GASTRIC CARCINOID TUMOUR

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SYNOPSIS

A case of carcinoid tumour of the stomach is reported. These rare tumours form only 0.02% of gastric neoplasms. Preoperative diagnosis is difficult and may be further complicated by associated peptic ulceration. Available postoperative data does not allow an accurate assessment of prognosis although occasional cases of long survival have been reported. Management is discussed.

INTRODUCTION

A recent review of the literature accounted for 93 reported cases of carcinoid tumours in the stomach (Cheek and Wilson, 1070). These tumours form only 0.02 per cent of all gastric neoplasms (Ming, 1973) so that their rarity makes them of sufficient interest to be reported. The other purpose of this report is to discuss the presentation of such neoplasms and to re-examine their biological behaviour and prognosis.

REPORT OF A CASE

Clinical History:

A 64-year-old Chinese man was admitted to University Hosiptal, Kuala Lumpur on 12.9.74 with a history of periodic passage of blackish stools for one month. He also experienced epigastric pain which was not associated with meals. He complained of general tiredness and poor appetite and had noticed weight loss of 7 pounds over the period. There was no history of nausea or vomiting, chest pain, palpitations or hot flushes. He experienced occasional giddy spells especially on rising up from a sitting position.

On examination, the patient's general condition was satisfactory. He was anaemic and had mild oedema of the ankles. No masses were palpable in the abdomen and rectal examination was unremarkable. The rest of the physical examination was unrevealing. Laboratory investigations revealed Hb 7.4 gm per 100 ml, Hct 25% WbcC 13,500/cu mm (78% neutrophils, 3% eosinophils, 17% lymphocytes and 2% monocytes), ESR 73

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mm/hr. Liver function tests were normal except for the serum proteins which were 7.3 gm/100ml (albumin 3 gm/100ml, globulin 4.3 gm/100ml). The serum electrolytes and blood urea were within normal range. Examination of stools for occult blood was positive. The urine examination and chest X-ray were normal.

On 17.9.74, there was an episode of massive malaena; the patient's blood pressure dropped and his haemoglobin level fell from 7.4 gm/100ml to 5.5 gm/100ml. An emergency barium meal revealed an irregularity and destruction of the gastric mucosa in the region of the pylorus and distal portion of the body of the stomach suggesting the diagnosis of carcinoma. At emergency laparotomy a large tumour was found in the pyloric antrum and body of the stomach with invasion of the seromuscular coat in the lesser curvature. Multiple enlarged lymph nodes were present along the lesser curvature and similar nodes were palpable in the para-aortic area. A large matted mass of nodes was also present in the infrapyloric region. The liver and rectovesicular pouch were free of metastasis. A palliative subtotal gastrectomy together with splenectomy and omentectomy was performed and intestinal continuity was restored with gastro-duodenal anastomosis (Bilroth I type). The post-operative course was uneventful and the patient was discharged on the 11th post-operative day. He was regularly followed-up and was last noted to be relatively well on 19.12.74 although he continued to complain of general tiredness. We were informed that his condition had subsequently deteriorated rapidly and he expired at home on 12.2.75 without seeing a doctor. Autopsy was not performed.

Pathology:

The gastrectomy specimen contained a 12 x 10 x 2cm plaque-like, well-circumscribed tumour in the lesser curvature. This haemorrhagic tumour appeared to arise from a submucosal location with ulceration of the overlying mucosa. The surrounding gastric mucosa formed a lip at the edge of the nodular tumour (figure 1). The cut surface was yellow-tan in colour and infiltration of the full thickness of the gastric wall with puckering of the serosal surface in the lesser curvature was seen (figure 2). Masses of tumour-inflitrated lymph nodes were present in the greater and lesser curvatures. The resected spleen was free of tumour.

Microscopic examination revealed the tumour to be composed of large solid masses of polygonal cells with moderate amounts of cytoplasm and pleomorphic, vesicular nuclei showing coarse

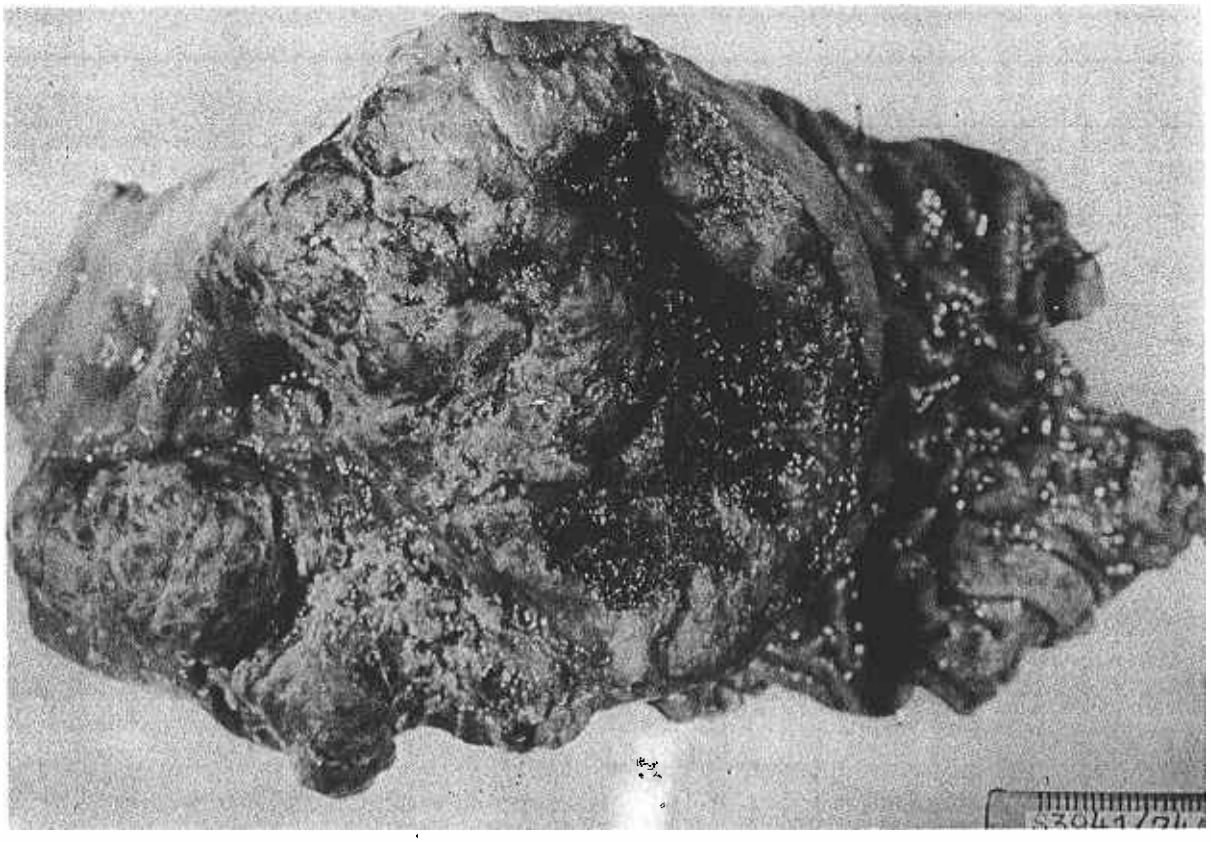

Fig. 1 An ulcerated, plague-like tumour with a rim of relatively normal gastric mucosa is seen in the lesser curvature of the ressected stomach.

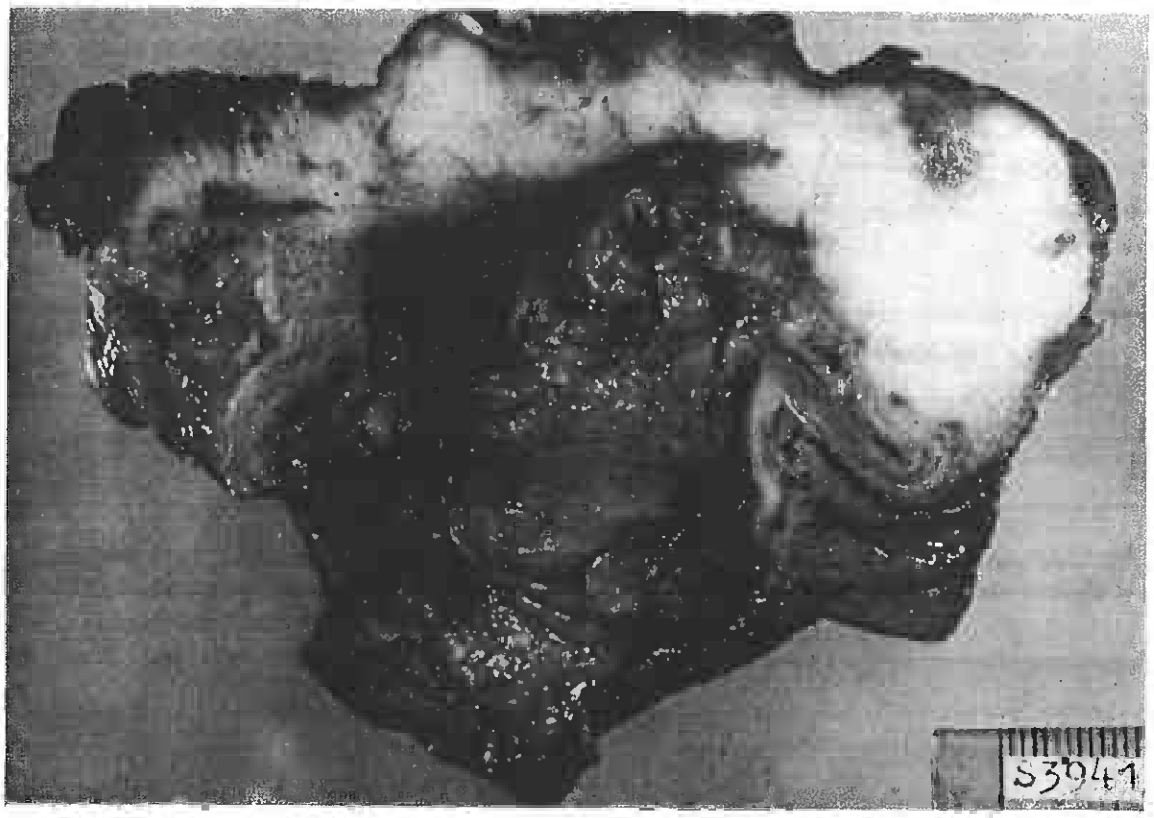

Fig. 2 Cut section of the tumour showing infiltration of the full thickness of the gastric wall and puckering of the serosa (arrow).

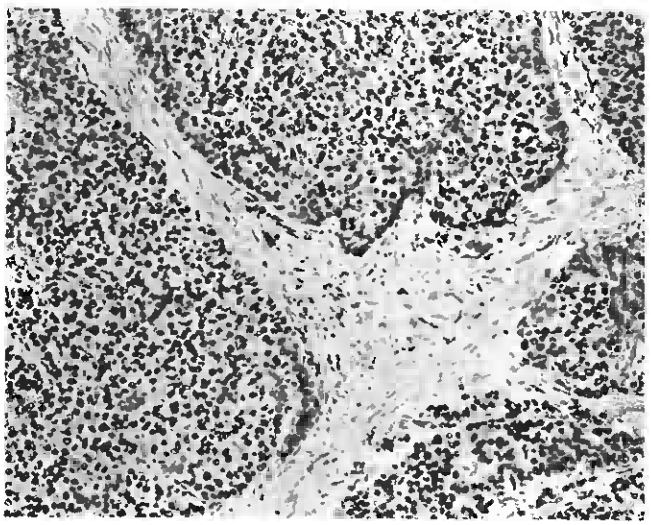

Fig. 3 Photomicrograph showing the solid masses of polygonal tumour cells separated by fibrous trabeculae (Haematoxylin-eosin, original magnification X60).

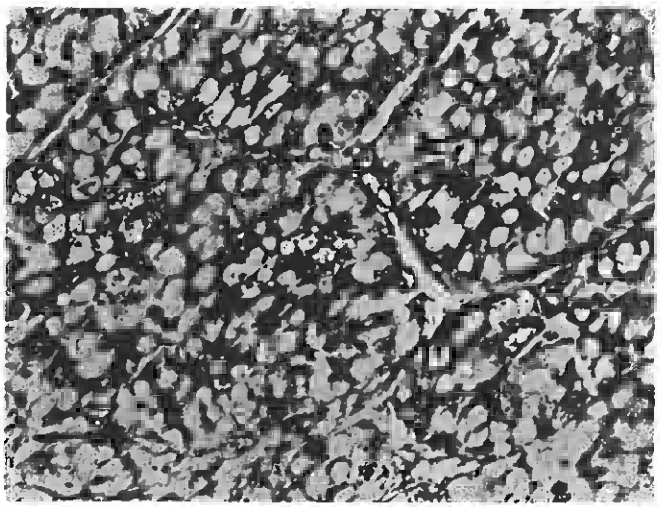

Fig. 4 Tumour cells with cytoplasmic argyrophilic granules (Pascual stain, original magnification X300).

chromatin clumping (figure 3). Occasional bizzare forms and small nucleoli were present. The mitotic rate was increased and areas of tumour necrosis were present. Argyrophilic cytoplasmic granules were demonstrated with a modified Bodian stain (Pascual, 1976) (figure 4). However, the tumour cells were negative for argentaffin and the diazonium reactions. There was infiltration of the full thickness of the gastric wall and extensive involvement of all resected lymph nodes.

Formalin-fixed tumour tissue examined in an electron microscope showed poor fixation. However, uniform, round membrane-bound secretory granules were discernable in the cytoplasm of the tumour cells.

DISCUSSION

Carcinoid tumour of the stomach was first described by Askanazy in 1923. Both his cases were incidental findings at autopsy (Christodoulopoulos and Klotz, 1961). When Lattes and Grossi reviewed the literature in 1956, they found 40 cases of carcinoid tumours of the stomach and 15 of these were asymptomatic lesions. The majority of patients, however, present with symptoms; these symptoms are non-specific and provide no clues to the diagnosis. Pain, anaemia or bleeding are the most common complaints. Occasionally, the epigastric pain may have ulcer-like characteristics and anorexia and weight loss may be accompanying features. The diagnosis can be further complicated by the presence of associated peptic ulceration. In a reveiw of 356 carcinoids of the gastrointestinal tract, MacDonald (1956) found an association of peptic ulceration in 38 per cent of cases. Another study (Lemmer, 1942) showed an incidence of 22 per cent of peptic ulceration in patients with gastric carcinoids. The reason for such an association is not known. It has been suggested that high levels of serotonin secreted by the tumour may stimulate the release of histamine accounting for the gastric ulcers. (Schneckloth and McIssac, 1959).

The diagnosis of gastric carcinoid has seldom been made before operation. Only in the rare instance of a radiologically visualized gastric tumour presenting with the carcinoid syndrome has the diagnosis been suggested (Thompson and Coon, 1964). The carcinoid syndrome may develop following hepatic metastasis. However, the primary gastric tumour, is, as a rule, hormonally inactive.

Radiologically, these tumours present as shallow gastric ulcerations simulating the classic intramural submucosal growth seen with leiomyoma or as sharply circumscribed polypoid filling-defects (Pochaczevsky and Sherman, 1959; Bluth, 1960; Thompson and Coon, 1964). Their differential diagnoses include leiomyoma, lipoma, fibroma, lymphoma, adenomatous polyp and carcinoma.

Gastric carcinoid may develop over a wide range of age and occurs most commonly in the sixth decade. A bleeding, ulcerated tumour has been reported in a 15-year-old girl (Lutzom-Holm, 1952). Carcinoid tumors originate from the Kulchitsky or argentaffin cell. In the normal stomach these cells are few and scattered. They are most numerous along the lesser curvature (Magnus, 1958) explaining the greater frequency of carcinoids in this location. Areas of intestinal metaplasia also show increased density of Kulchitshy cells and such metaplastic glands are usually present in the vicinity of the tumour. It is not known if these glands represent the site of origin of the carcinoid tumour.

Macroscopically, carcinoid tumours are submucosal growths which may grow to a large well-cicumscribed mass, frequently covered by mucosa with a central area of ulceration. The cut surface of the tumour may be yellow or tan. Multiple tumours have been described (Pestana et al, 1963). The histological features of gastric carcinoids resembles those seen elsewhere in the intestinal tract. The tumour cells are round and arranged in solid masses and have a strong tendency to trabecular patterns. Gastric carcinoids are known to give negative argentaffin and diazonium staining reactions. However, cytoplasmic argyrophilic granules can usually be demonstrated.

Several authors have highlighted the slow growth characteristics (Thompson and Coon, 1964; Cheek and Wilson, 1970; Ming, 1973) and the "definitely low degree of malignancy of these tumours even after they have produced extensive regional metastases" (Lattes and Grossi, 1956). We would add in caution that a good prognosis is not uniformly applicable to all cases of gastric carcinoids. This is evidenced by our patient who died within six months of diagnosis and the many other patients with rapidly growing, sometimes inoperable tumours who have expired soon after diagnosis from extensive metastases or recurrences after resection (Raiford, 1933; Lattes and Grossi, 1956; Pochazevesky and Sherman, 1959). The presentation of gastric carcinoids is usually late, one quarter of the patients having metastases at the time of histological diagnosis (Thompson and Coon, 1964). The majority of reported cases do not have sufficient postoperative data to allow accurate assessment of their behaviour. There are reported instances of patients who have survived for durations up to 13 years following surgical resection of their tumours (Lattes and Grossi, 1956) but such a good prognosis does not appear uniformly applicable to all gastric carcinoids.

We feel that partial gastrectomy is acceptable if the tumour is single and small, and there is no evidence of metastasis. If the tumour is large or multiple, a subtotal gastrectomy is indicated. If metastases are present, all tumour-involved tissue including liver deposits should be excised if possible (Crowder et al, 1967). Radiotherapy has not been shown to be useful.

We take the view that carcinoid tumours of the stomach do not all behave in a lethal manner and the occasional case may show a low degree of malignancy. As such, an attempt should be made at laparotomy to separate this category of tumours from

the larger and uniformly malignant group of adenocarcinomas of the stomach and therapy modified accordingly.

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