

Zakład Radiologii Ogólnej. Instytut Radiologii. Akademia Medyczna w Lublinie

Kierownik: prof. dr hab. Ludwik Smajkiewicz

Klinika Nefrologii. Akademia Medyczna w Lublinie

Kierownik: prof. dr hab. Andrzej Książek

Andrzej DROP, Ludwik SMAJKIEWICZ, Andrzej KSIĄŻEK

Use of Double Contrast Estimation in Diagnosis of Upper Gastrointestinal Tract in Hemodialysed Patients

Przydatność badania dwukontrastowego w diagnostyce górnego odcinka przewodu pokarmowego u chorych leczonych hemodializami

INTRODUCTION

Hemodialysis and peritoneal dialysis are at present widely accepted methods used in the treatment of patients in the final stage of renal failure. Nevertheless, pathogenetic complications observed during long-time dialysis therapy are only partially recognized. Nausea, recurrent vomiting and stomach pain have been frequently observed as clinical complaints in the hemodialysis patients (1, 2, 10). Recently there has been a growing number of reports on bleeding from upper gastrointestinal tract as a complication of stomach and duodenum ulceration (1—4, 6—8, 10, 11). This is the effect of introducing radiologic double-contrast examination which helps to confirm or exclude the occurrence of the above-mentioned symptoms.

The purpose of the present study was the evaluation of the usefulness and diagnostic efficacy of double-contrast examination of stomach and duodenum in hemodialysed patients.

PATIENTS AND METHODS

Forty-three patients (18 males, 25 females) whose mean age was 38, all with chronic renal failure on maintenance hemodialysis, were analysed. The patients nephropathy types were as follows: 31 had chronic glomerulonephritis, 4 — obstructive nephropathy, 4 — polycystic kidney disease, 2 — interstitial nephritis, 2 — hypoplasia of kidney (Table 1).

The patients were dialysed 3 times weekly during 5 h. Mean time of hemodialysis was 4, 5 years. Patients were hemodialysed with the following dialysate content: Na 138 mmol/l, K — 1.5 mmol/l, Cl — 100 mmol/l, Mg — 1 mmol/l, Ca — 1.75 mmol/l and acetate 38 mmol/l. Radiologic examination was performed with double-contrast methods. The study consisted of radiograph A-P, P-A, oblique left and right radiograph in standing position with and without medium pressure in the point of pain. Radiologic diagnosis was confirmed by endoscopic examination.

Table 1. Definition of study groups

Diagnosis	<i>N</i>
Chronic disease — (<i>glomerulonephritis pyelonephritis</i>)	31
Polycystic kidney	4
<i>Hypoplasia renum</i>	1
Obstructive nephropathy	4
Intestinal nephritis	2
Kidney trauma	1
Total	43

RESULTS

Dates of radiologic diagnosis in double-contrast examination in the individual patients are given in Table 2. Bleeding from upper gastrointestinal tract was diagnosed in 2 patients, but duodenum ulceration was diagnosed and endoscopic examination was confirmed in 5 patients. (Fig. 1). In 9 patients stomach mucosa and duodenum were examined by a specially careful technique. Gastric areas suggested gastritis and duodenitis in those patients. In the other nine patients examination revealed a state tension of mucosa tunica indicating hypersecretion and in two patients duodeno-gastric reflux was established (Figs. 2 and 3).

We have noted that together with the prolonged time of hemodialysis there increased a chance of some complications: bleeding and ulceration of stomach

Table 2. Haemorrhage from the upper section of the gastrointestinal tract

Double contrast diagnosis	Source of bleeding (<i>N</i>)
Ulcus duodenum and stomach	2
<i>Gastritis haemorrhagica et erosiva</i>	4
Polyps of stomach	1
Hiatal hernia	2
Total	9



Fig. 1. Double contrast X-ray showing gastric ulcer (arrow)



Fig. 2. Double contrast X-ray showing state irregular tension of mucosa tunica



Fig. 3. X-ray picture showing "wet stomach"

and of duodenum, *ruptura hiatus herniae* and *gastritis atrophicans*. Six patients were undergoing transplantation and in 2 of them duodenum ulceration was diagnosed. The source of bleeding was established in 2 patients as duodenum ulceration in one patients and as stomach ulceration in the other. In 4 patients *gastritis haemorrhagica et erosiva* was diagnosed and then confirmed by endoscopic examination. One patient after radiologic diagnosis of polipus of stomach underwent surgical treatment. One patient died because of massive bleeding from gastrointestinal tract and the diagnosis was confirmed by autopsy.

DISCUSSION

In the patients with chronic renal failure who are given maintenance hemodialysis some bleeding complications have been observed (1, 12). These complications are as follows: *haemorrhagica subarachnoidalis*, *gastritis haemorrhagica*, *ulcus ventriculi* and duodeni and sometimes bleeding into the eye (1, 3, 5, 13). Bleeding from the gastrointestinal tract and stomach and duodenum perforation are most frequent gastric complications in the hemodialysis patients (2, 7, 8, 10). Doherty et al. (4) have noted stomach ulceration in 15 out of 31 hemodialysis patients which makes 48%. Hypersecretion has been established in 28% of hemodialysis patients. Hadjiyanakisa (6) has observed the gastrointestinal tract bleeding in 15 out of 39 hemodialysed patients. This complication has been noted also in the kidney transplant patients (2, 6, 7, 8). It was most often localized in the stomach, duodenum and bowels. Gordon et al. (5) have observed bleeding from the gastrointestinal tract in 5 patients, the whole group consisted of 19 hemodialysed patients.

Radiologic examination in these patients has established as a source of bleeding a stomach ulcer in 3 patients, and duodenal ulcer in 2 patients. In all the patients with gastrointestinal bleeding hypersecretion of gastric juice has been observed. The factors which contribute to the development of gastrointestinal change can be variable. Acid hypersecretion as the first factor should be taken into consideration in patients with uremia, as the second — diminished gastric mucosal barrier resulting from indirect urea activity, and as the third — the use of too high doses of immunosuppressive therapy after transplantation (2, 10). Before the use of double contrast X-ray examination the gastrointestinal tract evaluation was examined by a carefully done conventional method (13). The so-called "wet stomach" described in literature had a special X-ray picture thickness irregular mucose tunic folds.

Predominantly stomach peristaltic was diminished with simultaneous prolonged extractory time. In duodenum thickening mucosus tunic folds appear as linear and irregular, sometime they are vertical or round and stiff during pressing

the abdomen. This X-ray picture of stomach and duodenum are the results of hypertension of muscular mucosis. The use of double contrast X-ray examination facilitated an accurate diagnosis by extending and straightening mucosa tunica folds and in this way was shown a tiny picture of the gastric areae. Double contrast X-ray examination was required to establish in 2 patients the results of erosive gastritis.

Summing up: it should be stressed that the diagnosis of a slight damage in the tunic of mucosis such as: erosive gastritis, surface ulceration and gastritis all clinically important and the double contrast X-ray examination facilitated an accurate diagnosis of the upper gastrointestinal tract.

REFERENCES

1. Bhasin H. K., Dana C. L.: Spontaneous Retroperitoneal Hemorrhage in Chronically Hemodialyzed Patients. *Nephron* **22**, 322, 1978.
2. Brzozowski R., Małdyk M., Tałałaj T.: Choroby przewodu pokarmowego oraz trzustki u chorych po przeszczepieniu nerek. *Pol. Arch. Med. Wewn.* **65** (4), 265, 1981.
3. Coon W. W., Willis P. W.: Hemorrhagic Complication of Anticoagulant Therapy. *Archs. Int. Med.* **133**, 386, 1974.
4. Doherty C. C. et al.: Peptic Ulcer in Renal Failure. *Gut*. **68**, 1977.
5. Gordon E. M., Johnson A. G., Williams G.: Gastric Assessment of Prospective Renal Transplant Patients. *Lancet* **29**, 226, 1972.
6. Hadjiyannakis E. J. et al.: Gastrointestinal Complications after Renal Transplantation. *Lancet* **2**, 781, 1971.
7. Julien P. J., Goldberg H. J., Margulis A. R., Belzar F. O.: Gastrointestinal Complications Following Renal Transplantation. *Radiology* **117**, 31, 1975.
8. Lewicki A. M., Saito S., Merrill J. P.: Gastrointestinal Bleeding in the Renal Transplant Patient. *Radiology*. **102**, 533, 1972.
9. Moore T. C., Hume D. M.: *Ann. Surg.* **170**, 1, 1969.
10. Pullman T. N., Coe F. L.: Pathophysiology of Chronic Renal Failure. *Clinical Symposia* **36** (3), 28, 1984.
11. Shepherd A. M., Stewart W. K., Wormsley K. G.: Peptic Ulceration in Chronic Renal Failure. *Lancet* **16**, 1357, 1973.
12. Stewart J. H., Tuckwell L. A., Sinnott P. F. et al.: Peritoneal and Hemodialysis. A Comparison of Their Morbidity and of the Mortality Suffered by Dialyzed Patients. *Q. J. Med.* **35**, 407, 1966.
13. Wiener S. N., Vertes V., Shapiro H.: The Upper Gastrointestinal Tract in Patients Undergoing Chronic Dialysis. *Radiology* **92** (1), 110, 1969.

Otrzymano 1990.07.26.

STRESZCZENIE

Przedstawiono ocenę przydatności i skuteczności diagnostycznej badania radiologicznego żołądka i dwunastnicy metodą podwójnego kontrastu u chorych hemodializowanych. Materiał obejmował 43 chorych leczonych hemodializami z powodu przewlekłej niewydolności nerek (w tym 25 kobiet

i 18 mężczyzn). Dzięki zastosowaniu metody dwukontrastowej możliwe było rozpoznanie drobnych płaskich owrzodzeń oraz nadżerek w żołądku i dwunastnicy, które obecnie uznawane są za jedną z częstszych komplikacji przy długotrwałym stosowaniu terapii dializacyjnej. Podkreślono zależność czasu stosowanych hemodializ od częstości powikłań, np. od występowania krwawienia z górnego odcinka przewodu pokarmowego. Podkreślono znaczenie diagnostyki radiologicznej, która ma istotny wpływ na późniejszą kwalifikację pacjentów do przeszczepu nerek, jak również ocenę po dokonanym zabiegu.

