Current Practice

Carcinoma of the Caecum and Colon

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Carcinoma of the large bowel is the second commonest killing cancer in our community, being exceeded only by carcinoma of the bronchus. In the Registrar General's returns for 1963 cancer of the colon accounted for 8,598 deaths, and of the rectum another 5,470. Growths in the rectum itself account for about one-third of the large bowel tumours, followed by growths of the sigmoid colon; but no part of the large intestine is privileged to be exempt from this disease.

Although it is somewhat arbitrary on pathological grounds to differentiate growths of the rectum from the rest of the large bowel, differences in clinical features, diagnosis, and management do give this division some practical value. The rest of these notes are therefore confined to the colon and caecum.

Clinical Features

Bowel tumours may present with features caused by the growth itself (disturbance of bowel function, pain, palpable mass), by the general manifestations produced by the cancer (anaemia, anorexia, weight loss), or by the presence of secondary deposits (ascites, hepatomegaly, icterus), or indeed by any combination of the three.

The caecum and ascending colon are patulous; tumours in this site are usually papilliferous, and the bowel contents fluid; thus as a general rule cancer of the right half of the colon rarely produces obstruction. Its presence becomes manifest because of malaise, loss of weight, and anaemia, so that patients are often treated by the unwary for some time with tonics, iron tablets, or even by more sophisticated vitamin B₁₂ injections. In many cases there is localized abdominal pain, and a palpable mass is obvious in over half the patients—sometimes mistaken for an appendix mass, again with consequent delay in definitive treatment.

The left side of the colon has a narrower lumen, its growths tend to be annular and constricting, and its contents are more solid. Large bowel obstruction, either acute or subacute, is therefore a common form of presentation of these tumours. Obvious rectal bleeding and mucus in the stool become increasingly more common the closer the tumour is to the distal end of the large bowel.

Though these generalizations apply to the great majority of cases naturally enough bizarre forms of presentation do occur. Thus there may be widespread intra-abdominal metastases from an occult tumour which first presents with ascites or jaundice. In other cases a central abdominal mass may appear and disappear again as a caecal tumour intussuscepts and then reduces repeatedly. In other instances a polypoid growth may prolapse from the anus, or there may be a vesico-colic fistula, or a stercoral perforation with usually lethal peritonitis.

The sexes are equally affected, and the disease falls most heavily on patients in the second half of life. However some 10% of cases occur in patients under the age of 40 and even in the 'teens. It is particularly among this younger age group

that cases are found with two important predisposing factors to large bowel cancer—chronic ulcerative colitis and familial polyposis coli.

Acute Obstruction

Some degree of obstruction is a common feature of colonic cancer, indeed many patients present with acute intestinal obstruction, either as a culminating episode following progressive bowel symptoms or as a devastating and sudden affair. Muir¹, for example, found that 20% of his patients with colonic carcinoma were admitted with intestinal obstruction. Goligher and Smiddy² analysed 1,644 cases of large bowel carcinoma admitted to the General Infirmary at Leeds. Of these 290 had acute intestinal obstruction (18%) and no less than 40% of the patients with a growth in the left side of the colon had this complication.

Diagnosis is usually not in doubt. The history is that of colicky central abdominal pain with distension and absolute constipation (which may or may not follow a period of increasing bowel difficulty, often with the passage of blood and slime). Vomiting is a relatively late symptom and may indeed be absent; at first it is bilious and only becomes foul smelling and faeculent in the late and neglected case. Abdominal examination reveals distension, which is often quite gross. The caecum may be obviously dilated, since it is thin walled, and in the presence of a competent ileo-caecal valve takes the brunt of the gaseous dilatation of the large bowel. Visible peristalsis may be seen, especially in the thin subject, and the bowel sounds will be increased. Careful palpation often reveals the presence of a mass. Rectal examination frequently demonstrates ballooning of the rectum, and it is not uncommon for a sigmoid growth which has prolapsed into the pelvic floor to be palpated through the rectal wall. It is worthy of comment that rectal cancer itself only rarely produces acute obstruction.

Perforation

Goligher and Smiddy² found that about 7% of their series of colonic and rectal tumours presented with perforation of the large bowel. This may result from perforation of a stercoral ulcer in the presence of obstruction either immediately above the growth or in the thin walled and distended caecum. This method of presentation is usually fatal. A tumour may perforate before obstruction has occurred, when the result may be either a generalized peritonitis or, more fortunately, a local mass which may closely mimic the paracolic abscess of diverticulitis on the left side or an appendix mass on the right.

Search for Secondaries

When a diagnosis of carcinoma of the colon has been made, the careful clinician will not be content until he has made a deliberate search for five physical signs of dissemination of the disease: ascites, hepatomegaly, an umbilical mass, supra-clavicular node involvement, and deposits in the pelvic floor.

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The presence of gross ascites usually indicates peritoneal deposits, though some free fluid may be detected in the obstructed and still operable case. It is not unusual to be able to feel a rubbery liver edge one or two fingers below the costal margin in a normal subject, but a hard irregular liver is highly suspicious of metastatic disease. A transcoelomic deposit at the umbilicus is relatively unusual, but it is wise to get into the habit of careful palpation at this congenital scar. Similarly the supraclavicular nodes must be palpated routinely. Finally rectal examination may not only reveal a prolapsed sigmoid growth but may detect the pelvis "frozen" from deposits in this peritoneal cul-de-sac.

Special Investigations

The routine investigation of the patient with suspected large bowel tumour comprises stool occult blood, sigmoidoscopy, and barium enema.

The Occult Blood Test.—It is a simple matter to test the stool by means of "Occultest" tablets. A positive result may be due to many factors, including a meat diet or the presence of other bleeding lesions within the bowel such as piles. A persistent positive test on two or three successive days when the patient is on a meat-free diet and when there is no other obvious cause for the bleeding is certainly an indication for most careful further investigation. Though the opposite situation when the occult blood test is persistently negative does not exclude a bowel tumour at least it reduces the likelihood of this diagnosis. Cameron and his colleagues³ found that in 24 cases of colonic cancer in which two specimens of stool were examined 13 were positive on both occasions, 8 in one sample only and in 3 both were negative.

Sigmoidoscopy is, of course, invaluable in bringing into view and allowing the biopsy of tumours of the recto-sigmoid region. In addition to this, however, the examination may also provide a valuable clue to a lesion higher in the bowel if mucus and blood are seen to be dribbling down from above. There is one important point which unfortunately is only whispered in the surgeon's mind, rather than being shouted from the pages of the textbooks, and that is that a tumour may be missed at sigmoidoscopic examination; it may be obscured by blood, mucus, or faeces, may lurk behind a mucosal fold, or, in particular, may lie just beyond the recto-sigmoid junction at 15 cm.; it may require just a little patience to get round the bend at this point and visualize a growth. Most clinicians will recall experiences where careful re-examination has demonstrated a tumour overlooked at initial sigmoidoscopy.

Barium Enema.—Beyond the reach of the sigmoidoscope the barium enema x-ray examination is essential to establish or confirm the diagnosis of a colonic new growth. It should be a firm rule, however, that this examination should not be ordered until the clinician has been able to exclude a tumour in the rectum or recto-sigmoid by sigmoidoscopy. The barium enema may reveal a filling defect or stricture in the bowel, and the radiologist may also be able to detect local rigidity of the colon wall infiltrated by tumour or proximal dilatation where subacute obstruction exists. Differentiation from spasm of the bowel wall may be made by intravenous injection of propantheline bromide. Small polypoid lesions as tiny as 2 mm. in diameter can be detected by a skilled radiologist using the air contrast technique.⁴ It is important for the practitioner to realize that the barium enema examination, even in skilled hands, carries with it the likelihood of both false positive and false negative findings. A prominent ileo-caecal valve, faecal residue, a stricture due to a benign lesion such as diverticulitis, or Crohn's disease may all be mistaken for a tumour; whereas a small growth, particularly in the sigmoid region, can easily be obscured by other loops of barium-filled bowel. If symptoms persist even in the face of a negative barium enema the investigation must be repeated, and in some cases a diagnostic laparotomy may be deemed advisable.

When the patient presents as an emergency either with obstruction or perforation a barium enema is very seldom justified, but plain radiographs of the abdomen may prove invaluable. In obstruction the dilated air-filled large bowel can be identified and traced round to the point of occlusion; in free perforation the presence of intraperitoneal gas can often be demonstrated.

Early Detection of Colonic Cancer

The practitioner anxious not to miss an early bowel cancer may well ask what are the possibilities of screening the population for colonic tumours? Some facts and figures are now available on this topic. For example, in 1948 Wangenstein established a cancer detection centre at the University of Minnesota for asymptomatic adults from 45 to 70 years of age. Up to 1965 over 12,000 patients had attended and nearly 60,000 examinations carried out. Pertinent to the large bowel, this check-up included a full physical examination, sigmoidoscopy, stool testing for blood (now discontinued), and a barium enema examination when indicated by the other findings. Initial examination detected 19 patients with carcinoma of the large bowel, 2 of which were advanced and suitable only for palliative surgery. In the re-check period an estimate was made that between 30 to 34 carcinomas should have presented, yet only 9 did in fact occur in a total of 46,000 examinations. Possibly this fall might be attributed to the routine removal of benign large bowel polyps and adenomas in no fewer than 9% of the males and 5% of the female patients attending the clinic.⁵ It is accepted by most authorities that such benign tumours precede frank bowel cancer and that their detection and removal may be an important prophylaxis against development of tumours of the lower large bowel. In another study Moertel and his colleagues⁶ found not a single case of cancer in over 1,000 routine sigmoidoscopic examinations in symptom-free patients at the Mayo Clinic, but they did detect benign polyps in 7.5% of this series. The idea of such clinics has not endeared itself in Britain, either to the general population or to the profession, and indeed their establishment would at present place too heavy a burden on our available medical resources. Yet the sigmoidoscope is a simple and safe instrument, and there is no doubt that its prompt use in every case with the least suspicion of bowel disturbance would yield a relatively rich harvest of early colonic lesions.

The barium enema examination is the only available method of screening the whole of the large bowel for cancer, and is indeed carried out as a part of the routine "physical" in many centres on the other side of the Atlantic. Such a routine examination, which would need to be repeated every year or two in the middle aged and elderly population, would hardly be acceptable to our public at present, nor could it be carried out by our already strained x-ray services. A barium enema should, however, be ordered if benign polyps are detected at sigmoidoscopy, if the occult blood test is positive in the stools of an otherwise asymptomatic patient, and, of course, in patients with otherwise unexplained recent disturbance of bowel habit.

Treatment

The treatment of uncomplicated colonic neoplasms is now quite formalized and comprises wide resection of the growth together with its adjacent lymphatic drainage and with restoration of continuity of the bowel. Painstaking preoperative mechanical cleansing of the intestine, antibiotics, and careful surgical technique have rendered this a safe and satisfactory procedure.

The principal problems in management now comprise the patients with obstruction and those with advanced or recurrent disease.

Obstruction.—Since obstruction in large bowel growths is often precipitated by the impaction of food debris or faecal

material above the neoplastic stricture, it is worth while first trying the effect of an enema, since this may dislodge the offending obturation, overcome the obstruction, and allow the surgeon time to prepare the patient for an elective resection. If this simple measure fails, urgent laparotomy now becomes essential, and should be preceded only by the passage of a nasogastric tube and the rapid correction of fluid and electrolyte loss by means of an intravenous drip.

Although some advocate immediate resection of the majority of cases of obstructing growths, most surgeons hesitate to carry out such a procedure in the presence of distended and oedematous bowel. For tumours of the left side of the large intestine a transverse colostomy is performed and resection delayed for a period of two or three weeks. Although the colostomy may be closed at this second intervention I believe that it is safer to preserve the colostomy and close this at a third operation. Tumours of the transverse colon can be decompressed by means of a caecostomy, which most prefer to the Paul-Mikulicz exteriorization procedure.

Obstructing tumours of the caecum and ascending colon require rather fine judgement in their surgical management. When the growth itself is mobile and the ileo-caecal valve is competent, it is perfectly reasonable to carry out an immediate resection of the tumour by means of a right hemi-colectomy. In such an instance the small intestine will not be distended and the anastomosis is therefore between non-obstructed ileum above and collapsed and empty colon below. If, however, the growth is adherent or the small bowel grossly distended and the patient's condition poor, it is safer practice either to carry out a caecostomy, if this is possible, or a double-barrelled ileostomy if the obstruction is situated in the caecum itself. Many surgeons advocate an ileo-transverse anastomosis in such circumstances to short-circuit the obstruction, but this procedure has all the disadvantages of carrying out an anastomosis in the presence of an obstruction, and still leaves it necessary to carry out a fairly extensive resective operation as a second procedure.

Advanced or Recurrent Disease

The presence of advanced local disease or of distant metastases at the time of laparotomy does not necessarily place the patient completely beyond surgical help. Occasionally a locally invasive tumour can be successfully resected even though this means excision of such adjacent involved structures as the abdominal wall, small bowel, stomach, or part of the duodenum. One such patient of ours, for example, is well and at full work more than a year after this type of procedure. Robert Cooke, of Bristol, has pointed out that in many cases a large apparently fixed tumour owes its adherence, in part at least, to peri-colic infection which may resolve after a preliminary colostomy, and which will allow a subsequent satisfactory excision of the growth to be carried out.

The presence of liver metastases, once considered by most surgeons to place operative treatment quite out of court, is no longer considered in this light. There are now many examples of successful resection of isolated deposits in the liver. Naturally the left lobe renders itself more readily to this type of surgery, but the technique of right hepatic lobectomy is now well established. Encouraging reviews on this subject are given by Friesen and his colleagues,⁷ Flanagan and Foster,⁸ and Woodington and Waugh.⁹ These reports include remarkable examples of survival for 10 or more years following this type of procedure.

In the majority of cases with liver secondaries both lobes are involved, rendering resection impracticable, but in these cases, unless the disease is very advanced and therefore life expectation grossly limited, palliative resection of the primary lesion is well worth while. Not only will local obstructive symptoms thus be removed, and the intractable pain of local invasion be avoided, but occasional surprisingly long and happy survivals may occur.

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We have recently studied 112 patients at Westminster Hospital in whom liver metastases were found at laparotomy for cancer of the large bowel. Only six were deemed unsuitable for any further surgery and all of these were dead within five months. Nineteen patients had a colostomy or short circuit performed and two lived longer than one year, dying at 13 and 21 months respectively. Eighty-six had palliative resections and one a diathermy removal of the primary tumour; 32 of these survived for more than one year and eight of these are still alive and well, one at three and a half years and one at four years after resection.

Even when the patient returns with recurrent disease it is worth bearing in mind that in some instances resection of the recurrence is possible. We have already mentioned the feasibility of hepatic resection, but in addition recurrence in the suture line, in the abdominal wall or in the lung¹⁰ may be successfully excised. It should be noted that the development of a second primary tumour in the large bowel is far from being uncommon and such a situation may be eminently suitable for further surgery.

When recurrent disease is fixed or widespread it may still be possible to give useful palliation by means of super-voltage radiotherapy, chemotherapy, or a combination of the two. At present the most popular drug is 5-fluorouracil.¹¹ Ascites may be controlled by tapping and replacement with a cytotoxic drug—for example, Thiotepa.

Prognosis

In assessing the prognosis of an individual case of carcinoma of the colon we need to know three important facts; the histology of the growth, the extent of its spread, and the general condition of the patient. The aggressiveness of the tumour upon microscopic examination and whether the tumour is confined to the mucosa, has extended through the muscle wall of the bowel, has invaded the regional nodes, or has extended widely beyond the confines of the bowel and its mesocolon are closely co-related with survival figures. Naturally the general condition of the patient will determine whether or not radical treatment may be possible and also whether the patient is likely to succumb to some intercurrent disease.

An example of the sort of results that can be achieved in expert hands in the surgical treatment of carcinoma of the colon are presented by Hughes.¹² In a review of his personal series he showed that about nine out of 10 colonic growths were resectable with an operative mortality in the region of 5%. The overall five-year survival rate was 44% following resection, but when curative rather than palliative excisions were considered this rose to the region of 80%.

From the practical point of view, the strikingly favourable results which can be expected after the adequate excision of an operable tumour of the large bowel compared with the gloomy state of affairs in the hopeless case must render every medical practitioner aggressively alert to the importance of early diagnosis in this disease.

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