she noticed her right leg to be numb, and, when she attempted to walk, found that she was unsteady because of weakness of both legs. She had been getting increasingly short of breath in recent months, but was not known to have suffered from heart disease. On admission she was found to have auricular fibrillation and signs of mitral stenosis. B.P. was 180/90. The femoral pulses could not be felt on either side. An aortogram showed occlusion of the left common iliac artery at its origin, the lower limit of the block lying near the origin of the external iliac artery. On the right side the external iliac artery was occluded above Poupart's ligament, the lower limit of the block lying above the origin of the profunda artery.

In this patient, as in Case 6, peripheral vascular disease was the factor which first drew attention to the underlying mitral stenosis. We believe it likely that the extent of this patient's arterial occlusion may progress and eventually involve the lower aorta. Her history is described as it represents a stage through which the other six patients (Cases 1–6) had passed before developing complete aortic occlusion.

Incidentally, it may be pointed out that it would be quite impossible to differentiate the vascular lesions in the last patient from complete aortic occlusion on clinical grounds alone. This can be done only by means of an aortogram.

In this series four out of six patients were women. This reflects the higher incidence of mitral stenosis in women. It is in sharp contrast to the heavy male preponderance in aortic thrombosis of atheromatous origin. This sex distribution also suggests that these patients fall into a separate aetiological category.

The evidence available suggests, therefore, that emboli in peripheral vessels may sometimes result in occlusion of the abdominal aorta; once this has occurred the clinical picture differs in no way from the typical Leriche syndrome.

Summary and Conclusion

Six patients are described in whom mitral stenosis, auricular fibrillation, and aortic occlusion of gradual onset were observed. There is evidence that the Leriche syndrome may be an unusual end-result of peripheral emboli in patients with mitral stenosis.

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The *Disabled Persons (Employment) Act (Northern Ireland), 1960,* includes sections on the minimum age for attendance at courses, amendments as to registration, the provision of sheltered employment by local authorities, and preference for ex-service women in selection for vocational training and industrial rehabilitation courses and for possible employment.

D

IDIOPATHIC STEATORRHOEA AND HAEMORRHAGE DUE TO MALABSORPTION OF VITAMIN K

BY

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Fanconi (1927) described a haemorrhagic diathesis in three patients with coeliac disease. Later he suggested that this might be due to vitamin-K deficiency (Fanconi, 1938). Kark *et al.* (1940) noted haemorrhages associated with idiopathic steatorrhoea; there was a prolonged prothrombin time that was shortened by administration of vitamin K. A patient with sprue, complicated by haemoptysis and haematuria, was found to have a prolonged prothrombin time (Collins and Hoffmann, 1943). Cooke *et al.* (1953) reviewed 100 cases of idiopathic steatorrhoea and reported an incidence of bleeding in 10%. Haemorrhage was found most often in the skin, but haematuria, haemarthrosis, and bleeding from the gastro-intestinal tract were sometimes present.

On occasion the malabsorption may be discovered in retrospect; Butler and Young (1955) reported a case presenting with severe subcutaneous haemorrhages and menorrhagia. The coagulation time and prothrombin time were both greatly prolonged; the patient responded rapidly to blood transfusion and intravenous vitamin K_1. Subsequent investigation revealed an idiopathic steatorrhoea.

Case Report

A man aged 43 was admitted to hospital on February 3, 1959, with a history of haematuria for five days and extensive bruises and petechiae, especially on the legs but also on the face, chest, and back. He had been treated for diarrhoea, diagnosed as amoebic dysentery, in 1942 while serving in India; after that his bowels had acted normally until 1954, when he had occasional attacks of diarrhoea. This had become worse since 1957, and investigations revealed the presence of steatorrhoea.

On admission there was evidence of an acute haemorrhagic illness, a smooth red tongue, and gaseous abdominal distension. The Hess test was positive and the one-stage prothrombin time was prolonged to 150 seconds (control 18 seconds). Blood examination showed a moderate macrocytic anaemia with leucopenia: haemoglobin, 75% (11.1 g./100 ml.); red cells, 3,020,000/c.mm.; colour index, 1.24; the red cells showed marked anisocytosis, poikilocytosis, and polychromasia; they appeared normally haemoglobinized, and many were macrocytic; white cells, 2,700/c.mm. (neutrophils 75%, lymphocytes 14%, monocytes 11%); platelets, 406,000/c.mm.; serum calcium, 8.1 mg./100 ml. A sternal marrow aspiration showed active erythropoiesis which was chiefly normoblastic but with a moderate incidence of transitional megaloblasts; granulopoiesis and platelet formation appeared normal. Stool microscopy was negative for cysts and amoebae, and cultures were negative for pathogens; the total faecal fat was 45% of the dry weight of the stool (split fat 33% and unsplit fat 12%).

Subsequent barium follow-through radiographs showed some dilatation of the ileum with increase in size of the mucosal folds—appearances consistent with an idiopathic steatorrhoea. Biopsy of mucosa of the upper jejunum showed marked flattening and atrophy of the villi—appearances very suggestive of idiopathic steatorrhoea. The diagnosis was therefore confirmed as idiopathic steatorrhoea.

The haemorrhagic condition responded rapidly to vitamin K_1, first intravenously and then intramuscularly. By the third day haematuria had ceased and there was no further bruising. 48 hours after treatment the prothrombin time was 24 seconds (control 18 seconds), and after a further seven days it was 19 seconds.

Folic acid and calciferol were given orally and he was put on a gluten-free diet with normal allowance of fat and protein. Within four weeks the anaemia had cleared up: haemoglobin, 102% (15.1 g./100 ml.); red cells, 4,930,000/c.mm.; packed cell volume, 43%; white cells, 5,300/c.mm., with a normal differential count.

When seen nearly nine months later (October 23) he had gained considerably in weight and reported a normal bowel habit, the blood picture was normal, and serum calcium was 10.3 mg./100 ml.

Discussion

It was decided that this case should be published, in spite of the absence of detailed studies of the coagulation deficiency, to draw attention to the importance of haemorrhagic manifestations in the malabsorption syndrome. Though this complication is fairly well recognized, many regard the incidence as slight. In a symposium on disorders of the small intestine at the Royal Society of Medicine the only brief reference to a bleeding tendency due to deficient vitamin-K absorp- was by Avery Jones (1959); Pullan (1959) also mentioned that the fat-soluble vitamins (A, D, E, and K) are likely to be imperfectly absorbed in the presence of steatorrhoea.

It appears that haemorrhage associated with malabsorption has received greater emphasis in America. At a symposium on the malabsorption syndrome in New York Bossak *et al.* (1957), reporting their observations on 94 patients with idiopathic sprue, noted haemorrhagic manifestations in 26.6% of cases, varying from skin petechiae to fulminating gastro-intestinal haemorrhage. In those patients in whom the prothrombin time was determined it was prolonged to more than 3 seconds above the control in 70.2%. Wang and Bossak (1957), at the same symposium, recorded haemorrhagic manifestations in idiopathic sprue in 25 cases in a review of 82 patients seen during a period of 25 years, with an average follow-up of 5.1 years. All were considered to be due to hypoprothrombinaemia. In 13 out of 14 of these patients at the time of abnormal bleeding the prothrombin time varied between 21 seconds to over 3 minutes (control 12 seconds), in all patients the prothrombin time returned to normal after treatment with vitamin K.

Douglas (1958) investigated the coagulation deficiency in vitamin-K deficiency regardless of its pathogenesis. He found a deficiency of factor II (prothrombin), factor VII, and factor IX (Christmas factor).

Hoffman and Hewlett (1959) carried out detailed coagulation studies in a patient with idiopathic steatorrhoea and severe haemorrhagic manifestations. They confirmed Douglas's findings—that is, a deficiency of prothrombin, factor VII, and Christmas factor—and also found a deficiency of Stuart (Prower) factor. After a single intravenous injection of vitamin K_1 all four factors returned to near normal in 24 hours and to normal in five days.

Summary

A case is described of an acute haemorrhagic illness which was proved to be an idiopathic steatorrhoea; there was a greatly prolonged prothrombin time, which became normal after vitamin-K_1 therapy, and the haemorrhagic condition rapidly cleared.

Some of the literature relevant to this condition is reviewed and reference is made to the specific coagulation factors which are defective.

It is considered that further emphasis should be placed on this serious complication in idiopathic steatorrhoea.

I thank Dr. E. C. Warner for access to this patient under his care at Charing Cross Hospital.

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POSSIBLE ASSOCIATION OF MALIGNANT NEOPLASM WITH IRON-DEXTRAN INJECTION

A CASE REPORT

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Recent reports of the carcinogenic properties of iron-dextran in rats and mice by Richmond (1959) and Haddow and Horning (1960) have aroused interest in the possibility of similar effects in humans. The following is a report of a patient who recently was found to have a sarcoma at the site of previous iron injections.

Case Report

A 74-year-old white spinster, known to have had a hypochromic anaemia since 1955, was investigated in hospital on three occasions: in 1955, 1959, and 1960. Frequent stool examinations revealed the presence of blood, but several series of upper and lower gastro-intestinal *x*-ray films and sigmoidoscopy failed to explain the blood loss adequately. Gastric analysis was normal. On recent admissions the prothrombin time, which was prolonged, responded once to vitamin K_1 oxide, and on another occasion the response was equivocal. Otherwise coagulation factors were normal. There was neither hepatic nor splenic enlargement nor lymphadenopathy.

Treatment consisted of whole-blood transfusions and oral iron. Between October 30 and December 4, 1956, six injections of iron-dextran ("imferon"), 2 ml. (100 mg.) each,