Gastric leiomyoma and leiomyosarcoma—five cases

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Summary

Five patients with smooth muscle tumours of the stomach are presented. In 3 cases, histological identification of the lesion was made pre-operatively on biopsy material obtained under direct vision at gastroscopy.

Introduction

Smooth muscle tumours are considerably less common than mucosal tumours of the stomach. An incidence of gastric leiomyomas of 16% has been found at post-mortem (McNeer and Pack, 1967a) but they are less important clinically; leiomyosarcomas are said to account for approximately 1% of all gastric malignancies (McNeer and Pack, 1967b; Ming, 1973). Clinical and histological differentiation between the tumours is difficult unless metastases are present (Morson and Dawson, 1972). It may be that leiomyomas precede leiomyosarcomas but the point is difficult to prove. Different parts of the same tumour may show varying degrees of nuclear change, compatible with different stages of malignancy. Pre-operative diagnosis is the exception and it has been stated that cytology and histology have little or no contribution to make in view of the submucosal situation of the tumours (Brandborg, 1973; Nelson, 1974). Between January 1972 and December 1977 2799 gastroscopies were carried out at the Victoria Hospital, Blackpool. In 5 patients there was histological proof of smooth muscle tumour. In 3, the diagnosis was made pre-operatively on biopsy material obtained under direct vision at gastroscopy. Clinical details are summarized in Table 1.

Case 1

A 70-year-old man presented with dizziness on exertion. Two months previously he had passed what was probably melaena. Hb was 7.2 g/100 ml with indices of iron deficiency. Barium meal followed by gastroscopy showed a smooth defect high on the lesser curve. Biopsies were taken from the surface of the tumour and from the edge of one of 2 ulcers and reported as follows: 'Extending into the submucosa of one of these biopsies is a neoplasm composed of plump, spindle-shaped cells with moderately pleo-

FIG. 1. Leiomyoma cells in submucosal region (biopsy from case 1). HE, $\times 256$.

morphic nuclei and occasional mitotic activity. The appearance is that of a leiomyoma' (Fig. 1).

At laparotomy, the tumour was removed along with the upper two-thirds of the stomach. No metastases were visible. The pathologist reported 'spindle cells forming irregular interdigitating bundles. Part of the surface is ulcerated, extending deep into the muscle layer. In some areas mitotic figures are fairly numerous. The appearances are those of a leiomyosarcoma'. The patient did well initially but 11 months later he returned with massive tumour recurrence in the abdomen infiltrating the skin. He died at home and post-mortem was not carried out.

TABLE 1. Clinical details of five patients with leiomyoma and leiomyosarcoma

Case	Age	Sex	Clinical	X-ray	Gastroscopy	Biopsy	Operation	Specimen	Outcome
1	70	M	Dizziness, Melaena	Smooth defect high on lesser curve	Confirmed the X-ray findings. Two ulcers on surface	Leiomyoma (Fig. 1)	Resection	Leiomyo-sarcoma	Died 11 months later with massive tumour recurrence
2	65	M	Gastro-intestinal haemorrhage	Not performed	Round tumour 5 cm diameter high on lesser curve	Normal mucosa	Resection	Leiomyo-sarcoma	Died 10 months later without recurrence
3	78	M	Dyspnoea, Melaena	Round ulcerated tumour high on greater curve	Confirmed X-ray	Leiomyoma (Fig. 2)	Not done	—	Died 2 months later with massive tumour in liver and abdominal wall
4	63	F	Gastro-intestinal haemorrhage	Large smooth lesion in fundus with ulcer	Confirmed X-ray (Fig. 3)	Gastric mucosa	Resection	Leiomyoma	Progress good for one year
5	79	M	Gastro-intestinal haemorrhage Gastroenterostomy for duodenal ulcer 50 years previously	Large fundal tumour	Confirmed X-ray. Superficial ulceration	Leiomyo-sarcoma	Resection	Leiomyo-sarcoma 14 × 11 × 5 cm	Initial progress good

Case 2

This otherwise fit 65-year-old man was admitted following a large gastrointestinal haemorrhage.

At gastroscopy a rounded tumour, about 5 cm by diameter, was seen high on the lesser curve. Biopsy from the surface showed normal gastric mucosa. At laparotomy the tumour was removed. The operation specimen was reported as follows: 'The mass is composed of spindle-shaped smooth muscle cells, in most areas well differentiated. A distinct but thin fibrous capsule is present. There is some central necrosis, in some areas occasional mitotic figures are present and there is some nuclear pleomorphism . . . leiomyosarcoma of low-grade malignancy . . . '.

He did well initially postoperatively but died suddenly at home 10 months later, of presumably unrelated cause. No post-mortem was performed.

Case 3

This 78-year-old man presented feeling tired and breathless. Melaena had been noted in the week before admission. Investigation showed iron deficiency anaemia.

Barium meal showed changes suggestive of an ulcerated, rounded tumour and at gastroscopy a rounded tumour 5 cm high was seen on the greater curve with an ulcer. Biopsies were taken at the edge of the ulcer and were reported as follows: 'These 2 pieces are from the ulcerated surface of a leiomyoma,

this being composed of parallel spindle-shaped cells which appear fairly well differentiated and mitotic figures are few' (Fig. 2). The patient was transfused but in view of his poor general condition and the situation of the tumour, resection was not performed.

He was discharged home but re-admitted 2 months later in extremis, very anaemic and with a large irregular liver suggestive of metastases. Post-mortem examination was not performed.

Case 4

A 63-year-old housewife presented following a large gastrointestinal haemorrhage. Barium meal was reported as showing 'a large well circumscribed smooth mucosal lesion in the fundus of the stomach with a central speck of barium, suggestive of a leiomyoma' (Fig. 3).

Gastroscopy confirmed the presence of the tumour and biopsies were taken from one of 2 ulcers on opposite sides of the tumour. Biopsies showed only 'inflammatory cells in superficial gastric mucosa, with no evidence of leiomyoma'. At laparotomy a local excision of the tumour was carried out through an anterior gastrotomy. The pathologist reported 'a rounded 3.5 cm tumour with central ulceration, microscopically a leiomyoma with a fairly uniform nuclear pattern and infrequent mitotic activity'. She made an uneventful postoperative recovery.

FIG. 2. Gastric biopsy showing whorls of mainly spindle-shaped leiomyoma cells (case 3). HE, $\times 100$.

Case 5

This 79-year-old man was admitted after a gastrointestinal haemorrhage. Fifty years previously he had had a gastroenterostomy for duodenal ulcer. After transfusion a barium meal showed a large fundal tumour suggestive of a leiomyoma. Four months later he was re-admitted with a further haemorrhage. Gastroscopy showed a large lobulated tumour in the fundus of the stomach. There was extensive surface ulceration. Biopsies were taken from ulcerated and non-ulcerated areas and reported as follows: 'Two pieces are of a spindle-cell tumour, highly cellular and fairly abundant mitotic figures. The appearances are those of a leiomyosarcoma'. At laparotomy a few days later the tumour was resected without operative or postoperative complications.

Discussion

Clinically, leiomyomas and leiomyosarcomas are often symptomless; gastrointestinal haemorrhage is the most important manifestation. Radiologically, the tumours may show as rounded intraluminal lesions, often with surface ulceration. Double-

contrast technique with thin barium reduces the number of false negative results. The lesions appear as rounded or ovoid swellings up to 15 cm in diameter, mainly in the submucosal region, occasionally with subserous extension. They are said to be more common in the distal stomach but all 5 of the cases reported here had lesions in the proximal stomach, 3 in the fundus and 2 high on the lesser curve. Ulceration of the surface occurs, which is attributed to stretching of the mucosa over the submucosal swelling. The cut surface is whitish or grey. Histologically, leiomyomas are made up of well differentiated smooth muscle cells forming criss-cross bundles with a richly vascular collagen matrix. The lesions are not usually well encapsulated. Different parts of the same tumour may show varying features with haemorrhage, necrosis and some round cells. Similarly, evidence of malignancy may be present making differentiation from leiomyosarcoma difficult. Leiomyosarcomas may show variation in cell and nuclear size and shape, high cell density and abundant mitoses. The presence of multiple tumours is suggestive, and of metastases, diagnostic of malignancy. Three of the tumours in these 5 cases were

FIG. 3. Barium meal showing rounded tumour high on the posterior wall of the stomach (case 4).

initially reported as leiomyomas and yet 2 of the patients were dead within a few months with metastases, presumably from leiomyosarcoma. It appears from this and other reports that the differentiation between the 2 types is either not valid or too difficult to be clinically useful. Treatment is by surgical removal, the lesions not being radiosensitive, and the value of chemotherapy not yet evaluated.

Experienced gastroscopists usually have little difficulty in suspecting the existence of these submucosal tumours, but it has been suggested that the technique has little or no contribution to make as far as pathological proof is concerned. However, if specimens are taken from the area of ulceration, it seems there is a good chance of obtaining helpful specimens. Henning and Witte (1968) reported cytological diagnosis of a gastric leiomyoma. Prolla and Kirsner (1972) described 2 patients and Cabre-Fiol *et al.* (1973) 3 patients in all of whom cytological diagnosis of leiomyosarcoma was made on material obtained under direct vision at gastroscopy. In the 3 positive biopsy cases reported here, biopsies were taken from surface ulcers.

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