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Bicontrast Examinations of the Mucous Membrane of the Stomach Stump Against Other Imaging Techniques

Badania dwukontrastowe błony śluzowej kikuta żołądka na tle innych technik obrazowania

An increasing importance of USG, fibroscopic gastroscopy and CAT imaging does not confine the purposefulness of bicontrast examination which is still a method of choice in the evaluation of the postoperative stomach (2, 8, 9). Imaging of recurrent ulcers and an early diagnosis of the malignant process is based on detecting subtle lesions of the mucous membrane which, despite its limitations, can be provided by an adequate bicontrast technique.

MATERIAL AND METHODS

The material comprises 86 patients after partial gastrectomy by different types of operations. Most often, that was partial gastrectomy with gastroduodenostomy (the Rydygier type, the Pean-Billroth type) — 32 cases, and with gastroenterostomy (the Billroth II, Reichel-Polya, Hoffmeister-Finsterer types) — 27 cases. The operative treatment was performed in 51 patients examined because of peptic ulceration, in 29 — because of neoplastic disease, and in 6 cases for other reasons. The patients were examined in the period from two months to 12 years after operation. Examination results were confirmed by endoscopy with taking biopsy specimens. Bicontrast examinations were performed by means of the technique commonly used in the evaluation of the operated stomach (9, 11).

RESULTS

In 12 cases a recurrent gastric recess was found. In 7 patients it had the character of maculate contrast stasis within the stump with oedematous folds of the mucous membrane occurring in the surrounding region (Fig. 1). In 2 cases the recess was localized in the anastomosis region (Fig. 2 a, b), and in 4 in the anastomosis ring (Fig. 3). There was also found an increased excitability of the anastomosis. In 5 cases the recess had the shape of linear or break-like defect of

the mucous membrane localized in the anastomosis (Fig. 4). Defects of the linear shape along the greater curvature got revealed after a suitable gas distension of the stump.

Postoperative deformations of the anastomosis produced by the presence of narrowing and corrugating sutures were found in 34% of cases. There was then observed a circular, convergent pattern of folds becoming wider towards the anastomosis. Irregular course of perianastomotic folds without their smoothing after stump distension was revealed 8 times in the presence of endoscopically observed biliary reflux and swollen mucous membrane. In 2 cases deformations resulted in pedunculated postoperative diverticula within the anastomosis (Fig. 5).

A malignant recurrence in the anastomosis region after gastrectomy because of cancer was found in 2 cases. In 5 patients there was found a primary neoplasm in the stump after gastrectomy because of peptic ulceration. The period of recognizing it after resection ranged from 10 months to 8 years. In 3 cases an infiltration was found in a place distant from the anastomosis ring (Fig. 6 a, b), and in 2 patients it involved the anastomosis (Fig. 7).

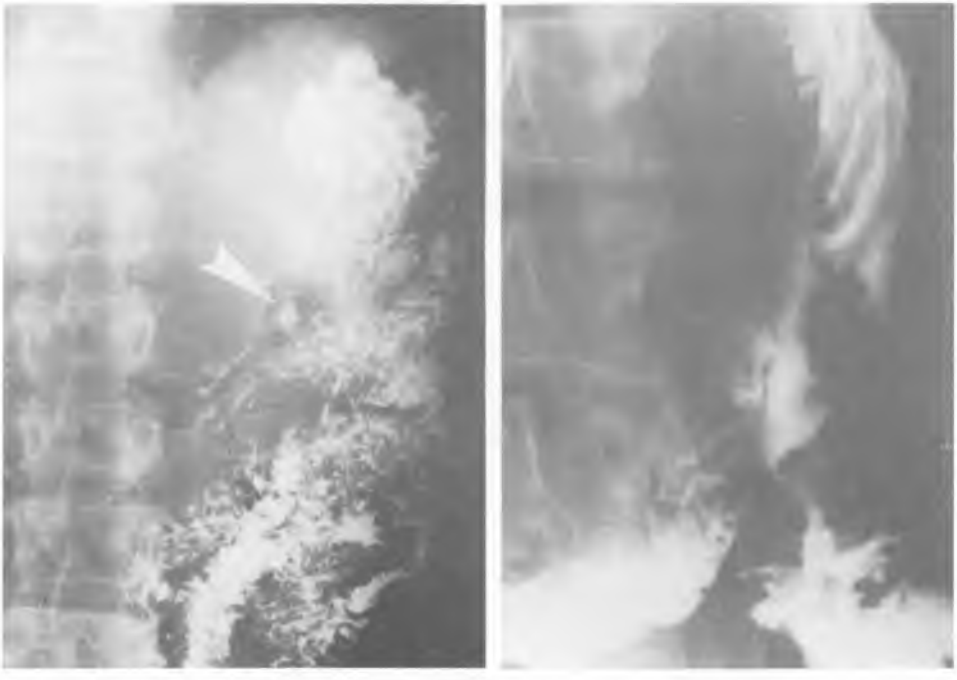
Gas distension and regular contrast cover of the mucous membrane in 3 cases enabled us to differentiate the infiltrate produced narrowing from the consequences of surgical corrugation. In 2 patient defects found in the stump also resulted from corrugation.

DISCUSSION

In differentiating postoperative deformities with stiffness caused by stump walls infiltrations or by a narrowing of the anastomosis it is important to use gas distension (10). The bicontrast examination, showing plasticity of anastomosis, has a dynamic character. Lack of wall dilatation (the so-called dilatation test) and subtle changes of mucous membrane sculpture provide vital data, by separating mucous membrane folds the distension epmhasizes their deformations, nodular thickenings, discontinuities, irregularities, junctions especially in the region of ulceration, which is essential in the assessment of malignancy. The usefulness of bicontrast examination in revealing superficial erosions has been emphasized (4). However, shallow recesses in a soft surface with a mild passage to the surrounding mucous membrane also occurs in the type II c of stomach cancer (6). Despite diagnostic advances, in over 25% of operated patients there was shown the presence of distant metastases (6). In the material of Freeny and Marks (3) these tumours accounted for 66% of cases.

Separation of stump is emphasized by the picture of stomach areas whose obliteration is useful in the evaluation of the type of the process (12). Thickening of the folds, especially in the anastomosis region produces irritating action of the

Fig. 1. Condition after partial gastrectomy by the Rydygier's method. In the medial part of the stump on the side of the greater curvature a semicircular extra opacity of digestive recess character with oedematous folds of the mucous membrane of the adjacent region (arrowhead)



a b

Fig. 2. Condition after partial gastrectomy by the Rydygier's method; a — on the posterior wall of the stump at the anastomosis maculate contrast stasis consistent with a recess surrounded by oedema of the mucous membrane (arrowhead); b — in the monocontrast examination screening of the lesion

Fig. 3. Condition after partial gastrectomy by the Rydygier's method. At the site of anastomosis spheric stasis of digestive recess character (arrowhead). Excitable anastomosis region

Fig. 4. Condition after partial gastrectomy by the Rydygier's method. In the anastomosis on the side of the greater curvature a linear, beak-like extra opacity of recurrent recess character (arrowhead)

Fig. 5. Condition after partial resection of the subcardial region and of the gastric fundus with gastroesophagostomy. Within the anastomosis deformations with pedunculated extra opacity on the side of the greater curvature which is consistent with a postoperative diverticulum (arrowhead)

a

b

Fig. 6. Condition after antrectomy; a — monocontrast technique — infiltration of the subcardial region and of the stomach fundus; b — bicontrast technique — spheric defects of the filling consistent with soft tissue proliferation against the air

Fig. 7. Condition after partial gastrectomy with the Rydygier's method performed 8 years earlier because of peptic ulcer. Within the anastomosis a drastic narrowing of the stump lumen consistent with infiltration. On the side of the lesser curvature an irregular extra opacity in proliferating infiltrate (adenocarcinoma)

reflux bile destroying the electrolytic barrier of the mucous membrane (11). There are emphasized frequent malignant transformations in the anastomosis performed because of a benign disorder (5).

A dynamic CAT examination assesses thickening of stump walls and the local character: diffuse, regular or irregular. Wall thickness differs with regard to the degree of distension. It amounts to 6—7 mm, 2—4 mm and when it exceeds 1 cm it is quite distinct (4, 6).

According to the authors' own experience, as well as the literature data, the parietotomography presents in some cases a diagnostic value in early detecting of malignant thickening of the stomach wall muscular layers (3). Now it is USG that provides a possibility of assessing lesions of individual wall layers (1). It determines the depth of local tumor penetration in the form of a hypoechogenic pause within the wall and similar areas in the enlarged lymphatic node. It reveals metastases to small lymphatic nodes in the walls and perigastric region ranging up to 7—8 cm (6). CAT visualizes metastases to distant nodes without revealing superficial lesions of the mucous membrane (13).

As for the depth of tumour penetration endoscopic USG findings are consistent with operative specimens in 92% while dynamic CAT in 42%. The conformity in metastases assessment was 78% for endoscopic USG and 48% for CAT (6).

Nuclear magnetic resonance, valuable in revealing hepatic metastases, did not prove its usefulness in the evaluation of the depth of tumour penetration in the wall, nor the possibility of differential assessment of individual stomach wall layers (6).

Conclusions

The bicontrast technique in the evaluation of the operated stomach increases the potential od detecting and differentiating subtle mucous membrane lesions in conjuction with the assessment of stump wall elasticity. Advances in endoscopic USG and dynamic CAT have given new dimensions to the diagnostics, especially in the assessment of malignancy, the degree of its progression by determining the involvement of lymphatic nodes and distant metastases.

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STRESZCZENIE

Na podstawie analizy, dokonanej na materiale uzyskanym z 86 badań dwukontrastowych kikuta po operacjach żołądka różnego typu, wykazano wartość diagnostyczną powierzchownych owrzodzeń nawrotowych okolicy zespolenia, najczęściej niewidocznych podczas standardowego badania. Rozdęcie gazowe uwidaczniało obraz pól żołądkowych, rozdzielając zmienione fałdy błony śluzowej. Umożliwiało to również wczesne rozpoznanie zmian złośliwych i różnicowanie ze zniekształceniami pooperacyjnymi, a także pozwalało na dokonanie oceny elastyczności ścian kikuta.