Upper Gastrointestinal System Complications in Pediatric Hemodialysis Patients

A.	Aysin	Bakkaloglu
S.	Seza	Ozen
F.	Ferhun	Balkanci
U.	Umit	Saatci
N.	Nesrin	Besbas

Departments of Pediatric Nephrology and Radiology, Hacettepe University Faculty of Medicine, Ankara, Turkey

Seza Ozen. MD, Associate Professor of Pediatric Nephrology, Kuleli sok. 9/2, Gazi Osman Pasa, TR-06700 Ankara (Turkey)

Dear Sir,

Bleeding of the upper gastrointestinal system (GIS) is a major cause of morbidity and mortality in uremic patients [1]. Several factors are held responsible for the relative frequency of upper GIS bleeding in these patients including disturbances in serum gas-trin, in gastric acid excretion, defects in the clotting process, hypercalcemia associated with secondary hyperparathyroidism and adverse effects of uremia on GIS epithelium as well as chronic anticoagulation of hemodialysis and drug therapy [2, 3]. Upper GIS bleeding has been described in 10-60% of uremic patients [1] whereas gastric and duodenal ulcers were reported in 5-10% of these patients which has been suggested to be a percentage similar to the general population [2]. Gurland et al. [4] have reported that GIS bleeding secondary to peptic ulcer disease is responsible for 3-5% of all deaths in dialysis patients. Figures in children are scarce. We have performed a routine X-ray survey of the esophagus, stomach and duodenum in our 19 pediatric hemodialysis patients after the upper GIS bleeding observed in one of our asymptomatic patients. Nineteen children (9 girls and 10 boys) with end-stage renal disease and on long-term dialysis treatment were the subject of this study. The mean age of the patients was 13.6 with an age range of 8-16 years. The mean duration of maintenance hemodialysis was 33 months (range 4-82 months). Hemodialysis was performed thrice weekly in all. Dialyzer membranes were cellulosic cuprophane membranes. Anticoagulation was achieved by a routine heparin, repeated-bolus regimen in most of the patients whereas a constant infusion at a dose of 10-15 units/kg/h was applied to patients at risk for bleeding. None of these patients were receiving corticosteroids or nonsteroidal anti-inflammatory drugs. Evaluation of the upper gastrointestinal tract was carried out by a single-contrast barium meal X-ray.

The primary disease of the patient who presented with upper GIS bleeding was reflux nephropathy. This patient developed severe hyperkalemia during the bleeding episode which was only controlled by a strict dialysis programme.

Subsequent X-ray examinations of the upper gastrointestinal tract in the 18 hemodialysis patients revealed marked peptic ulcer in 5 yielding a peptic ulcer percentage of 26 in this study group. Furthermore 3 patients had marked edema in the duodenal bulb. Thus, together with the first

patient, the overall frequency of upper GIS abnormalities in this pediatric study group reached 47% overall (9 out of 19 patients) which included 6 girls and 3 boys. None of these patients had obvious gastrointestinal symptoms except for mild dyspepsia in 1 patient of each group. The average age of these patients was 14.8.

The primary disease of the 4 girls with peptic ulcer were reflux nephropathy in 2, unknown etiology in 1 and focal glomerulo-sclerosis in 1; thus, only the latter patient had received corticosteroids during her disease course. Except for the latter patient who had recently been started on continuous low-dose heparin therapy due to her orthopedic problem, all received bolus heparin treatment. All the patients with marked edema in the upper gastrointestinal tract had developed uremia secondary to glomerulopathies and thus had received corticosteroids during their disease course. However they had been off treatment

©1995 S. Karger AG,

0028-2766/95/

0691-0094\$8.00/0

for at least a year. One was receiving constant low-dose heparin infusion because of her bleeding tendency whereas others were on a routine bolus regimen.

Upper GIS bleeding may also be a major route of blood loss and resistance to erythropoietin in this patient group. GIS bleeding is also a cause of severe and potentially fatal hyperkalemia. Electrolyte disturbances are quite devastating in children and indeed hyperkalemia was a major cause of morbidity in our first patient.

The overall percentage of upper GIS abnormality in our patient group was 47% which is one of the highest figures reported. It is noteworthy that these were all pediatric patients and were almost completely asymptomatic.

Although a number of these patients had received corticosteroids during their disease course, there was a significant time period since the medication had been stopped. The number of patients with glomerulopathy in this group was not significantly different from that of the patients without GIS complications ($p = 0.005$). On the other hand bolus heparin, maybe an important risk in these patients, precipitating a bleeding tendency.

We suggest that in the light of the severe complications of a GIS hemorrhage routine barium meal X-ray should be performed in the pediatric age group. This rather noninvasive procedure might save the patients from the potentially fatal complications of gross hemorrhage and hyperkalemia which might be overlooked in these patients.

References

Sevy N, Snape WJ: Gastrointestinal abnormalities; in Massry SG, Glassock RJ (eds): Textbook of Nephrology. Baltimore, Williams and Wilkins 1989; vol 2, pp 1210-1214.

Lazarus JM, Hakim RM: Medical aspects of hemodialysis; in Brenner BM, Rector FC (eds): The Kidney. Philadelphia, Saunders, 1991, vol 2, pp 2223-2299.

Boyle JM, Johnston B: Acute upper gastrointestinal hemorrhage in patients with chronic renal disease. Am J Med 1983;75:409-412.

Gurland HJ, Brunner FP, Von Dehn H, et al: Combined report on regular dialysis and transplantation in Europe, III. 1972. Proc Eur Dialysis Transplant Assoc 1973;10:17-57.