MEDICAL PRACTICE

Contemporary Themes

Colonoscopy for unexplained rectal bleeding

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Summary and conclusions

Two hundred and thirty-nine patients underwent colonoscopy for unexplained rectal bleeding. Local anorectal conditions were excluded by digital and proctosigmoidoscopic examinations and results of barium studies were negative for all patients. A cause for bleeding was found in 95 patients. Thirty-nine had adenomatous polyps, 24 had unrecognised inflammatory bowel disease, and most importantly 23 (10% of series) had carcinomas. Forty patients had diverticular disease, but nine of them were found to have an adenomatous polyp and four a carcinoma.

Colonoscopy can contribute positively to the investigation and treatment of unexplained rectal bleeding and may prevent unnecessary laparotomy.

Introduction

Rectal bleeding is common, though the exact incidence is unknown. Usually it may be ascribed to local conditions such as haemorrhoids or fissures, but sometimes a cause is not apparent after sigmoidoscopy and barium-enema examination have been performed. Fibreoptic colonoscopy is now an established procedure that has proved valuable in investigating radiological abnormalities[1 2] and has revolutionised the management of colonic polyps.[3]

We report our experience of colonoscopy in investigating otherwise unexplained rectal bleeding after sigmoidoscopy and barium-enema examination have failed to detect any abnormality.

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Patients and methods

Out of the first 1800 colonoscopies that we carried out, 239 were performed because of unexplained rectal bleeding. Forty-seven patients (20%) were referred by our colleagues at St Mark's Hospital and the rest were from other hospitals. Local causes for bleeding were excluded by rectal examination, proctoscopy, and sigmoidoscopy, and all patients had had a barium-enema examination. All the patients from St Mark's and some of those referred from elsewhere underwent air contrast studies; others underwent single-contrast studies only. Most were managed as outpatients, though some of those who had polyps removed were admitted overnight. Patients were prepared and sedated in the manner we have described elsewhere.[4] Good bowel preparation, always essential for colonoscopy, is particularly important in such patients because small, flat lesions, such as telangiectases, may cause bleeding.

Instruments—The full range of commercially available colonoscopes (ACMI, Fujinon Machida, and Olympus) were used in this series.

Results

Out of the 239 patients included in the series, 227 (95%) underwent total colonoscopy, but we failed to complete the procedure in 11 patients for technical reasons and in one because of poor bowel preparation. A cause for bleeding was found in 95 patients (40%). We classified colonoscopic findings according to the final diagnosis.

CARCINOMAS

Previously undiagnosed carcinomas were found in 23 patients (10%). Carcinoma of the colon is the most important reason for investigating patients with rectal bleeding, since a half to two-thirds of patients will present with this symptom.[5] In the United Kingdom carcinoma of the colon is the second most common cause of death from malignant disease (after carcinoma of the bronchus), and is responsible for over 16 000 deaths a year in England and Wales; in America it is the commonest malignancy. Since postoperative survival rate correlates closely with the degree of spread beyond the submucosa[6] these tumours should be removed as soon as possible.

It is disturbing that so many cancers were missed radiologically, but our results agree with the findings of other colonoscopists.[7] Many of the lesions were visible in retrospect on the *x*-ray films, but not reported, usually because faecal residue was also present in the colon. The two danger areas for radiological misdiagnosis are the sigmoid colon and the caecum. Cancers were missed in the sigmoid colon if it was very tortuous, masked by overlying loops of barium-filled ileum, or if diverticular disease was also present.

POLYPS

Adenomatous polyps that were thought to be responsible for the bleeding were found in 39 patients (16%), and all were removed with the diathermy snare. The endoscopic appearance of a polyp gives no indication of its nature, and only excision and histological examination allow a proper diagnosis to be made. Polyps should be removed because of their potential for malignant change,[8] and two polyps (5%) in this series already showed invasive carcinoma. Polyps and cancers differed in their distribution, for whereas malignant tumours were found throughout the colon, most polyps were in the sigmoid colon.

We have shown before that 98% of all polyps over 1 cm in diameter are detectable by double-contrast barium-enema examinations, whereas only 77% are detectable by single-contrast studies.[3] This emphasises the advantage of adequate radiology. We were, however, prepared to accept patients with rectal bleeding for colonoscopy when *x*-ray films were unsatisfactory, since even negative findings on double-contrast enema examination do not exclude abnormality, and a positive result may often indicate colonoscopy in any case.

INFLAMMATORY BOWEL DISEASE

Twenty-four patients were found to have previously unsuspected inflammatory bowel disease. The diagnosis was made from histological findings as well as endoscopic appearances. Fourteen patients had ulcerative colitis; six Crohn's disease; and two had ischaemic, one amoebic, and one radiation colitis. In no case was the rectum affected.

Even the double-contrast enema examination fails to detect the full extent of inflammatory bowel disease in some patients,[9] and six of the 24 patients were found to have ulcerative colitis or Crohn's disease affecting the whole colon, despite a normal, good-quality air-contrast picture. In all cases colitis was mild, with superficial ulceration not detectable radiologically. Even mild colitis should be diagnosed accurately, since appropriate treatment will stop the bleeding and reduce the frequency of attacks. Radiation colitis is a useful reminder of the limitations of *x*-ray techniques, for although a history of radiation may suggest the diagnosis, the telangiectatic abnormality of the mucosa is usually completely flat and therefore undetectable radiologically.

VASCULAR MALFORMATIONS

Vascular malformation was the final diagnosis in four cases. Haemangiomas of the colon may present various appearances. In one case vessels were characteristically enlarged and tortuous, in another von Willebrand's disease was also present, with a single punctate lesion 5 mm in diameter, which was electrocoagulated. This patient had previously required transfusion with 280 units of blood during 18 months of chronic unexplained blood loss. Telangiectases were seen in the right colon of two elderly patients, and these corresponded to the condition of "angiodysplasia," which is now being increasingly often shown by angiography and colonoscopy to be a cause of gastrointestinal blood loss and is thought to be degenerative.[10] Angiographic appearances in our two patients were normal.

Vascular abnormalities should be identified and localised, since endoscopic coagulation of small lesions may occur with the hot biopsy technique,[11] and in one case we used local sclerosant injections. Photocoagulation using a laser has been successfully carried out by Frühmorgen,[12] and this method holds promise for the future. Others with larger lesions may require surgery. Equally, "angiomas" should not be overdiagnosed, since prominent blood vessels may be seen in the normal colon. Two such false-positive diagnoses of haemangioma were made, and although the patients made an uncomplicated recovery, they underwent needless surgery. Enlarged haemangiomatous blood vessels are invariably tortuous, whereas normal vessels, however large, never are.

DIVERTICULAR DISEASE

In 40 patients with diverticular disease four carcinomas and nine adenomatous polyps were found, and it is therefore unwise to assume that any diverticular disease is responsible for persistent rectal bleeding. Barium studies in these patients are notoriously difficult to perform and interpret.

In a further five patients diverticular disease was diagnosed as the cause of bleeding, and hyperaemic friable patches were present on the ridges of the prominent haustral folds in the affected segment of the colon. The patients were bleeding visibly and no other lesions were seen in the rest of the colon. These appearances have been noted by other colonoscopists, and the endoscopic and histological appearances are not characteristic of either Crohn's disease or ulcerative colitis; their importance is uncertain, except as a cause of blood loss. We have seen no case of isolated bleeding diverticula. This is probably relatively rare, and causes prolific haemorrhage rather than minor repeated blood loss.

Colonoscopy may certainly be difficult in diverticular disease,[13] but with experience and the use of modern instruments our failure rate in this condition is only 8%.[2] Failure to pass the instrument is usually due to fixation and angulation of the sigmoid colon by pericolic adhesions.

ANAEMIA

In a subgroup of 28 patients iron-deficiency anaemia was the presenting feature. Nine lesions were found, including two carcinomas in the caecum and seven polyps. Colonoscopy should always be considered when investigating unexplained gastrointestinal blood loss. Before colonoscopy barium-enema examination should be performed and the upper intestinal tract should be investigated both radiologically and endoscopically, since these investigations are easier, less unpleasant, and as likely to detect a cause of bleeding.

ACUTE SEVERE HAEMORRHAGE

No diagnosis was established in two patients in this series who were examined during a major bleed. One was subsequently shown to have a bleeding Meckel's diverticulum, the other a jejunal haemangioma. One reason for this small number is that most patients are referred to us from other hospitals. Most endoscopists consider that colonoscopy is an unsuitable investigation in patients with massive colonic haemorrhage. Selective angiography is usually accepted as a primary investigation. Some enthusiastic colonoscopists have, however, reported good results,[14 15] and with the possibility of snare polypectomy and electro- or laser coagulation, colonoscopy might be tried if angiography is not possible.

PEROPERATIVE COLONOSCOPY

Colonoscopy should always precede and may preclude diagnostic laparotomy for suspected colonic disease, but we have used it successfully during laparotomy for finding a site of bleeding from the small intestine in two cases. One patient had a hamartoma, the other a haemangioma. The long, single-channel instrument, suitably sterilised, may be easily manipulated from without by the surgeon once it has passed through the mouth to the ligament of Trietz or through an enterostomy, but the inflated air must be kept to a minimum and aspirated before closure of the wound or before the distended intestine becomes difficult to handle.

NORMAL FINDINGS

Management of patients in whom satisfactory and careful colonoscopy has failed to show a lesion remains a problem. It is usually possible to be fairly confident that an important lesion has not been missed on colonoscopy, but if the examination is less than satisfactory a repeat examination may be considered. We know of four patients in whom colonoscopy failed to show a colonic lesion responsible for the bleeding—one had a carcinoma of the appendix, one a carcinoma and one a villous adenoma (both of which were hidden in a caecal recess) and one an undetected polyp proximal to an acute splenic flexure. This is a further argument for preceding endoscopy with good radiology whenever possible, though only the last of the four lesions mentioned above was visible subsequently on repeat barium-enema examination.

Discussion

Although this series is reported from a specialised hospital and is therefore selected, the results are similar to those of others.[7 16] All our patients underwent careful anorectal examinations to exclude local conditions and proctoscopy and sigmoidoscopy with rigid instruments, which are essential investigations before colonoscopy. A limited examination with an expensive fibreoptic sigmoidoscope and an examination with the longer colonoscope are both skilled procedures, and in this series 13 unsuspected neoplasms (20%) were proximal to the splenic flexure. In 133 of our patients (56%) colonoscopy showed that no abnormality was present, and this in itself has clinical value. We therefore believe that total colonoscopy is essential in high-risk patients such as ours.

Should colonoscopy replace barium-enema examination as the investigation of choice in such patients? We think not; double-contrast radiology remains a most valuable procedure. It may show the cause for bleeding, it shows the overall configuration of the colon, which alerts the endoscopist to possible problem areas, and in some cases, in which colonoscopy is technically difficult, it allows the endoscopist to limit his examination. While colonoscopy should not be a substitute for inadequate radiological investigation, it seems more appropriate than repeating a barium-enema examination in patients with rectal bleeding; it should certainly replace diagnostic laparotomy, for it is safer, quicker, and more accurate.

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Epidemiology for the Uninitiated

Experimental studies

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Epidemiological studies of causation, such as we have outlined in preceding articles, rarely incriminate a factor to the extent that immediate action to remove or control it in the environment is justified. The evidence linking lung cancer and cigarette smoking is exceptional in this respect. Among additional kinds of evidence which may be brought to bear are the results of some form of experiment in which a group of people is removed from exposure to the factor and their subsequent disease experience compared with that among people in whom exposure continues. Historically such experiments have provided compelling proof of causation, confirming, for example, the dietary origins of pellagra and the link between retrolental fibroplasia and oxygen treatment. Nevertheless, they are not necessarily appropriate models for studies which are required today. For the diseases of industrialisation, such as ischaemic heart disease, there is no evidence of a single major cause whose manipulation would drastically reduce incidence. Rather, there appears to be an array of interacting causes, and experimental verification of any one of them would mean studying thousands of people.

Experimental evidence of a kind may be obtained by critical assessment of unplanned experiments. The table shows the rise in ischaemic heart disease mortality after softening of the water supply to Scunthorpe. The change in mortality is compared to that in the neighbouring town of Grimsby, where the supply was unchanged and where mortality fell slightly. The limitation of this kind of evidence is that comparison with Grimsby may be biased by many influences that affect deaths from ischaemic heart disease in the two towns and for which adequate allowance cannot be made during analysis.

Hopes for preventing diseases of industrialisation rest more

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