Lesson of the Week

How far down the duodenum?

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It is a commonly held belief by surgeons that carcinoma of the stomach does not readily spread across the pylorus. This is probably based on the original observation by Rokitsky, that "pyloric cancer was exactly bounded by the pyloric ring and never reached beyond that into the duodenum."¹ Certainly in the surgical removal of gastric cancer most practising surgeons are happy to divide the duodenum at a spot determined more by convenience and safety than by the strict pathological consideration of the possibility that it will spread. The transpyloric extension of gastric carcinomas has been reported in upwards of 20% of cases.²⁻⁵ We report on a patient who illustrates this.

Case report

A 68-year-old Englishman presented with a five-month history of retrosternal pain and vomiting. He had noticed a weight loss of one stone (6 kg) over three months. He did not complain of dysphagia but had started eating only soft food. His discomfort was relieved by vomiting, particularly at night. Examination showed a visible gastric peristaltic wave, and his liver was just palpable. Investigations showed haemoglobin concentration 12.9 g/dl; white cell count $7.8 \times 10^9/l$ (7800/mm³); blood group A positive; total protein concentration 65 g/l (albumin 31 g/dl); bilirubin concentration 10 $\mu\text{mol/l}$ (0.5 mg/100 ml); urea concentration 4.8 mmol/l (28.9 mg/100 ml). Gastroscopic examination and barium studies both showed severe gastric retention, with rigidity of the antrum suggesting carcinoma. Cytology and histological appraisal of biopsy specimens confirmed an adenocarcinoma of the stomach. A liver scan was normal.

Laparotomy showed an extensive antral tumour affecting the right gastroepiploic nodes, which were adherent to the mesocolon. The growth appeared to be close to the pylorus, but the edge could not be well defined by palpation. The liver was free of metastases. A radical abdominal total gastrectomy with Roux-en-Y oesophagojejunal reconstruction was performed. The duodenum was divided well beyond the pylorus, through apparently normal tissues, and a comfortable three layer closure obtained. The patient made a good recovery.

The fixed specimen showed an ulcerated carcinoma in the gastric antrum approximately 6.5 cm long by 5 cm maximum width, which appeared to affect the whole circumference of the pyloric canal. Its distal edge could not be defined, and the duodenal mucosa up to the cut end appeared irregularly granular and heaped up. The length of duodenum was 2.5 cm.

Transpyloric spread of gastric cancer is not rare

Microscopy showed an adenocarcinoma, the bulk of which was poorly differentiated and included many signet ring cells; foci of mucoid pattern and foci with well formed gland-like spaces were also present. The carcinoma extended directly to the duodenal resection line in the mucosa, though the glandular architecture was preserved in several areas, and there was carcinoma in many submucosal lymphatic vessels. All layers of the wall of the duodenum proximal to the resection line showed patchy infiltration affecting many lymphatic vessels. The tumour penetrated the stomach wall to reach its serosal aspect. There were metastases to lymph nodes on the lesser curve, greater curve, and a superior pancreatic node.

Discussion

Ian Aird⁶ summarised this phenomenon of carcinoma extending from the stomach through the pylorus by stating: "the submucous extension (of carcinoma of the stomach) almost invariably ceases abruptly at the pylorus, although this abrupt cessation, dramatic to the naked eye, is more apparent than real. In a substantial number of cases careful histological examination reveals spread to the duodenum and, even in gastrectomy cases, to the line of duodenal section." These wise words were borne out by the earlier studies of Castleman in 1936,⁷ who found that in six of 65 (9%) necropsy specimens the carcinoma of the stomach had invaded the duodenum, and found the same in 15 of 134 (11%) surgical specimens. Fodden,² in a careful study of 50 cases of pyloric cancer, found a spread in seven out of 21 necropsy specimens (33%) and in nine out of 29 surgical specimens (31%). In reviewing published reports back to 1864 (only three years after Rokitsky's statement), he found much that opposed the view that transpyloric spread is a rarity. More recently Menuck⁵ found transpyloric extension in 17 out of 88 (20%) patients.

The importance of this spread obviously depends on whether recurrent tumour is found either in the duodenal stump (after Polya's operation or total gastrectomy) or at the anastomosis after a Billroth I resection. Bockus⁸ has reported a 12% recurrence rate at the anastomotic stoma, and Maki⁹ quoted a figure for "local" recurrence of 40.8% in 311 cases. Five of these recurrences were found in the duodenal stump. Pichlmayer and Meyer¹⁰ reported a recurrence rate in the duodenum of 10% after distal subtotal gastrectomy.

Surgeons appear not to have faced up to a known pathological entity, possibly because in doing so the "correct" policy might be to add a duodenectomy (with probably a pancreatectomy) to

an already extensive operation. The morbidity and mortality of this procedure would certainly outweigh any possible advantage gained by adequate clearance. It seems logical, however, to pay more attention to the possibility of transpyloric extension of carcinoma by doing an adequate duodenal resection determined by frozen section biopsy specimen at the point of transection. Guidance is given by Castleman,⁷ who found that the length of the spread into the duodenum in his patients ranged from 4 mm to 23 mm. Thus a resection of at least 3 cm of duodenum is suggested on pathological grounds; and this should easily be achieved in all cases without increasing the surgical risk. Perhaps nearly 50 years after this evidence was presented it bears repetition in an attempt to improve the chances of survival of our patients with gastric cancer.

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References

- ¹ Rokitsky C. *Lehrbuch der pathologischen Anatomie* 3rd ed. Vienna: W Braumiller, 1861. (cited by Castleman 1936, and Fodden 1948).
- ² Fodden JH. Duodenal spread of pyloric carcinoma. *Br J Cancer* 1948;**2**: 239-49.
- ³ Collier FA, Kaye EB, McIntyre RS. Regional lymphatic metastases of carcinoma of the stomach. *Arch Surg* 1941;**43**:748-61.
- ⁴ Zininger MM, Collins WT. Extension of carcinoma of the stomach into the duodenum and esophagus. *Ann Surg* 1949;**130**:557-66.
- ⁵ Menuck L. Transpyloric extension of gastric carcinoma. *Am J Dig Dis* 1978;**23**:269-74.
- ⁶ Aird I. *A companion in surgical studies*. 2nd ed. Edinburgh: Livingstone, 1957:756.
- ⁷ Castleman B. Extension of gastric carcinoma into the duodenum. *Ann Surg* 1936;**103**:348-52.
- ⁸ Bockus HL. *Gastroenterology*. Vol I. 3rd ed. Philadelphia: Saunders, 1974: 991.
- ⁹ Maki T. End results of gastric cancer. *Journal of Japan Society for Cancer Therapy* 1969;**4**:117-21.
- ¹⁰ Pichlmayer R, Meyer HJ. In: Herfarth C, Schlag P, eds. *Gastric cancer*. Berlin: Springer-Verlag, 1979:197.

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Dealing with the Disadvantaged

Bereavement

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The break-up of the extended family, a conspiracy of silence surrounding death, and a lack of mourning ritual leave many bereaved unsupported. At this vulnerable time they may turn increasingly to doctors and health workers for help.

After a death families, friends, and neighbours often offer immediate help to comfort the bereaved and deal with the practicalities of funeral arrangements. The critical period follows when this help ceases and the initial feelings of numbness or shock give way to intense grief. Although for many grieving will take its normal painful course, some (perhaps a quarter to a third) will be at risk during this time if unsupported.

Risk factors

- (1) Sudden, unexpected, and untimely death—for example, fatal accident or suicide in a child or young adult.
- (2) Demands of dependents: children and others.
- (3) Lack of a close relationship or a warm, supportive family. Presence of a family who block attempts to grieve—for example, after stillbirth or neonatal death.
- (4) Financial hardship and housing difficulties.
- (5) Non-employment: at home all day—particularly mothers of young children and the elderly.
- (6) Earlier difficulties in accepting impending death; clinging and pining or excessive anger and self reproach.
- (7) Multiple losses.

- (8) Vulnerable personality—for example, history of mental illness or inadequacy.

Problems facing the bereaved

- (1) Practical difficulties in taking over unaccustomed functions of the deceased: widow, business affairs; widowers, domestic responsibilities and child caring.
- (2) Physical symptoms, which are normal physiological accompaniments of grief, may be self-perpetuated by the bereaved's fear for his own future health—for example, tachycardia, anorexia, insomnia, indigestion, and headache.
- (3) Loneliness and isolation often increased by the community's embarrassment and inability to mention the death or the deceased.
- (4) Dealing with the grief of other members of a family in addition to his or her own: particularly hard for the surviving parent of young children.
- (5) The frightening intensity of grief, sometimes accompanied by feelings of panic or suicidal thoughts (no diffidence should be felt in asking a direct question about suicide).
- (6) Fears of "breakdown" often spoken of after experiencing vivid illusions: "sights" or "sounds" of the dead person, or forgetfulness.
- (7) Lack of an outlet for the expression of guilt and anger.

Needs of the bereaved

- (1) To be allowed to talk about the experience: the illness, death, funeral, and memories.
- (2) To have expressions of grief accepted.