Hypomagnesemic Hypoparathyroidism Leading to Posterior Reversible Encephalopathy Syndrome

Anam Malik MD, Shannon Davis DO, Yehia Mishriki MD

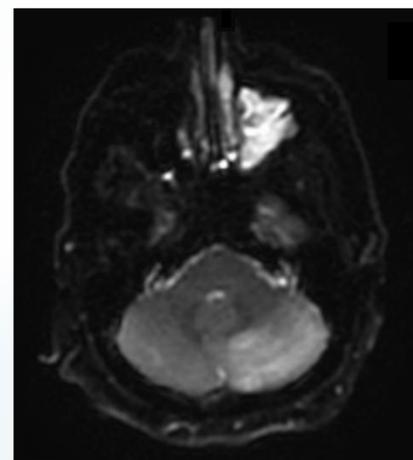
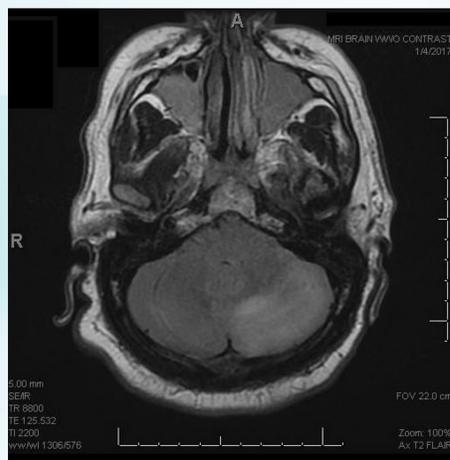
Department of Internal Medicine, Lehigh Valley Health Network, Allentown, Pennsylvania

INTRODUCTION

- Hypomagnesemia is a well-known complication of proton pump inhibitor (PPI) use.^{1,2}
- Magnesium plays an important role in vascular endothelial regulation. Deficiency can lead to cerebral edema and posterior reversible encephalopathy (PRES).³

CASE REPORT

- A 42 year old male presented with anorexia, dyspepsia and nausea.
- His medication list was notable for chronic PPI use. Physical exam at that time was normal.
- Initial laboratory findings were normal with the exception of a calcium of 7.5mg/dl.
- He subsequently presented with a severe headache and dizziness. Laboratory studies revealed a calcium of 6.5 mg/dl, magnesium 0.4mg/dl and phosphorus of 3.8 mg/dl. A repeat calcium was 5.5 mg/dl. Urinary calcium was <5.0 mg/dl. Fractional urinary excretion of magnesium was 0.2%. A PTH level was normal.
- MRI of the brain showed bilateral cerebellar vasogenic edema. The differential diagnosis included posterior reversible encephalopathy syndrome (PRES) versus acute cerebellitis. EBV, Bartonella and Lyme serologies were negative. ANA testing was negative.
- The PPI was discontinued. The magnesium level normalized with replacement and the calcium level rapidly normalized. His symptoms quickly resolved.
- A repeat MRI showed significant improvement in the cerebellar edema.



DISCUSSION

- Hypomagnesemia can present with a variety of symptoms including seizures, cardiac arrhythmias, and neurological deficits.³
- Magnesium is known to have a role in the regulation of vascular tone and reactivity.¹
- Hypomagnesemia can cause endothelial dysfunction with capillary leakage, blood brain barrier disruption and axonal swelling leading to cerebral edema.
- Posterior reversible encephalopathy syndrome is due to disordered cerebral autoregulation and endothelial dysfunction.
- Impaired active absorption of magnesium by intestinal epithelial cells is caused by PPI-induced inhibition of transient receptor potential melastatin TRPM6 and TRPM7 channels.⁴
- Hypomagnesemia also impairs release of PTH and decreases peripheral tissue sensitivity to PTH leading to a functional secondary hypoparathyroidism.⁵
- Our patient improved with magnesium repletion which is compatible with secondary hypoparathyroidism and reversible cerebellar findings due to PPI induced hypomagnesemia.

References:

1. Perazella MA. Proton pump inhibitors and hypomagnesemia: a rare but serious complication. *Kidney Int.* 2013;83(4):553-6.
2. Park CH, Kim EH, Roh YH, Kim HY, Lee SK. The association between the use of proton pump inhibitors and the risk of hypomagnesemia: a systematic review and meta-analysis. *PLoS ONE.* 2014;9(11):e112558.
3. Te riele MG, Verrips A. Severe hypomagnesaemia causing reversible cerebellopathy. *Cerebellum.* 2014;13(5):659-62.
4. Boulos MI, Shoamanesh A, Aviv RI, Gladstone DJ, Swartz RH. Severe hypomagnesemia associated with reversible subacute ataxia and cerebellar hyperintensities on MRI. *Neurologist.* 2012;18(4):223-5.
5. Clarke BL, Brown EM, Collins MT, Jüppner H, Lakato P, Levine MA, Mannstadt MM, Bilezikian JP, Romanischen AF, Thakker RV. Epidemiology and Diagnosis of Hypoparathyroidism. *J Clin Endocrinol Metab* (2016) 101 (6): 2284-2299.

© 2017 Lehigh Valley Health Network

610-402-CARE LVHN.org