

## DIVERTICULOSIS AND ITS COMPLICATIONS

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This paper is intended to be a brief clinical survey of the cases admitted to the professorial wards of the surgical department of Grootte Schuur Hospital during the period 1950-55. The case summary cards were used as a basis for this analysis. Unfortunately, as there were not many pathological reports and as the X-ray records were unobtainable, no correlation of the evidence could be carried out.

The number of cases admitted during this period was 44, of whom 38 were Europeans and 6 Coloureds; 23 were

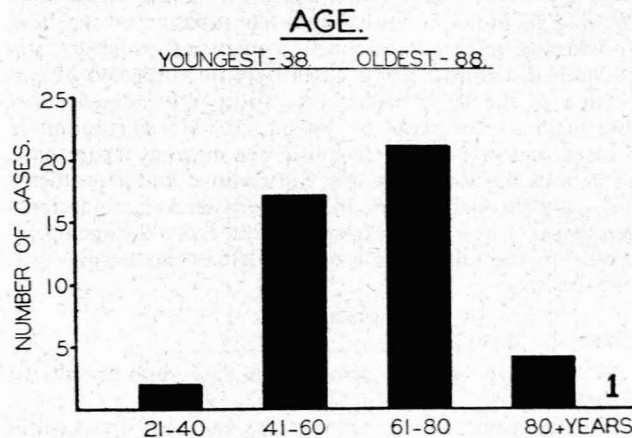


Fig. 1. Analysis of 44 cases of diverticulosis showing age distribution.

males and 21 females. The age incidence is shown by the graph in Fig. 1. For purposes of analysis these cases were divided into 2 main groups as taken from the final diagnosis on the case card: Group A, cases of diverticulosis; and group B, cases of diverticulitis.

### GROUP A: DIVERTICULOSIS

An analysis was made of the symptoms with which these cases (14) presented:

1. Cases with vague abdominal symptoms (4). The symptoms were referable to the gastro intestinal tract, e.g., indigestion, loss of weight, and vague abdominal pains. These cases were admitted for investigation because carcinoma was suspected clinically. After full investigation, and after a laparotomy in 1 case, a final diagnosis of diverticulosis was made. In 2 cases psychoneurosis was suggested for the real cause of the symptoms.

2. Cases with symptoms referable to the large bowel (5). The symptoms were those of alteration of bowel habit, e.g., constipation and diarrhoea. Carcinoma of the large bowel was suspected clinically in these cases. After full investigation a final diagnosis of diverticulosis was made. The treatment was palliative.

3. Cases with rectal bleeding as a prominent symptom (3).

#### Case 1

Investigations were negative except for evidence of diverticu-

losis. In this case 'small' haemorrhoids were considered the likely cause.

#### Case 2

Investigations were negative except for evidence of diverticulosis. A laparotomy was performed which was also negative. A *faute de mieux* diagnosis was made of diverticulosis.

#### Case 3

In this case there was a history of melaena with a Hb. 8.8 g.% and a transfusion of 3 pints of packed red cells was necessary. Investigations revealed an oesophageal hiatus hernia and diverticulosis. No cause for the bleeding was established and the patient was discharged with the intention that laparotomy should be performed if the melaena recurred.

This is an unsatisfactory group, because in no case was it definitely established that diverticulosis was not the underlying cause of the rectal bleeding. The case notes indicate a reluctance on the part of the examiners to accept diverticulosis as the cause of the bleeding and tend to suggest some other undetermined pathology, e.g. in the one case 'small' haemorrhoids was suggested as the possible cause.

4. Cases with diverticulosis coincidental with other pathology (2).

#### Case 1

A known case of carcinoma of the prostate with hydronephrosis of the right kidney was investigated for symptoms of intestinal obstruction. Barium enema examination revealed diverticulosis and a laparotomy was negative. A final diagnosis of paralytic ileus was made.

#### Case 2

A case of melaena. On investigation a filling defect of the caecum was found for which a right hemicolectomy was performed. Examination of the specimen revealed an idiopathic inflammatory ulceration of the caecal mucosa with fibrosis. At some distance from this ulceration diverticula were present which showed no inflammatory changes on histological examination.

### GROUP B: DIVERTICULITIS

An analysis was made of the clinico-pathological pattern with which these cases (30) presented:

#### Acute Inflammation

Acute inflammation with its complications occurred in 18 cases. This group can be further subdivided into:

1. Cases with acute peridiverticular inflammation without complications, giving rise to symptoms suggestive of 'left-sided appendicitis' (9). These cases had a short history and on examination all but 2 were febrile. In all of them tenderness was elicited in the left iliac fossa and in 6 cases a mass could be felt either in the left iliac fossa or *per rectum*. In 2 cases the clinical diagnosis of diverticulitis was made but never confirmed. In the remaining 7 cases this diagnosis was established either by a barium enema examination, or at laparotomy. Two operations were performed on the basis of a wrong diagnosis: (i) A laparotomy for suspected appendicitis, and (ii) a laparotomy where a transverse colostomy was performed for a supposed carcinoma of the sigmoid. Otherwise the treatment was conservative with antibiotics. All cases made good recoveries, and some months later a 3-stage sigmoidectomy was performed in 1 case.

2. Cases of acute peridiverticular inflammation with complications referable to a diverticulum:

(a) Acute perforation with subsequent peritonitis (5 cases)

A perforation of a diverticulum of the sigmoid was demonstrated in all but 1 case, either at operation or on post-mortem examination. In these cases the onset of the condition appears to be gradual and it takes the form of a spreading peritonitis from the left iliac fossa. There was a tendency to report late for treatment in our series. The shortest delay was 36 hours and the longest 5 days. This group is remarkable because the patients were relatively young; their ages varied from 41 to 61, and 4 out of the 5 cases were males. There were 2 deaths amongst them, which were the only deaths in the whole series of 44 cases. The treatment in all but 1 case was a right transverse colostomy with a drain to the region of the perforation. In 1 case, which was exceptional on account of his bad general condition, treatment consisted only in the insertion of a drain. The 2 deaths reflect a mortality of 40%. Of the 3 survivors, after re-examination by means of a check barium enema procedure 6 months later, 2 had a sigmoidectomy performed and 1 a simple closure of the colostomy.

(b) Perforation with subsequent pelvic abscess (2 cases). Both abscesses were drained, with subsequent faecal fistula formation. These fistulae were treated successfully by defunctioning transverse colostomies. In 1 case the colostomy was closed 4 weeks later; in the other, 6 months later. No bowel resection was required.

(c) Perforation with subsequent colo-vesical fistulae (2 cases). Both cases had pneumoturia and were treated successfully by a 3-stage sigmoidectomy.

#### Chronic Inflammation

Chronic inflammation with its complications occurred in 12 cases. This group can be subdivided into:

1. Cases with chronic peridiverticular inflammation with the emphasis on the mucosa, giving rise to haemorrhage, either melaena or bright blood *per rectum* (3).

#### Case 1

A known case of diverticulitis was admitted for investigation for this symptom but, while under treatment with antibiotics, he developed a 'black tongue'. The investigations were then postponed, and the case is thus incomplete.

#### Case 2

The history in this case was one of upper abdominal pain associated with occasional melaena as well as with bright blood *per rectum*. The haemoglobin was 6.3 g.% and a transfusion of 4 pints of packed red cells was given. Full radiological investigation revealed diverticulitis of the sigmoid, which was accepted as the cause. Treatment was palliative.

#### Case 3

Was one of repeated attacks of melaena, for which transfusions had been given and a laparotomy had been performed with removal of a duodenal diverticulum. Despite this, the melaena continued and eventually a left hemicolectomy was performed for diverticulitis of the descending colon. After this operation the attacks of melaena ceased. Examination of the specimen showed that the source of the bleeding was in the mucous membrane of a chronically inflamed and thickened segment of colon associated with diverticulitis.

2. Cases with chronic peridiverticular inflammation causing fibrosis and stenosis of the bowel wall, thus giving rise to symptoms of large-bowel obstruction.

(a) Cases which presented with acute large-bowel obstruction. (3).

#### Case 1

The symptoms, which were those of incomplete large-bowel

obstruction, were relieved by enemas. Subsequently a 1-stage sigmoidectomy was performed.

#### Case 2

The symptoms were those of incomplete large-bowel obstruction plus a history of melaena. A 1-stage sigmoidectomy was performed. Examination of the specimen revealed an area of diverticulitis associated with 3 benign ulcerated polypi; the latter no doubt accounted for the melaena.

#### Case 3

The symptoms were those of a complete large-bowel obstruction, for which an emergency colostomy had to be performed. Subsequently a barium enema investigation revealed a stenosis of the junction of the descending colon with the sigmoid colon due to diverticulitis. This patient was left with a permanent colostomy because he was a poor surgical risk.

(b) Cases which presented with chronic obstructive symptoms and alteration of bowel habit (6). The symptoms are those of alteration of bowel habit—constipation or diarrhoea and passage of blood and mucus, sometimes associated with abdominal cramps. These cases were all suspected of carcinoma of the large bowel. A pre-operative diagnosis of diverticulitis was made by barium enema examination in 5 cases, and in 1 case a diagnosis was made at laparotomy. In 3 cases the treatment was conservative and the other 3 patients were operated on. In 2 of the latter a sigmoidectomy was performed (1 as a 1-stage operation and 1 as a 3-stage operation). In the other case a 1-stage left hemicolectomy was performed.

#### DISCUSSION

##### Group A: Diverticulosis

A review of the cases described in this group reveals the following:

(i) The symptoms are the same as those of diverticulitis except for the fact that they are milder in nature.

(ii) The symptoms in general are the same as those associated with carcinoma of the gastro intestinal tract, especially of the large bowel.

(iii) In discriminating between diverticulosis and diverticulitis, it appears from our findings in this series, that the X-ray appearances have been accepted as adequate criteria for diagnosis. Cases with obvious radiological appearances on barium enema examination, such as 'filling defects', were classified as diverticulitis.

If it is kept in mind that these cases were admitted into the surgical wards for investigation, it will be realized that the symptoms with which they presented must have been sufficiently impressive. These cases, then, were in reality early cases of diverticulitis without complications. After all, 'filling defects' as seen on barium enema examination, suggest a long-standing inflammatory condition.

##### Group B: Diverticulitis

The following conclusions can be drawn from our findings in this group:

(i) This group represents established diverticulitis with complications. All the usual complications encountered in diverticulitis, which are wide and diverse, and which include generalized peritonitis, are reflected in this series.

(ii) The treatment of diverticulitis and its complications was carried out on conventional and conservative lines whenever possible. Surgical intervention depended on the particular complications in the individual case. Defunctioning colostomy, followed 6 months later by a possible resection, has been the accepted surgical principle in dealing with cases

of acute or sub-acute inflammation. For the chronic case with obstructive symptoms, or where carcinoma of the colon could not be excluded, elective surgery consisting of a sigmoidectomy or hemicolectomy in 1 or 3 stages has been performed.

(iii) In this series the surgery of diverticulitis has been the surgery of the pelvic colon, and the resections—11 in this series—have been either sigmoidectomy or left hemicolectomy.

(iv) On the basis of our experience in this series it can be stated that resection is a safe procedure provided the correct operation is selected for the particular patient. There were no deaths in the 11 resections performed, in spite of the fact that many of these were complicated cases.

#### *Comment*

From the foregoing it will be seen that the surgery performed in this series has been conventional; it was directed towards meeting the particular complication presented. Nowhere was surgery performed for the uncomplicated case, i.e. early diverticulitis without complications.

In this respect one would like to raise a plea for preventive surgery for a particular select type of case. One has in mind a case in the 4th, 5th or 6th decades (especially males) in which barium enema examination reveals extensive diverticulosis of the descending and pelvic colon, with symptoms, of course,

but with no 'filling defects.' To draw a parallel: If one could imagine a sigmoid festooned with diseased appendices, would there be any doubt regarding the type of surgical treatment indicated in these cases? After all, compared with a diverticulum, the appendix *per se* is a normal structure and it should be less likely to develop the complications which are common to both these conditions. In such a hypothetical case, would surgeons prescribe liquid paraffin with the equanimity with which they prescribe it for uncomplicated diverticulitis? All the evidence available is that once inflammation has set in, diverticulitis is a progressive condition.

#### SUMMARY

Forty-four cases of diverticulosis and their complications and treatment are reviewed. It is suggested that the diagnosis of diverticulitis should be made on the symptoms, and the 'filling defect' appearances on X-ray examination should be regarded as evidence of chronic and established disease. A plea is made that there is a place for preventive surgery such as left hemicolectomy in a small and select group of cases of diverticulitis without complications.

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