Managing hypomagnesaemia during PPI therapy - good practice guide

Background:

Use of proton pump inhibitors (PPI) has been recently associated with low magnesium levels, but the mechanism remains not fully understood. Low urinary magnesium excretion has been observed and may support the theory that it is likely related to reduced magnesium absorption from the intestine. Intestinal absorption of this ion normally proceeds in both a passive paracellular and an active transcellular manner. Long-term PPI users who are highly adherent to treatment can eventually deplete total body magnesium stores and present with severe complications of hypomagnesaemia.¹⁻³

Regulatory bodies recommendations

The FDA and MHRA have both notified that PPI drugs may cause low serum magnesium levels if taken for prolonged periods of time.^{4,5} In most cases, hypomagnesaemia occurred after one year of PPI treatment. However, some reports showed hypomagnesaemia after three months. Treatment of hypomagnesaemia generally requires magnesium supplements. In approximately one-quarter of the cases reviewed, magnesium supplementation alone did not improve low serum magnesium levels and the PPI had to be discontinued. Moreover, in a few cases in which the patients restarted taking a PPI, the hypomagnesaemia recurred, suggesting a PPI-related effect.^{4,6}

Healthcare professionals may consider obtaining serum magnesium levels prior to initiation of prescription PPI treatment in patients expected to be on these drugs for long periods of time, as well as patients who take PPIs with medications such as digoxin, diuretics or drugs that may cause hypomagnesaemia. This is especially important because low magnesium can increase the likelihood of serious side effects. Healthcare professionals should consider obtaining magnesium levels periodically in these patients.

Good practice guide

Currently there are no national guidelines for hypomagnesaemia treatment. <u>Magnaspartate®</u> and <u>Neomag®</u> are the only licenced products for treating hypomagnesaemia.⁷⁻⁹

The flowchart presented below advises prescribers on the management of hypomagnesaemia and gives suggestions on the use of magnesium products. Oral magnesium products may trigger diarrhoea. Taking magnesium supplements with food may reduce side-effects.⁸

<u>Local guideline</u> is available from Clinical Chemistry at STH covering 'The investigation of hypomagnesaemia in adults'.¹¹

References

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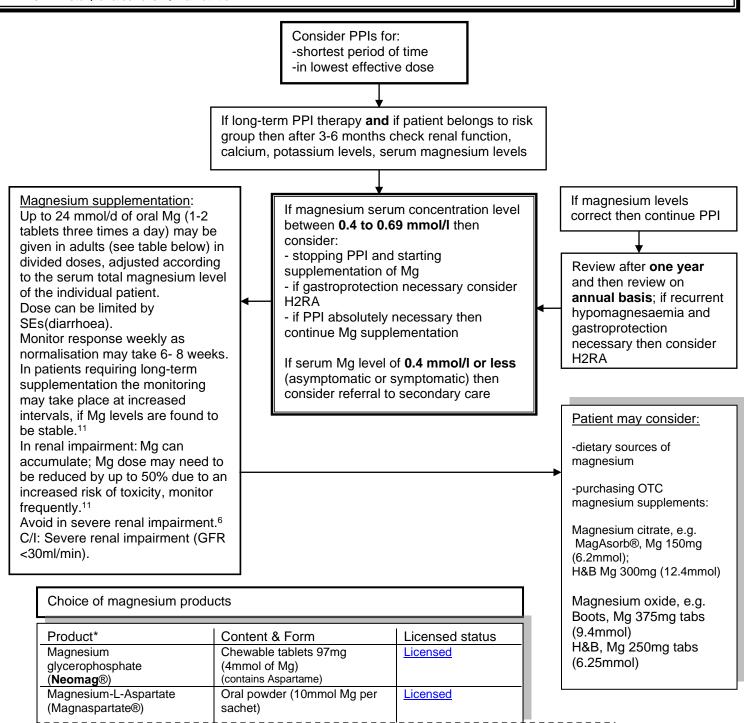
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Management of hypomagnesaemia in PPI treatment in adults

See 'The investigation of hypomagnesaemia in adult (new diagnosis in adults)'

Check magnesium levels only if the patient belongs to a risk group i.e.:

- 1. Symptoms of hypomagnesaemia:
 - Mild hypomagnesaemia (serum magnesium <0.7mmol/L): weakness, fatigue, lethargy, muscle weakness, paraesthesia, cramps, hypertension, cardiac arrhythmias;
 - Severe hypomagnesaemia (serum magnesium < 0.4mmol/L): tetany, seizures, convulsions, cardiac arrhythmias, confusion. coma:
- Drugs: e.g. PPIs, loop & thiazide diuretics, ciclosporin, digoxin, theophylline, immunosuppessants (tacrolimus, ciclosporin), chemotherapy (e.g. cisplatin)
- 3. Severe or refractory hypokalaemia or hypocalcaemia (reduced PTH secretion)
- 4. GI causes: chronic diarrhoea, malabsorption, short bowel syndrome, interstinal fistula
- 5. History of alcoholism, malnutrition



*If one oral Mg preparation is not effective in raising Mg levels then consider an alternative oral preparation.6