CARCINOMA OF THE OESOPHAGUS**A REVIEW OF FIFTY CASES**

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Fifty patients with malignant disease of the oesophagus were referred to the Thoracic Surgical Unit of St. Thomas's Hospital during 1951 and 1952. All the patients referred are included in this analysis, so it is an unselected series, except for the fact that they were sent to a surgeon. In one-third of the cases the involvement of the oesophagus was secondary. These are included because from the point of view of symptoms, treatment, and all clinical aspects the lesion was essentially oesophageal.

The lethal nature of this disease and its normally rapid progress are indicated by the fact that at the time of writing (January, 1954) only six of these patients are alive. It is some consolation that five of these have been treated by radical surgery and the sixth by radiotherapy. The various palliative treatments attempted were often successful in relieving the most distressing symptom, inability to swallow, and probably in prolonging life by a few months. They were, however, accompanied by a very high mortality, justified only by the imminence of death from starvation, cachexia, or secondary bronchopneumonia.

There were 29 men and 21 women affected. Over half of them were over 60 years of age; three were under 40. The youngest patient was 37 when her first symptoms appeared. This series shows the same high incidence in old age as does the longer one reported by Raven (1948), but not such a preponderance of males as his did. No patient gave a family history of oesophageal cancer or a past history suggesting oesophageal trauma.

Symptoms

The commonest symptom of oesophageal cancer is difficulty in swallowing, which nearly all patients eventually develop. Forty-four of these patients complained of dysphagia when they were first seen, and this was usually the symptom which had led them to seek advice. The dysphagia is persistent and progressive but may fluctuate, though remissions are short-lived, and seldom complete. Typically, difficulty is first noticed with a poorly masticated piece of meat or a dry biscuit. Dysphagia gradually advances until only thin fluids can be swallowed; finally it becomes complete and even saliva must be regurgitated. The patient may locate the level of the obstruction accurately, but this cannot be relied on, as he will often point to a spot higher than his lesion, probably because distension of the oesophagus occurs here. In no case did the patient point to a lower level. Dysphagia is usually due to narrowing of the lumen of the oesophagus by the growth, which most commonly results from scirrhous infiltration of the wall, but sometimes from internal obstruction by a proliferative lesion or occasionally from external pressure. Dysphagia may also occur before there is appreciable narrowing, when it is due to interference with the normal muscular action.

Almost as common a symptom as dysphagia is loss of weight, of which 42 patients complained when first seen. It is primarily due to malnutrition; although four patients who had lost weight did not complain of dysphagia, they were all found on investigation to have oesophageal obstruction.

Thirty-five patients complained of regurgitation of food or of vomiting. Although patients might say they vomited, careful questioning usually confirmed that they were in fact regurgitating undigested food from the oesophagus above the obstruction. The regurgitation often caused coughing. Mild or occasional cough on swallowing is due to overflow of saliva or food particles into the trachea. Severe and persistent cough on swallowing usually indicates a fistula between oesophagus and trachea or bronchus, but it may also be due to incompetence of the glottis from paralysis of one or even both vocal cords caused by invasion of the recurrent laryngeal nerves by the growth, or to invasion of the larynx itself. Either complication indicates that radical operation is impossible.

Twenty-five patients complained of pain, usually felt only on or after swallowing, but sometimes as a dull ache in the back and beneath the sternum. The site of pain was an accurate indication of the level of the lesion. In no case was pain severe when the patient was first seen. Although segmental pain indicating involvement of spinal nerve roots and invasion of the vertebral column may occur in oesophageal cancer, it was not met with in this series. Oesophageal pain carried no such sinister import; six of the seven patients in whom radical resection was possible complained of pain, and in none of these was there involvement of the parietes by the growth nor was there visible peri-oesophagitis at operation.

The history was short in nearly all these patients. From onset of symptoms until attendance at hospital it was three months or less in 26, four to six months in 17, seven to twelve months in 4, and over twelve months in 3. Many patients were wasted and anaemic and some were obviously dehydrated. Only the upper oesophagus is accessible to palpation, so that local physical signs are unusual. In none of these cases did physical examination reveal any abnormality of the gullet. Only one patient showed any clinical evidence of metastases—a stony gland above the right clavicle.

Several patients when first seen had clinical or radiological evidence of pulmonary lesions: bronchopneumonia, 5; emphysema, 4; atelectasis, 3; broncho-oesophageal fistula, 1; pulmonary tuberculosis, 1; fibrosis after radiotherapy, 1. Most of the cases of bronchopneumonia and of atelectasis were probably due to bronchial aspiration of particles of food or stagnant saliva with secondary infection. Usually, in cases of malignant oesophageal obstruction there is not time for the development of the destructive and suppurative changes in the lungs sometimes seen complicating achalasia (Belcher, 1949).

Barium Swallow and Oesophagoscopy

Two special investigations are all-important in diagnosis—barium swallow and oesophagoscopy. If necessary, both can be conducted on out-patients. No special preparation is needed for the barium swallow. If a plain chest radiograph has not already been taken this should be done. The barium investigation should include films as well as fluoroscopy. Firm reliance should seldom be placed on this investigation alone, but it usually gives an accurate indication of the level of the lesion, and, if the typical appearances of an unchanging and irregular filling defect are seen, carcinoma can be confidently diagnosed. In the present cases the report of the radiologist was never dogmatic, and in only four was a suggested diagnosis subsequently proved incorrect.

Results of Barium Swallow.—The following were the diagnoses made in the 50 cases: suggestive of carcinoma, 36; stricture or obstruction, without indicating nature, 5; suggestive of extrinsic mass, 4; suggestive of achalasia, 3; suggestive of oesophagitis, 1; investigation not done (patient too ill), 1.

The results were most accurate in middle-third growths. Upper-third lesions, especially post-cricoid cancer, are difficult to visualize unless large, as the barium passes so

quickly. A plain lateral soft-tissue film may sometimes show a suggestive forward displacement of the larynx or trachea. A small growth at the cardia may give exactly the same appearances as achalasia because it also results in spasm of the muscle of the cardia; the malignant infiltration may be too limited to detect or may be mainly in the fundus of the stomach, which is difficult to outline. Marked dilatation of the oesophagus is unusual.

Oesophagoscopy confirms the level of the lesion. If a growth is seen the upward extent of mucosal involvement can be estimated, but microscopic invasion may be higher, as emphasized by Churchill and Sweet (1942). The nature of the lesion can be surmised by observation, and more valuably determined by biopsy. There were no complications following diagnostic oesophagoscopy in these cases.

Findings at Oesophagoscopy.—These were: appearances suggesting carcinoma, 39; benign lesion suggested, 2*; no abnormality detected, 2; appearances of extrinsic glandular mass, 1. Oesophagoscopy not done, 6.

Of the 44 cases in which oesophagoscopy was carried out the biopsy was positive in 39 and negative in 4; in one case a biopsy specimen was not taken. As well as a method of investigation, the same oesophagoscopy in many cases provided a means of treatment by dilatation or intubation.

If the growth lies in the upper or middle third, oesophagoscopy should be followed by bronchoscopy to examine the posterior wall of the trachea and left main bronchus. In one case ulceration of the trachea was seen; another had a deformity, contraindicating operation.

Pathology

The growth occurred in the upper third in 4 cases, in the middle third in 24, and in the lower third in 22. Thirty-two growths arose primarily in the oesophagus. In 17 it was involved secondarily in direct extension of a neoplasm arising in an adjacent viscus—the bronchus in one case and the stomach in the others. In the fiftieth case the oesophageal lesion was a metastasis from a carcinoma of the rectum.

The primary lesions all showed the histological picture of a squamous-celled carcinoma. With growths at the lower end of the oesophagus, a biopsy report of a squamous-celled carcinoma always implied that the neoplasm originated in the mucosa of the oesophagus itself (five cases). A report of a carcinoma of a different cellular pattern, such as adenocarcinoma, polygonal-celled carcinoma, or mucoid carcinoma, indicated a neoplasm originating in the gastric mucosa (17 cases). The difference is probably not of great practical importance, as in either case spread to lymph nodes and to other tissues can occur both upwards to pleura and mediastinum, and downwards to coeliac glands and peritoneum (Allison and Borrie, 1949). One patient had a sarcoma of the stomach.

The spread of the primary oesophageal growths was first by direct invasion of adjacent structures, particularly trachea or bronchus, pleura, and pericardium, and by the lymphatics to the peri-oesophageal glands in the mediastinum. Subsequent glandular spread occurred both upwards and downwards, so that abdominal glands near the diaphragmatic hiatus, in the small omentum, and around the coeliac axis might become involved. Finally, spread to other organs occurred by the blood stream and sometimes by transpleural and transperitoneal migration. Post-mortem examinations were carried out on nine patients with primary oesophageal carcinoma who died of their disease or its effects; in only three were distant metastases found—in one case in the heart and ribs, in another in the stomach, and in a third in many organs, including bones. Widespread dissemination is unusual, because the patient usually dies of starvation or of bronchopneumonia before it takes place. Raven (1948) found no metastases in nearly half the necropsies done in his series.

*In one of these biopsy was positive.

Treatment

The policy adopted in the treatment of these patients was that a radical operation should be done when possible, and that when it was not possible an attempt should be made to relieve the patient's dysphagia. When the diagnosis had been established, and no evidence of spread beyond surgical limits found, an exploratory operation was advised if the patient's general condition permitted this major undertaking. If radical resection was found to be impossible, a palliative resection or an anastomosis without resection was done if feasible. Table I shows the treatments carried out.

When major surgery was contraindicated two methods of palliative treatment were considered—oesophagoscopic dilatation and intubation, and radiotherapy. Gastrostomy was not usually advised, as it was felt that it prolonged the patient's life in misery without relieving his main symptom of dysphagia; when obstruction becomes complete even saliva must be regurgitated, and tube feeds give little satisfaction.

In two patients in whom repeated intubation had been unsuccessful and who were about to die, an experimental operation was carried out, resecting the major part of the growth and bridging the gap in the oesophagus with a plastic tube—a method which has proved successful in healthy dogs (Berman, 1952). These operations failed, both patients dying from leakage.

TABLE I.—Treatment Carried Out

		Deaths in Hospital
Major operation	26	8
Radical resection	7	2
Palliative resection	6	2
Palliative anastomosis	5	1
Exploration only	6	1
Reconstruction with tube	2	2
Minor operation	12	3
Intubation by oesophagoscopy*	21	3
Gastrostomy	1	0
Jejunostomy	1	0
Radiotherapy	8	0
No treatment given	4	3

*Some of these were also treated by other methods.

After preparation, as described by Franklin (1952), an exploratory operation was done on 24 patients. In only seven was radical resection possible. In one the growth involved the cervical oesophagus; it was possible to bring the mobilized stomach up into the neck and perform a satisfactory anastomosis above the clavicles as described by Nissen (1949) but the patient, doing well, died suddenly from a pulmonary embolus. Another patient, with a middle-third growth, treated by right thoracotomy and anastomosis to the stomach (Lewis, 1946), is well. In five patients the lesion lay in the lower third. In three it originated in gastric mucosa. In these patients a total gastrectomy was done by a thoraco-abdominal approach, removing the spleen and lymphatic fields with the stomach, and restoring alimentary continuity by anastomosing oesophagus to a Roux-en-Y loop of jejunum within the thorax (Yudin, 1944). One of these patients died from pericardial haemorrhage following anticoagulant therapy; the others are alive and well. In the other two patients the carcinoma originated in the oesophagus. One was treated similarly, and remains well; the other, also well, by oesophago-gastrostomy (Sweet, 1947).

At the exploratory operation, if a radical resection was impossible, an attempt was usually made to by-pass the obstruction. The simplest and safest way used was to bring a pouch of stomach through the diaphragm and anastomose it to the oesophagus above the growth. This was not possible, however, when the stomach was extensively involved or when the growth lay in the middle third. In these cases a palliative resection was done, with anastomosis to the gastric stump, or else an oesophago-jejunostomy (Allison, 1946). In six cases even such procedures were considered unwise, as the growth appeared too advanced or the patient's condition too poor.

Another valuable, and simpler, method of palliative treatment is oesophagoscopy intubation, which was extensively used, often on repeated occasions. Symonds's (1885) gum-elastic tubes were used in some cases, but in general Souttar's (1927) spiral wire tubes were found more effective, especially when a large size could be inserted. Instrumental dilatation of a friable and necrotic growth is inevitably risky, especially as considerable force must often be used. In 3 out of 35 intubations performed the oesophagus was perforated; the patients died as a direct result. As each had advanced carcinoma, no attempt was made to repair the perforation or drain the resulting abscess. Perforation is suggested by severe pain in the back after the endoscopy and can be diagnosed confidently if there is clinical or radiological evidence of surgical emphysema in the mediastinum or neck, or of pneumothorax.

Intubation was most often successful in middle-third growths, effective relief of dysphagia being obtained in two-thirds of the cases; it invariably failed in growths at the cardia which had originated in the stomach.

Patients treated by intubation and those responsible for their care must be instructed in the future management of the diet, as even the largest tubes have a lumen less than half the diameter of that of the normal oesophagus. Unless care is taken to avoid solid lumps such as gristle or pieces of potato by thorough mastication or preliminary preparation the tube will become blocked. This is particularly likely to happen in edentulous patients. It is often wise to recommend a semisolid or fluid diet, especially if it has been possible to insert only a small tube, and it is sometimes useful to issue printed instructions. The patient should be recommended to drink plenty of fluid with his meals. Temporary blockage of a tube can often be relieved by a fizzy drink such as soda-water. With these provisos remembered, the patient can enjoy a normal diet.

Eight patients were treated by radiotherapy, using methods similar to those discussed by Fleming (1947), sometimes with intubation as an ancillary. The treatment usually involved a stay of several weeks in hospital, and often caused temporary increase in dysphagia. Radiotherapy is the treatment of choice in carcinoma of the cervical oesophagus, where the growth is relatively accessible. The mutilating operation of pharyngo-laryngectomy with its difficulties of reconstruction of the food passage should be used only when radiotherapy has failed.

Survival

Four patients were given no treatment—one because he refused, the others because their disease was too advanced when they were first seen. They survived 4, 5, 6, and 12 months from their first symptom. In addition, six patients had an exploratory operation only; these lived 1, 4, 6, 6, 6, and 27 months from the onset of symptoms. The longest survivor of each list had adenocarcinoma of the stomach, suggesting that this carries a slightly better prognosis than primary oesophageal cancer.

The five who left hospital after a radical resection are all alive and well, having lived respectively 48, 30, 29, 18, and 14 months from the time of operation. They have had no subsequent dysphagia.

Eight patients left hospital after a palliative major operation with anastomosis and survived 3, 3, 3, 5, 7, 9, 12, and 18 months from the operation, and 5, 6, 7, 9, 60, 10, 13, and 23 months from their first symptom. Life is seldom greatly prolonged by such operations. Only one of these patients, a man with sarcoma of the stomach, had any recurrence of dysphagia; all the others were able to swallow well until they died.

Sweet (1947), reporting a series of 213 cases with 141 resections, radical and palliative not distinguished, found that most recurrences occurred within two years, as did those after palliative resections here.

The patients treated by intubation without radiotherapy survived from the first symptom 3, 5, 6, 6, 11, 15, and 16

months respectively, excluding three who died from instrumental perforation. No great prolongation of life can thus be expected from this manoeuvre. Most of these patients complained of no serious subsequent dysphagia, although, in many, to achieve this several intubations were performed.

The patients treated by radiotherapy lived respectively 4, 5, 8, 9, 13, 15, and 41 months from their first symptom, suggesting that in some cases prolongation of life is possible. Only one complained of dysphagia after completion of treatment (which sometimes included intubation). In addition one patient is alive and well, 28 months after her first symptom.

Without effective treatment the natural expectation of life from the first symptom appears to be about eight months, (Table II).

TABLE II.—Number of Patients Surviving

	Without Effective Treatment	With Palliative Treatment	With Radical Operation
Up to 6 months from first symptom ..	8	15	1
6-12 months from first symptom ..	1	7	1
Over 12 months from first symptom ..	1	11 (1 alive)	5 (all alive)

Summary

Fifty unselected cases of oesophageal malignant disease are reviewed, and the grave prognosis of this malady is emphasized. Dysphagia and loss of weight are the commonest symptoms; the history is short. Specific physical signs are unusual. Barium swallow and oesophagoscopy with biopsy are essential and accurate aids to diagnosis.

Only seven patients could be treated by radical resection; two died from the operation, the remainder being alive and well. Most of the other cases were treated palliatively, by anastomosis, intubation, or radiotherapy.

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On May 6, the anniversary of the birth of SIGMUND FREUD, a memorial plaque was unveiled in Vienna on the outer wall of 19, Berggasse, the house in which Freud lived from 1891 to 1938. The plaque was provided by the World Federation for Mental Health in association with the Austrian Society for Mental Hygiene. At the unveiling ceremony, attended by about 200 guests, who included the two deputy mayors of the City of Vienna, the Rector of the University, and the Dean of the Faculty of Medicine, addresses were given by Professor H. C. RÜMKE, of Utrecht, president of the World Federation for Mental Health, and Professor HANS HOFF, professor of psychiatry in Vienna and chairman of the Austrian Society for Mental Hygiene. The inscription on the plaque reads as follows:

"In diesem Haus lebte und wirkte Sigmund Freud, in den Jahren 1891-1938, der Schöpfer und Begründer der Psychoanalyse. Gestiftet von der 6. Jahresversammlung der World Federation for Mental Health im August, Wien, 1953."