Efficacy of ferric citrate as a phosphate-binding agent in end-stage renal disease

Sir,
I read with great interest the article by Yang et al. [1], describing the role of ferric citrate as a phosphate binder in haemodialysis patients. Dr Yang and colleagues have presented their data (Table 3), which demonstrate convincingly that ferric citrate lowers serum phosphate, though not as significantly as calcium carbonate. However, the presentation of statistically significant data could be made more clinically relevant to physicians if it were presented in terms of absolute risk reduction (ARR) and number needed to treat (NNT) [2]. Relevant information would be how many of the 55 patients achieved a phosphorous level determined to be ideal in patients with chronic renal failure, i.e. 4.5–5.5 mg/dl [3]. A similar calculation could be made for calcium carbonate, enabling the reader to make a prompt assessment about the efficacy of both drugs.

There are additional problems with ferric citrate therapy that require clarification. All patients develop black-coloured stools, which could create a problem in end-stage renal disease (ESRD) patients that already require continuous surveillance for gastrointestinal bleeding, and would probably result in unnecessary testing (upper gastrointestinal endoscopy, colonoscopy) with all the associated costs and side-effects. Twelve of 55 patients (22%) patients had either diarrhoea or loose stools, which would translate into a number needed to harm (NNH) of 5. Being able to calculate the NNT and NNH of a treatment and factoring in patient values (for tolerance of side effects) could greatly help in deciding whether a new therapy would be useful to a patient [4]. Also, given the increased phosphate intake in western diets, it is unclear whether ferric citrate would be a suitable alternative to currently existing therapy. Additional testing to evaluate the efficacy of ferric citrate as a phosphate-lowering therapy in a larger randomized trail with adequate power could be very useful.

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Reply

Sir,
We are glad to see that our article has generated interest in the renal community. This Taiwan study was a proof of concept, therefore issues such as ARR and NNT as raised in Dr Ghosh’s letter will be addressed in future studies. To answer his first question, our trial found that among the 55 patients, 22 in the ferric group and 28 in the calcium group achieved phosphorous levels of 4.5–5.5 mg/dl. With respect to the concerns regarding dark-coloured stools, this also happens to patients who take oral iron supplements such as ferrous sulphate. Therefore, the workup for gastrointestinal symptoms includes crucial decisions in determining the necessity of endoscopy and colonoscopy. We have already done a similar study with western patients, and ferric citrate has proved to be effective and safe (ASN abstract 1999 (A3098)).

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