

GASTRIC EXFOLIATIVE CYTOLOGY*

A REPORT ON 300 CASES

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The role of exfoliative cytology in the diagnosis of gastric malignancy has been the subject of several recent reports and reviews. Data from most of the important published series have been tabulated by Seppälä,¹ who also recorded his own experience with 721 cases; Gibbs,² in a well-illustrated review, gave a general assessment of the usefulness of the technique, together with an account of the cytological criteria of malignancy. Schade's important monograph in 1960³ gave details of the technical procedures, and recorded extensive personal experience.

The present paper records the findings on specimens from 300 patients examined at Groote Schuur Hospital in the 18 months from September 1960 to March 1962.

MATERIAL AND METHODS

The patients had all been referred to the Gastro-intestinal Service of Groote Schuur Hospital for investigations which included gastroscopy and the augmented histamine test. In September 1960 it was decided to do exfoliative cytology in addition, in order to assess the usefulness of the procedure with the relatively limited facilities available, and also to acquire experience in this field. Selection of the cases for cytology was done by the staff of the Gastro-intestinal Service, who also collected the specimens. The cytological examinations were made without knowledge of their findings or of the results of radiological examinations.

Lavage was done with normal saline^{3,4} and the material was sent without delay to the laboratory. All the slides were prepared and stained by Papanicolaou's method.⁵ Data on the final diagnoses were taken from the patients' folders; histological findings are those reported by the diagnostic service of the Department of Pathology. For interest, I examined the histology slides as well at a later stage.

Cytology reports were classed as positive, doubtful (suspicious of malignancy), negative or unsatisfactory. It was found impossible to avoid giving equivocal reports on occasion, very often because of the extreme paucity of the cells under suspicion. In several cases the diagnosis of malignancy was regarded as established on other grounds, and the patients came to operation before repeat specimens could be obtained. Slides were reported as unsatisfactory when cytological detail was lost owing to poor preservation, or was obscured by food debris and bacteria. Because of the time and trouble involved in the collection and preparation of specimens, there is a strong inclination to attempt to report on slides which are not wholly satisfactory.

RESULTS

Clinically Malignant Group

The whole series comprised 312 specimens from 300

patients. Of these, 70 cases were regarded as clinically malignant, and Table I summarizes the basis for the

TABLE I. CLINICALLY MALIGNANT GROUP—BASIS OF DIAGNOSIS

<i>Diagnosis based on</i>		<i>Patients</i>
Histology of operation specimen	54
Autopsy findings	2
Clinical findings and biopsy	1
Laparotomy (no histological confirmation)	7
Clinical findings and follow-up	6
Total	70

diagnosis. The 7 patients in whom laparotomy was done were regarded as having inoperable malignant tumours of the stomach, though lymph-node or omental biopsies were negative. The diagnosis of malignancy was regarded as reasonably certain on clinical and radiological grounds in 6 patients, 4 of whom refused operation. The cytological findings are given in Table II.

It will be seen that a finding indicative or suggestive of malignancy was given in 59%. On 16 occasions slides were reported as negative in patients subsequently shown to have a malignant tumour. The slides from these were

TABLE II. CYTOLOGICAL FINDINGS IN THE CLINICALLY MALIGNANT GROUP

<i>Cytology</i>	<i>Patients</i>	
	<i>No.</i>	<i>%</i>
Positive	30	43.0
Suspicious (doubtful)	11	15.5
Negative	16	23.0
Unsatisfactory	13	18.5
Total	70	100.0

re-examined when the diagnosis was established, and in no case were suspicious cells found. Burnett *et al.*⁶ found that in all their false negative reports (9 out of 24) the tumour in question was a large fungating or ulcerating mass. In the present series, 5 of the false negatives were fungating tumours 8 cm. or more in maximum diameter; in 3 surface necrosis was a prominent feature, while in 2 no mucosal lesion was evident, the tumour being intramural. All the patients reported as 'doubtful' were subsequently shown to have malignant tumours.

The number of patients with malignant tumours from whom it proved impossible to obtain satisfactory material (13 patients, 18.5%) is high compared with other series. Pyloric stenosis with gastric retention was present in 8 of them, and there was 1 ulcer-cancer with a very high acid output. Seppälä¹ drew attention to the absence in many published reports of details concerning the cases excluded because of technical failures. In his own series there were 5 failures (3.5%) of which 3 were attributed to the presence of pyloric stenosis. Schade³ rejected as unsuitable 24 preparations from 282 patients with tumours (8.5%).

* Based on a paper presented at the 43rd South African Medical Congress (M.A.S.A.), Cape Town, 24-30 September 1961.

From Table II it can be seen that adequate slides were obtained from 57 patients; malignant or suspicious cells were found in 74% of these.

Clinically Non-malignant Group

This comprised 230 patients. In 51 the diagnosis of a benign lesion was established at laparotomy. There were 46 patients with gastric or duodenal ulcer, treated medically. A variety of conditions, including atrophic gastritis, hiatus hernia, pernicious and other anaemias, and gall-bladder disease, made up the remainder. The follow-up period in the most recent of these patients is necessarily short (minimum 2 months), but in none of them did any of the investigations raise suspicions of malignancy.

The results of the cytological examinations in this group are set out in Table III. In 2 patients (0.9%) the finding of malignant cells was unsupported by subsequent histo-

TABLE III. CYTOLOGICAL FINDINGS IN THE CLINICALLY NON-MALIGNANT GROUP

Cytology	Patients	
	No.	%
Negative	208	90.4
False positive	2	0.9
Unsatisfactory	20	8.7
Total	230	100.0

logical evidence. The first occurred early in the series, and on review it is considered that it would better have been included in the doubtful group. The patient was an elderly female who had a pedunculated gastric tumour, shown histologically to be a benign adenoma. The second patient was operated on following recurrence of symptoms after local excision 18 months earlier for a histologically confirmed carcinoma. No tumour was evident at operation, and a random biopsy of gastric mucosa showed an abnormally flattened epithelium with intestinal metaplasia. This patient is still being followed up.

DISCUSSION

Several recent publications of large series indicate that it should be possible to find malignant or highly suspicious cells in over 80% of patients with gastric neoplasms.^{1,3,7} Other smaller series have given results of the same order as the present one.^{6,8} There is general agreement that a negative finding is of little value in excluding malignancy in the individual case, and for this reason the technique should not be contemplated as a screening procedure. The role of gastric exfoliative cytology is, therefore, likely to be limited to the confirmation of a diagnosis suspected on other grounds, and there can be no doubt of its helpfulness in this respect.

Our experience confirms this, despite the lesser degree of successful diagnosis achieved. There were, for example, 5 clinically suspect patients in whom X-ray studies had been negative and gastroscopic examination inconclusive, where malignant cells were found and a malignant tumour was subsequently demonstrated. Three are of special in-

terest. The first was a Bantu male of 24 years with an X-ray finding considered typical of a benign gastric ulcer. Several sections of the ulcer were required to show an early surface carcinoma. The second was a 55-year-old man in whom the only abnormality on gastroscopy and at operation was an area of thickened mucosa. Histologically this was a widespread surface carcinoma, extending beyond the limits of the naked-eye abnormality. In parts the tumour was clearly invasive, having extended beyond the muscularis mucosae. In the third patient, the possibility of an extrinsic deformity of the stomach was suggested on a repeat barium-meal examination after the positive cytology report. An oesophageal biopsy showed an adenocarcinoma compatible with a gastric origin. At operation a large tumour was present at the cardia, and there were multiple visceral secondary deposits.

The helpfulness of exfoliative cytology as an adjunct to radiology, gastroscopy and acid-secretion studies has to be weighed against the problem of the time and personnel required to provide an adequate service. We agree with the estimate of Gibbs⁹ that, from start to finish, the isolated case takes from 1 to 2 hours to examine. Except in very large departments this must necessarily limit the application of the test. Provided the limitations are appreciated by all concerned, in this department we conclude from our experience that with selection of cases the additional information given by this procedure is of practical value in the management of the individual patient.

SUMMARY

Malignant or suspicious cells were found in gastric washings from 41 of 70 patients with malignant neoplasms. In 16 no malignant cells were found, and there were 13 technical failures. Positive or suggestive reports were given in 74% of the cases where adequate material was available. The cytological findings were of crucial importance in 5 of the 70 patients.

Of 230 cases regarded as clinically benign, 2 (0.9%) were given positive cytology reports, and details of these cases are given in the text.

These findings are discussed in relation to other published data.

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