

Thursday 12th October 2023

The UK Kidney Association's Kidney Patient Safety Committee has at the request of NHS England, reviewed the existing evidence around hypomagnesaemia in the context of concomitant use of tacrolimus and proton pump inhibitors (PPIs). This request came from a Coroner's report following the tragic death of a kidney transplant patient. This review had input from the UK Renal Pharmacy Group, the British Transplantation Society and Medicines and Healthcare products Regulatory Agency (MHRA).

Disease associations and linked co-morbidities mean that individual patients suffer from both acid peptic disease and conditions requiring immunosuppression with tacrolimus. PPIs are the preferred treatment for acid peptic disease and tacrolimus is the first choice immunosuppression. These conditions result in very frequent requirement for co-prescription of these two medications.

Hypomagnesaemia is a well-recognised side effect of both PPIs and calcineurin inhibitors e.g. tacrolimus. It is a side effect included in the company drug information and patient information leaflets on www.medicines.org.uk and has been the subject of a previous MHRA Alert ([Proton pump inhibitors in long-term use: reports of hypomagnesaemia](#)).

There are also a number of reports via the Yellow Card scheme on this side effect. However, in the vast majority of patients, co-prescription of these medications results in effective and safe management of the conditions they are intended for.

Following a review of the evidence, from a literature search and MHRA yellow card reports, the level of available evidence did not meet the threshold where benefits outweighed the risks from a wide-scale change in practice.

We expect that patients taking both tacrolimus and a PPI are regularly monitored and recommend that abnormally low serum corrected calcium and/or potassium levels should trigger measurement of a magnesium level. Healthcare professionals should consider measuring magnesium concentration before starting PPI treatment and repeat measurements periodically during prolonged treatment ([Proton pump inhibitors in long-term use: reports of hypomagnesaemia](#)). Symptoms such as cramps or paraesthesia should, as a minimum, prompt a magnesium level check. If the magnesium level is low, the dose of PPI should be minimised and consideration given to switching from PPI to a histamine type 2 receptor antagonist and/or magnesium supplementation according to local guidelines. Stopping a calcineurin inhibitor may not be practical, so oral magnesium supplementation may be considered.