Current Practice

DISEASE OF THE DIGESTIVE SYSTEM

Problems of Persistent and Occult Bleeding from the Gastrointestinal Tract

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The problem of persistent and occult bleeding from the gastrointestinal tract is one which can cause great concern. It often poses the question of how intensive and extensive the investigations should be in pursuing the cause. This is particularly so in the elderly and frail patients in whom occult blood loss is common. Bedford and Wollner¹ found positive occult blood tests in 55% of a random selection of 156 admissions in patients of 65 years and over. Anaemia was twice as common in those with gastrointestinal bleeding as in those without.

Iron deficiency anaemia is indeed the most frequent guise in which chronic bleeding from the gastrointestinal tract presents itself to the physician. The balance of iron is so delicately adjusted that any long-continued blood loss sooner or later exhausts the reserves of iron and further loss cannot be made good from the diet alone.

Apart from excessive menstrual loss, bleeding from the gastrointestinal tract is by far the most frequent cause of iron deficiency. This was shown well by the follow-up study² of 371 patients with iron deficiency anaemia seen in the Nuffield Department of Medicine in Oxford in the 20-year period 1941 to 1960. This study showed that in 149 patients gastrointestinal blood loss from a known cause was an aetiological factor in the anaemia. In a further 59 positive occult blood tests were obtained but no cause was recognized either initially or at subsequent follow-up.

Before proceeding to investigate such cases one must consider all the possible causes.

Intrinsic Gastrointestinal Lesions

Peptic ulcer, hiatus hernia, and diverticulosis are the three gastrointestinal lesions most likely to present the problem of chronic blood loss. In many instances there will be other characteristic symptoms, but *peptic ulcers*, especially in adolescents and younger adults, may pose a problem of anaemia accompanied by only very vague and slight abdominal pain. Ulcers of the jejunum or in Meckel's diverticulum may also present with atypical features, and anaemia consequent on chronic blood loss may be the most prominent symptom.

Similarly *hiatus hernia* may be symptomless apart from anaemia and the patient may be completely unaware of blood loss. Thus in a recent study in Oxford only 3 out of 19 anaemic patients with hiatus hernia complained of dyspepsia as one of their presenting symptoms, and even on direct questioning most of the patients denied ever having had indigestion. Measurement of blood loss in these subjects showed that several were losing some 10 to 30 ml. of blood per day. In the middle-aged or elderly patients, and particularly in overweight women, hiatus hernia should be high on the list of suspected causes of persistent occult blood loss.

Diverticulosis is such a common finding in the elderly subject that it is difficult to know how far to attribute occult

blood loss to this cause, but there appear to be some cases in which it is the only factor.

Neoplasms are always prominent in the differential diagnosis of chronic intestinal blood loss, and, though the proportion of patients who present with this symptom alone is small, it is none the less important, since early neoplastic lesions may be amenable to surgical treatment. There are several simple neoplasms, such as leiomyomata, fibromata, neurofibromata, adenomatous polyps, and haemangiomas, which are more likely to occur in the younger age groups, whereas in older subjects malignant tumours should be considered, particularly in the stomach and colon or in the ampulla of Vater.

Oesophageal varices are more likely to give rise to acute haemorrhage than to chronic blood loss, but occasionally this can occur, leading to a chronic iron deficiency anaemia.

Gastrointestinal Bleeding due to Salicylates

Salicylates have for many years been recognized as occasionally causing acute gastric haemorrhage, but it is only very recently that their importance in causing chronic blood loss has been realized. A number of studies have shown that about 70% of patients taking aspirin by mouth show evidence of alimentary blood loss, and where this has been measured with ⁵¹Cr labelled red cells a mean daily loss of about 4 ml. was found.³

Salicylates in one form or another probably now rank as one of the most frequent causes of occult blood loss. M.I.M.S. lists 40 different preparations among the analgesics which contain aspirin or sodium salicylate, and this does not include many of the popular preparations sold over the counter and which are prominently advertised as general "cure-alls" and "pick-me-ups." Salicylates as a cause of blood loss will clearly be frequent in patients with conditions such as rheumatoid arthritis, osteoarthritis, and migraine who require treatment by these drugs.

Other possible causes of gastrointestinal irritation are corticosteroids and phenylbutazone, but these do not cause trouble nearly as frequently as salicylates.

Blood Dyscrasias

Gastrointestinal blood loss is a feature of many of the blood dyscrasias, but in most cases the diagnosis will be clear from other symptomatology—for example, abdominal pain and purpura in Henoch-Schönlein purpura. One condition, however, which may trap the unwary is the occult bleeding which sometimes occurs in polycythaemia vera. Occasional patients may present with anaemia as a result of such bleeding, which may be due either to an accompanying duodenal ulcer or to haemorrhage associated with local small thromboses in the gut or due to the thrombocythaemia.

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Parasites

In patients who come from parts of the world where hookworm is endemic these parasites should be regarded as the most likely cause for chronic alimentary bleeding.

Hereditary Conditions

Though numerically small, the group of hereditary conditions which may cause chronic gastrointestinal bleeding is important, particularly as their recognition may spare the patient much unnecessary investigation. The commonest of these is *hereditary haemorrhagic telangiectasia* (Osler-Rendu-Weber's disease). This is inherited as an autosomal dominant condition and is characterized by telangiectases which appear particularly on the lips, nose, buccal mucous membrane, tongue, face, palms, and sometimes soles of the feet. Bleeding from the gastrointestinal tract occurs from similar lesions in the mucous membrane of the gut. Occasionally the external lesions are sparse and may be missed. They tend to become more troublesome with advancing years, and thus patients with the condition presenting with gastrointestinal bleeding tend to be middle-aged or elderly.

Rather similar telangiectasia, which may also give rise to chronic bleeding, sometimes occurs in association with scleroderma, but in this instance the condition is not hereditary.

Von Willebrand's disease is again an autosomal dominant condition characterized by bruising and a tendency to bleed. Though episodes of gastrointestinal bleeding may be acute, they may also be more chronic and occult. The subjects are likely to be younger and to have a clear-cut personal and family history of bleeding.

Two hereditary abnormalities of connective tissue—*Ehlers-Danlos syndrome* and *pseudoxanthoma elasticum* (P.X.E.)—may also present with the picture of persistent bleeding from the gastrointestinal tract. The former should be recognized by the hyperelasticity of the skin, hyperextensibility of the joints, and atrophic scars over the knees and elbows. Blue sclerae are sometimes also associated with the condition, as is hiatus hernia. P.X.E. is characterized by looseness of the skin; "plucked chicken" appearance of the skin, especially in the neck, axillae, and groins; and angioid streaks in the fundi.

Peutz-Jeghers's syndrome is a further condition with a dominant inheritance. Here the outward manifestation is melanin-pigmented spots on the lips, and this is associated with multiple intestinal polyps. Such polyps are more likely to cause colic and intussusception than bleeding alone, but occasional cases do present with chronic blood loss only.

Hysteria

One of the more bizarre causes of gastrointestinal bleeding—and one particularly difficult to detect—is that caused either by self-medication with anticoagulants or by deliberate ingestion of blood. We have recently had one such case in a young nurse, whose condition defied recognition for several months. It was, however, finally shown that she was able to venesect herself to the extent that she became grossly anaemic and at the same time she swallowed sufficient quantities of her own blood to produce persistently positive occult blood tests.

Investigation

From this summary of possible causes of persistent gastrointestinal bleeding it is clear that a very careful personal and family history is of paramount importance in trying to pinpoint the cause. A history of previous bleeding episodes and haemorrhage from other sites—for example, nose bleeds, or a family history of bleeding, immediately makes the diagnosis of one of the rarer hereditary conditions more likely. Careful and often repeated questioning may be needed to determine whether the

patient has been taking any of the preparations containing aspirin, and a knowledge of names of the commoner types used for self-medication is useful.

As already indicated, the age of the subject may give a clue to the further direction of investigation, hiatus hernia, diverticulosis, and malignant neoplasm being to the fore in the older subjects.

In the physical examination the stigmata such as telangiectases, spider naevi, neurofibromata, angiomas, and other features mentioned above should be sought carefully and the abdomen should be palpated for evidence of a neoplasm, splenomegaly, or hepatomegaly. The rectum should be examined, as the presence of a polyp in the rectum may suggest polyps elsewhere.

Special Investigations

The extent to which special investigations are done will depend on the clues which have already been obtained from the history and physical examination. Most of the hereditary conditions may be diagnosed on clinical grounds alone and on examination of the relatives. Confirmation of Von Willebrand's disease is sometimes to be obtained by finding a long bleeding time or a low level of antihaemophilic globulin. The blood count will usually reveal an iron deficiency type of anaemia, but a raised white cell count, if persistent, should arouse particular suspicion of a neoplastic lesion. A temporary rise in count may be found with diverticulitis. Eosinophilia, especially in coloured immigrants, will point to the presence of hookworm. Leucocytosis plus thrombocythaemia should suggest polycythaemia vera.

Tests of liver function should be done if there is any suspicion of liver disease. Among such tests the prothrombin and the bromsulphalein retention are probably the most helpful.

X-ray Studies.—These may need to include barium swallow and meal (looking for oesophageal varices, hiatus hernia, peptic ulcer, gastric neoplasm, etc.), follow-through examination or small bowel enema (looking for evidence of an ampullary carcinoma or small bowel neoplasm), and barium enema (primarily for diverticulosis and neoplasm). Since the history may not have given any indication of the site of bleeding, it is important to make the radiologist aware of the kind of lesions to look for, since some of them may well be difficult to demonstrate. A negative examination should not be taken as proof that no lesion is present—for example, small neoplasms of the caecum and colon may be readily missed—and if bleeding persists repeated examinations may be indicated.

Oesophagoscopy.—This is indicated if oesophageal varices are suspected but not visualized by the x-ray studies.

Gastroscopy.—The modern fibroscope makes gastroscopy a much easier examination for both patient and operator, and on occasions such examination may reveal a site of bleeding not otherwise suspected. With some of the newer instruments biopsy under direct vision makes the diagnosis of early carcinoma of the stomach easier.

Sigmoidoscopy.—Lesions visualized by the sigmoidoscope are more likely to cause overt bleeding; nevertheless in cases of persistent bleeding such examination may be indicated to look for evidence of polyps or haemorrhagic proctitis.

String Test.—Even after the most careful and thorough investigation some patients continue to have gastrointestinal bleeding from unknown sources. If there is any possibility that it might, for example, be from a lesion amenable to operation the string test originally devised by Einhorn may be useful. The principle is that a string or tape of about 40 in. (100 cm.) long with a radio-opaque marker is swallowed one morning, the upper end being secured to the patient's jacket or nightgown. The subject eats normally, apart from avoiding haemoglobin-containing foods, and the string is removed carefully 24 hours later, the position of the marker being checked

radiologically before removal, as is the relationship of the teeth to the length of string. The position of any blood-staining on the string is taken as an indication of the site of bleeding.

Laparotomy.—This is occasionally indicated when patients go on bleeding for no obvious cause, but the operation is seldom rewarding, particularly if carried out during an interval when the bleeding has stopped. If a definitive diagnosis has not been reached it is probably better to keep the patient under observation and be prepared to re-x-ray at intervals if it is suspected that a neoplasm may in fact be present. In relation to such a policy it is reassuring that of 68 patients diagnosed originally as having iron deficiency anaemia with unexplained occult bleeding 51 remained unexplained.⁴ The majority were in good health 2 to 21 years later apart from relapse of the anaemia in some cases. Of the other 17, 12 were thought to have been bleeding because of aspirin ingestion, two had bleeding piles, one had been found to have a gastric ulcer, one a possible carcinoma of the rectum, and one a definite carcinoma of the colon. This last case is probably the only one in which laparotomy might have been helpful at the time of the original admission, but even then with completely negative x-ray findings a

small tumour might have been missed, since the surgeon had no guidance on where to look for it.

Conclusions

Persistent and occult blood loss from the gastrointestinal tract is not necessarily a sinister symptom. It is now recognized that in a high proportion of cases the cause is ingestion of drugs of the salicylate group. A careful history and clinical examination will go far towards detecting many of the causes of persistent blood loss. Special investigations such as barium studies, gastroscopy, and sigmoidoscopy are mainly needed to look for peptic ulcers, hiatus hernia, and neoplasms. Laparotomy should not be undertaken lightly as a diagnostic procedure.

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MEDICINE IN THE TROPICS

Hypertension in the Tropics

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There is good evidence that patterns of blood pressure and the prevalence of hypertension vary considerably from country to country. Within each country there may also be wide variations from region to region and from group to group. Probably the widest variations are found in the reports from the African continent. Donnison¹ had encountered no case of raised blood pressure in a period of two years in a native reserve hospital in Kenya; and Williams² found essential hypertension uncommon in Africans in Uganda. On the other hand, Shaper³ showed that hypertension was quite common in hospital populations in East Africa and accounted for the largest proportion of cardiovascular admissions.

Moser and his colleagues⁴ showed that in Liberia mean blood pressure levels in most ages and both sexes are lower than the mean levels noted in negroes in the West Indies, the United States, and southern and central Africa; whereas a high frequency for elevated blood pressure has been found in the negro in the Belgian Congo.⁵ Reports from South Africa also indicate that hypertension is not uncommon among the Bantu and other negro populations in Cape Town and that the severity of the hypertension is more pronounced in the negro than in whites living in this area.⁶

Prevalence rates for hypertension have also been shown to be higher in negro groups in the West Indies⁷⁻⁹ and in the United States¹⁰ than in comparable white populations. The ancestors of most American and West Indian negroes came from West Africa in the second half of the eighteenth century. Although data concerning the blood pressure levels in the general population of West Africa are relatively sparse, available data from this area indicate that blood pressure levels and their relationship to age and sex differ in no respect from values obtained in white races.¹¹

The demonstration that many communities in the tropics and sub-tropics show relationships of blood pressure to age

and sex that are comparable to those found in Western countries is of much interest. Of possibly greater interest has been the identification of communities where mean blood pressure levels are low and show no rise with age—in certain nomadic pastoral tribes in Kenya,³ in Pacific island populations,^{12, 13} in low income groups in New Delhi,¹⁴ among the Cuna Indians,¹⁵ and in many other areas. In some communities—the Gilbertese and other Micronesian populations, for example, and also in South Korea¹³—blood pressures in women have been found to remain below those of men in later years. No reasons for these differences are at present available. They are nevertheless of great importance; and no theory about the aetiology of hypertension which fails to explain them can be entirely adequate.

Aetiology

In tropical areas where elevated blood pressure levels have been reported varying aetiologies have been advanced. In Georgia a possible role for syphilis has been discussed.¹⁰ In East Africa³ and in Panama¹⁶ pyelonephritis and glomerulonephritis are considered of major importance. In the Bahamas, a high salt intake has been thought a possibly important factor.⁴ In Jamaica, though significant bacteriuria was found in 15% of females in a rural area with diastolic pressures exceeding 110 mm. Hg as compared with 0.5% of males, it was considered that urinary tract infection might contribute to, but not entirely explain, the high levels of blood pressure found in these surveys.⁸ However, the high prevalence of pyelonephritis found on post-mortem examination of subjects with hypertension in Jamaica has suggested that the role of urinary tract infection in the genesis of hypertension may be far greater than has been suggested by the survey findings.¹⁷

In Jamaica it has been possible to relate blood pressure levels to age, sex, heredity, parity, and body-build as in

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