Early diagnosis of ischaemic colitis

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During the last few years, it has become widely recognized that a clinical state closely resembling ulcerative colitis or Crohn's disease may be produced by insufficiency of the vascular supply to the large bowel (Boley, Schwartz, Lash, and Sternhill 1963; Schwartz Boley, Lash, and Sternhill, 1963; McGovern and Goulston, 1965; Irwin, 1965; Marston, Pheils, Thomas, and Morison, 1966; Farman, 1966; Sturdy, 1968). Moreover the clinical distinction between these varieties of non-specific colitis may be of considerable importance, for the natural history of ischaemic colitis differs considerably from that encountered in dealing with ulcerative colitis or Crohn's disease.

However, apart from the studies already mentioned, reports of ischaemic colitis in the literature have been few and far between, and this applies especially to cases of ischaemic colitis diagnosed in the early stages of the disease. The present paper reports such a case, in which a diagnosis of ischaemic colitis was made within 24 hours of the onset of symptoms; describes the clinical and radiological progress of the patient concerned; and contrasts this clinical and radiological picture with that of other forms of non-specific colitis.

CASE HISTORY

D. F., a 47-year-old diabetic, was admitted under the care of the Professorial Surgical Unit, The General Infirmary at Leeds, on 26 November 1967. Five hours before his admission he was well in every respect. He then experienced moderately severe suprapubic pain, which was relieved by passing a thick, loose motion consisting of faeces mixed with bright red blood. Some two hours later a further loose bowel action consisted mainly of bright red blood.

On examination he was sweating, flushed, and pyrexial, with a temperature of 101°F, and with a moderate tachycardia of between 100 and 110 per minute. Apart from some tenderness in the left flank and suprapubic area, there were no abnormal physical signs in the abdomen. Sigmoidoscopy revealed fresh blood in the upper rectum, but with no mucosal abnormality to account for its origin. A plain x-ray plate of the abdomen disclosed no significant abnormality.

During the next 24 hours there was little change in his general condition; he remained pyrexial, flushed, and

sweating but without any noticeable drop in blood pressure or other evidence of deterioration. Within 24 hours of his admission, an urgent barium enema was performed (Figs. 1 and 2). This confirmed that the colon distal to the splenic flexure was normal but showed changes highly suggestive of ischaemic colitis in the transverse colon and at the region of the splenic flexure. Particularly well shown on this investigation was the segmental nature of the lesions concerned, the 'thumb printing' and the 'saw tooth' mucosal irregularity described by Marston *et al* (1966).

In view of these findings an initial regime of conservative management was instituted. The patient's oral intake was restricted to fluids, electrolytes were replaced intravenously, and large doses of penicillin were administered. On this regime the symptoms and physical signs rapidly settled, so that after four days the patient was able to begin having a normal diet, the pyrexia and tachycardia had disappeared, and normal bowel actions returned.

Selective mesenteric arteriography carried out some 10 days later failed to reveal any specific evidence of local arterial blockage. However, a further barium enema examination some 13 days after admission to hospital revealed a considerably changed state of affairs. The 'thumb printing' and mucosal irregularity seen within 48 hours of the onset of disease had rapidly resolved, to be replaced by a tubular appearance of the bowel (Figs. 3 and 4), again similar to that described by Marston and his colleagues.

The patient was allowed home after a total period in hospital of 15 days. At the time of discharge from hospital there were no symptoms or physical signs whatsoever, a state which has persisted to the present time. Repeat barium enema studies performed some four weeks after the patient's discharge from hospital showed considerable improvement, the most notable features being the return of colonic distensibility and contractility (Figs. 5 and 6).

DISCUSSION

The pathological features of ischaemic colitis, together with the clinical and radiological findings in the later stages of this disease, have been well documented by Boreham (1957), Boley *et al* (1963), Schwartz *et al* (1963), McGovern and Goulston (1965), Roberts (1965), and Marston and his colleagues (1966). However, in most of the cases described by these authors the diagnosis of ischaemic

FIG. 1.

FIG. 2.

FIG. 3.

FIG. 4.

FIG. 1. Barium enema taken within 24 hours of the onset of disease, showing segmental disease chiefly involving the transverse colon, with 'thumb printing'.

FIG. 2. Close-up view of splenic flexure area from the same barium enema showing 'thumb printing' and 'saw-tooth' irregularity.

FIG. 3. Barium enema performed two weeks after the onset of disease, showing conversion of the transverse colon to a long tubular stricture.

FIG. 4. Close-up view of splenic flexure two weeks after the onset of disease. Note disappearance of thumb printing and development of a long stricture.

FIG. 5.

FIG. 6.

FIGS. 5 and 6. Barium enema performed four weeks after patient's discharge from hospital. Comparison of transverse colon on filled film (Fig. 5) and post-evacuation film (Fig. 6) shows return of distensibility and colonic tone.

colitis was only made on post-mortem or operative findings, although Marston *et al* (1966) described three cases where the diagnosis of ischaemic colitis was made on clinical and radiological features alone.

The present case is of interest since the diagnosis of ischaemic colitis was made within 24 hours of the onset of symptoms, and the patient thereafter was managed without recourse to laparotomy or to resection. Such early diagnosis and subsequent conservative management enables the initial symptoms and course of the disease to be carefully studied.

Of particular diagnostic value in the present case was the barium enema which was performed shortly after admission to hospital thus enabling the segmental nature of the lesion, together with its characteristic features, to be clearly shown at an early stage of the patient's illness. The selective arteriographic studies were of less diagnostic value, since no localized block was shown. This is not altogether surprising, since as Engelhardt and Jacobson (1956), Cooling and Protheroe (1958), Marston (1962), and Marston *et al* (1966) have emphasized, other factors—such as local vascular reflexes or focal Schwartzman reactions—may operate in such patients.

We would therefore suggest that any patient in this age group, who suddenly develops abdominal pain and bright rectal bleeding, should, in the absence of a firm history of dyspepsia or an abnormal sigmoidoscopy, be submitted to barium enema within 48 hours of admission to hospital.

The serial barium enema studies were also of some interest, for they call in question the adequacy of the 'pragmatic' classification of ischaemic colitis drawn up by Marston and his colleagues (1966).

These workers suggested that patients with ischaemic colitis could be classified into three groups, namely, (1) those who developed gangrene of the colon; (2) those who developed an ischaemic stricture; and finally (3) those in whom the changes of 'thumb printing', acute abdominal pain, and bleeding were transient. It will be seen from Figs. 1 to 6 that the case reported here could well have been classified as belonging to group 3 on the basis of the initial radiographs and subsequent clinical improvement. But the barium enema performed some two weeks later indicated the formation of a colonic stricture, thus placing him quite firmly in group 2. On the basis of these observations, we would suggest that cases can only be allocated satisfactorily to the groups proposed by Marston *et al* (1966) some weeks or even months after the onset of the disease, and hence this classification is of little value in the early stages of ischaemic colitis. In the early stages it might be more realistic to divide patients into two groups: those who respond readily to supportive and antibiotic therapy and those who do not. In the former the immediate prognosis is excellent but in the latter the need for resection or exteriorization of the bowel is self evident.

One final point needs emphasis. Marston and his colleagues have repeatedly emphasized that some cases of 'segmental' ulcerative colitis may have an ischaemic origin, although Sturdy (1968), also reviewing a series of cases from St Mark's Hospital, London, attempts to separate the two conditions by referring to 'non-specific (ischaemic) segmental colitis'.

We ourselves have observed numerous cases of ulcerative colitis which appear to have been segmental

in nature (see Watts *et al*, 1966 a and b) but it must be pointed out that their clinical picture showed numerous points of difference when compared with that of the present patient and that of the patients described by Marston *et al* (1966) and Sturdy (1968). Apart from obvious age differences (the mean age of our patients with segmental ulcerative colitis was 24 years, whereas ischaemic colitis seems most likely to occur in patients aged over 50), the most striking clinical difference was in the mode of onset of symptoms.

In our own patients with segmental ulcerative colitis, the symptoms which brought them to hospital gradually came to their notice over a period of weeks, and in some cases months. There simply could not be a greater contrast with the typical onset of ischaemic colitis, as for example, in the present patient, where symptoms reached their maximum intensity within 15 minutes of the onset of disease! Moreover, our own findings in this respect are confirmed by a number of other reports, notably those from Newcastle and from South Africa (Irwin, 1965; Farman, 1966) in which cases with a similar dramatic onset of disease are documented.

Whilst we do not doubt, therefore, that ischaemic colitis is a clinical and pathological entity, it seems equally clear that there are occasional cases of true ulcerative colitis in which the disease may have a segmental distribution and in which ischaemic factors of the type described by Marston *et al* (1966) play no aetiological part whatsoever.

SUMMARY

A case of ischaemic colitis is reported in which the diagnosis was made within 24 hours of the onset of symptoms. No surgical treatment was necessary, since intensive conservative management produced complete remission of symptoms within four days.

The clinical and radiological findings are presented and discussed. The mode of presentation of patients with ischaemic colitis is contrasted with that of patients suffering from segmental ulcerative colitis. It is suggested that both of these diseases are clinical and pathological entities in their own right.

The importance of early diagnosis of ischaemic colitis is emphasized in relation to the subsequent management of the patient.

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REFERENCES

- Boley, S. J., Schwartz, S., Lash, J., and Sternhill, V. (1963). Reversible vascular occlusion on the colon. *Surg. Gynec. Obstet.*, **116**, 53-60.
- Boreham, P. (1957). Benign strictures of the colon. *Proc. roy. Soc. Med.*, **50**, 601-604.
- Cooling, C. I., and Protheroe, R. H. B. (1958). Infarction of the colon. *Postgrad. med. J.*, **34**, 494-499.
- Engelhardt, J. E., and Jacobson, G. (1956). Infarction of the colon, demonstrated by barium enema. *Radiology*, **67**, 573-575.
- Farman, J. (1966). Vascular lesions of the colon. *Brit. J. Radiol.*, **39**, 575-582.
- Irwin, A. (1965). Partial infarction of the colon due to reversible vascular occlusion. *Clin. Radiol.*, **16**, 261-263.
- Marston, A. (1962). The bowel in shock. *Lancet*, **2**, 365-370.
- Marston, A., Pheils, M. T., Thomas, M. L., and Morson, B. C. (1966). Ischaemic colitis. *Gut*, **7**, 1-15.
- McGovern, V. J., and Goulston, S. J. M. (1965). Ischaemic enterocolitis. *Ibid.*, **6**, 213-220.
- Roberts, W. M. (1965). Ischaemic lesions of the colon and rectum. *South Afr. J. Surg.*, **3**, 141-161.
- Schwartz, S., Boley, S., Lash, J., and Sternhill, V. (1963). Roentgenologic aspects of reversible vascular occlusion of the colon and its relationship to ulcerative colitis. *Radiology*, **80**, 625-635.
- Sturdy, D. E. (1968). Non-specific (ischaemic) segmental colitis. *Brit. J. Surg.*, **55**, 99-101.
- Watts, J. McK., De Dombal, F. T., Watkinson, G., and Goligher, J. C. (1966a). Early course of ulcerative colitis. *Gut*, **7**, 16-31.
- , —, —, — (1966b). Long-term prognosis of ulcerative colitis. *Brit. med. J.*, **1**, 1447-1453.