Upper gastrointestinal lesions in children on chronic haemodialysis

Sir,

Peptic ulcer and its complications may easily develop after renal transplantation in the setting of already damaged gastroduodenal mucosa and/or in the presence of *Helicobacter pylori* infection [1,2]. We report upper gastrointestinal endoscopy (UGE) findings and the incidence of *H. pylori* infection in children on intermittent haemodialysis (HD) treatment.

Twenty-five children with end-stage renal disease (ESRD) aged 4–18 years (12.3 ± 3.9) and on intermittent HD for 0.3–8 years (2.7 ± 2.1) were investigated. None of the patients received antibiotics, steroids, antacids, proton-pump inhibitors, H2 receptor antagonists or non-steroidal anti-inflammatory agents prior to the study. UGE was performed in all patients by a single endoscopist, a paediatric gastroenterologist. Antral mucosal biopsy for detection of *H. pylori* by urease test was performed in 22/25 patients. We analysed gastrointestinal (GI) symptoms (obtained by interviewing patients and their parents), endoscopic findings, urease test results and blood type.

One or more GI symptoms (nausea, vomiting, epigastric pain, anorexia, melena) were present in 56% (14/25) of all patients. We found abnormal UGE findings in 56% (14/25) of all patients. Gastritis and duodenitis were defined as the presence of erythema, oedema, friability, exudates, erosions, atrophy, vascular pattern, nodularity and/or subepithelial haemorrhage on endoscopic examination, and the severity of features was graded as mild, moderate or severe [3,4]. Gastritis and/or duodenitis, with or without erosive lesions, were most frequently seen. This is in agreement with previously reported data both in children and adults [5–7]. In contrast with a previous claim that peptic ulcers are more frequent in children on dialysis (84% of investigated children were on HD and 16% were on peritoneal dialysis) [5], we did not find peptic ulcers in our patients, which is in agreement with reports in adult patients [7,8]. *Helicobacter pylori* was positive in only 2/22 patients (9%), comprising the 15% (2/13) of those who had lesions on UGE. These results are in disagreement with other data reported in children on dialysis, showing that 62.5% of patients with lesions on UGE were also positive for *H. pylori* [5]. Results in adults are controversial, showing both a positive [9] and a negative [10] association of *H. pylori* with GI lesions in ESRD patients. Mostly negative *H. pylori* results suggest that other factors may be more important in causing upper GI lesions in this population, such as elevated gastrin level, increased production of gastric acid, delayed gastric emptying, complex disorder of GI motility and uraemic toxicity [11,12]. Positive UGE findings were found both in patients with and without GI symptoms. Ten out of 14 (71%) patients who had GI symptoms also had abnormal endoscopic findings. As many as 4/11 (36%) patients who did not have GI symptoms, had GI lesions on UGE. Sixty-four percent of our patients with GI lesions had a blood type ‘O’. A significant positive correlation was found between GI symptoms and abnormal UGE findings (r = 0.440, P < 0.05) and length of HD and GI symptoms (r=0.390, P = 0.05). There was no correlation between *H. pylori* and GI symptoms, *H. pylori* and endoscopic findings, or between endoscopic findings and length of HD treatment.

Our study did not include a control group, since this would entail subjecting healthy children to a relatively invasive procedure of UGE and antral mucosal biopsy for *H. pylori* detection. Studies on otherwise healthy children with upper GI symptoms and abdominal pain showed an incidence of *H. pylori* infection from 14.1 to 33.7% [13–15], with association of *H. pylori* infection with peptic ulcer disease and gastritis ranging from low [13] to very high [14,15]. In our study, none of the patients had peptic ulcer, while of 14/25 patients with GI symptoms, only 1/14 (7%) was positive for *H. pylori* and had abnormal UGE findings, showing that the prevalence of peptic ulcer disease and *H. pylori* infection is markedly lower in children on HD than in the non-renal disease paediatric population, which is contrary to a previous report on children on dialysis [5], but in agreement with reports on adults [7,8,10].

Mucosal biopsies were not taken for histological evaluation of the mucosa in our study since inflammatory disorders and ulcers of the GI mucosa are readily identifiable endoscopically and histological evaluation is not necessary unless a distinctive type of GI inflammation is suspected [4]. Further studies that would include histological evaluation of mucosal biopsies are needed to better explain the specific type and aetiology of mucosal lesions seen by UGE in children on chronic HD.

In conclusion, there is a high prevalence of upper GI lesions in children on chronic HD. Factors other than *H. pylori* cause most of the upper GI lesions in this population. Positive UGE findings are frequently found in patients without GI symptoms. We suggest that UGE be included in all protocols for preparing children on HD for renal transplantation.

**Conflict of interest statement.** None declared.


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Assessment of severity of illness in end-stage renal disease patients: need for multi-disciplinary effort

Sir,

Dr Weisbord and colleagues [1] ought to be congratulated in their attempt to validate the severity of illness in patients with end-stage renal disease (ESRD). A perusal of the symptoms listed in table 2 [1] depicts a range of complaints which may be easily overlooked, if not actively sought for, by the medical personnel. The usual guidelines for adequacy for dialysis and reliance on surrogate markers (creatinine, albumin, haemoglobin, etc.), may fall short in their attempt to validate the severity of illness in patients awaiting renal transplantation. *Am J Gastroenterol* 1983; 78: 328–331


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Risks related to catheter locking solutions containing concentrated citrate

Sir,

We are concerned that risks of using concentrated sodium citrate for a catheter lock solution (CIT) are not well understood. Routine haemodialysis is safe, partly as a result


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