are only separated from urticarial (anaphylactoid) purpura and urticaria by the degree of the capillary defect.

4. Splenectomy should have a permanent beneficial effect, though protection from capillary haemorrhages may not be complete.

The term "angio-stasis" is suggested for the condition.

THROMBO-PHLEBITIS MIGRANS.

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PHLEBITIS of widespread distribution, recurrent and migratory, has been described from time to time. In most of the descriptions we find an association with various suggested etiological factors. As far back as the time of Paget, Lancereaux, and Hewitt we find reports of a number of cases in which gout was invoked as the exciting cause, though often with but scant justification. Daguillon¹ described a series of cases of migratory phlebitis in 1894, and regarded the condition as an indication of "an arthritic constitution, with or without actual gout." In a case published by Neisser² in 1903 there was a clear-cut history of syphilis, whilst in two cases recorded by Schwartz³ in 1905 there was advanced pulmonary tuberculosis. In other cases of more or less widespread phlebitis we find an association with various conditions, such as rheumatic fever, trauma, and a number of toxic and cachectic illnesses.

The first description of a type of recurrent phlebitis in which no causal factor could be adduced, and which possessed individual and constant symptomatic features, was made in 1905 by Briggs,⁴ who thought that the cause was possibly to be found in a sclerosis of veins analogous anatomically with arterio-capillary fibrosis.

The type of phlebitis which we are about to describe, and of which we have seen four cases, differs from that of Briggs and other writers in that in each patient there was definite evidence of involvement of visceral veins as well as of peripheral veins. These cases had so many unusual features in common that we were led to the conclusion that we were dealing with a rare type of phlebitis *sui generis*, to which we could find but little reference in the English literature.

Case Histories.

CASE I.

A lady, aged 55, suffered from an illness diagnosed as pleurisy in September, 1926. Early in October she was bitten by a mosquito on the left hand, but no local septic symptoms developed. A week later she got extensive thrombosis of the left cephalic vein. In another week the veins of the right arm became involved, and ten days later there was extensive dry pleurisy, involving mainly the right lung, but also the base of the left. Throughout there was mild pyrexia. This cleared up slowly, and the patient was progressing favourably when, three weeks later, there was an attack of violent abdominal pain, with collapse and accompanied by severe malaena. The patient at this time was extremely ill, and mesenteric thrombosis was diagnosed. Recovery took place, and everything seemed well, when, after an interval of a month, the left saphenous vein became thrombosed. Subsequently the right saphenous vein was also involved. Finally, a branch of the facial vein became affected, and was followed by some ulceration of the mouth, this event occurring about six months after the beginning of the illness. Each attack of phlebitis was accompanied by fever, but in the intervals the patient was fairly well. Apart from the facts above stated nothing abnormal was found. A blood culture was sterile; the heart, kidneys, and other organs were normal. Various treatments were employed, including peptone injections and a vaccine made from streptococci isolated from the teeth. It was not apparent that any treatment had any special effect on the course of the disease, apart from relieving symptoms. Since the involvement of the facial vein the patient had made slow but satisfactory progress, and is now, twelve months later, except for some persistent oedema of the legs, practically well.

CASE II.

A strong healthy man, aged 62, who had had no previous illness of importance during the last twenty years, suffered towards the end of July, 1927, from a mild pyrexial attack. This was accompanied by abdominal discomfort and slight pain. The possibility of appendicitis was discussed, but in a couple of days the attack cleared up, and a week later the patient went on a holiday. On the first day of this holiday he walked about three miles, and that evening felt discomfort in his right leg. Two days later the leg was swollen, and there was obvious phlebitis of a superficial vein in the calf. The temperature was raised, and remained slightly above normal for one week.

After three weeks' rest the patient returned home, and after a further couple of weeks resumed work. Soon after, the right leg, which had returned to normal, again became swollen and tender, apparently due to thrombosis of the deeper veins. A week later a small vein in the left calf became thrombosed. This settled down in a fortnight, and the patient was apparently going on well when pain in the left side of the thorax developed, and a pleural rub at the base of the left lung was detected. This was accompanied by a smart fever and haemoptysis, and as the sputum was found to contain pneumococci in pure culture, a diagnosis of mild pneumonia was made. After five days the attack cleared up, but haemorrhagic sputum continued for about a fortnight.

The next event was an attack of abdominal pain with flatulence, followed by thrombosis of the right saphenous vein, and again mild pyrexia. This attack subsided, and the patient was sent to a nursing home for full examination. A complete x-ray examination revealed nothing abnormal, a blood culture was sterile, and the Wassermann reaction negative. Mild anaemia, but nothing else, was found on full examination of the blood. The urine was sterile, and contained nothing abnormal, and a complete examination of the faeces showed nothing wrong.

Just as this examination was complete, pain was again experienced over the left lung, and another attack of apparent pneumonia developed, again accompanied by some haemoptysis. Five days after the subsidence of this attack there was a severe bout of anginal pain, believed at the time to be due to thrombosis of a cardiac vein. This was accompanied by a very rapid fibrillating pulse. When this attack had subsided the patient again returned home, and the day afterwards had a further pneumonic attack, in which the base of the right lung was involved.

The last event in this long illness was an attack of violent abdominal pain, so violent as to produce complete collapse. This came on in the evening and lasted several hours, and although no malaena followed, it was diagnosed as an attack of mesenteric thrombosis, owing to its resemblance to a similar attack seen in Case I, in which malaena was a prominent symptom.

During the whole of the illness, which lasted about six months, and which included eleven thrombotic episodes, the patient was depressed and felt ill, and suffered from lassitude. He looked anaemic, and there was marked loss of weight. A week after the abdominal attack his spirits began to improve, and his tongue, which had been furred all through, became normal. From this time on he made slow but satisfactory recovery.

CASE III.

This patient, a woman, aged 50, had enjoyed robust health until the month of June, 1924, when she developed phlebitis in the region of the left foot, with resultant pain, tenderness, and swelling. This attack was the precursor of many similar attacks, which came on at varying intervals and affected the veins of the left leg, left thigh, and later those of the right ankle and leg. With each attack there was mild pyrexia. In addition to involvement of superficial veins there was implication of deeper veins, with marked oedema. The patient spent five weeks in bed, and for nine months rested for most of the day on a couch.

In April, 1925, phlebitis attacked the veins of the right hand, which became painful and tender. Shortly afterwards the left hand became affected. On September 30th, 1925, the patient was admitted to hospital for investigation. The ankles were oedematous, and the skin of the legs was thick and discoloured, showing the appearance seen frequently after a severe attack of phlebitis. Over the inner aspect of the thigh a number of nodules could be felt, with a distribution corresponding to the course of the large saphenous vein. Blood culture was negative. There was severe pyorrhoea, and culture from the gums yielded a pure growth of *Streptococcus viridans*. Teeth extraction was advised, and a vaccine prepared from the gums.

Improvement continued until December, 1925, when the patient developed symptoms and signs similar to those of a mild pneumonic attack. This was accompanied by haemoptysis and by moderate pyrexia, and necessitated a month's stay in bed. Shortly afterwards phlebitis developed in a vein of the left arm. This was followed by a further remission, which lasted until the month of June, when some pain, tenderness, and swelling developed in the flexure of the right knee. No further attack has occurred since.

During her illness the patient experienced considerable malaise, loss of appetite, and general deterioration of physical strength. As residua of the recurrent attacks there is a tendency to the development, after exertion, of swelling of the ankles, especially on the left side, and to stiffness of and pain in both legs, after even moderate exercise.

CASE IV.

A nurse, aged about 22, got a superficial burn on the left ankle in February, 1922. Three months later there was extensive thrombosis of the superficial veins of the left leg, with pyrexia. This cleared up, but was followed two months later by thrombosis

of practically every superficial vein of the right leg. A section of a vein was removed for examination and showed a firmly adherent clot, with slight thickening of the vein wall. Cultures made from the vein were sterile. An absolutely complete examination at this time failed to reveal any cause for the trouble. Further events in this case were thrombosis of a superficial vein in the abdominal wall, and of one or two other superficial veins of the trunk at intervals of two or three months, each attack being accompanied by a general febrile reaction. Finally, a year after the beginning of the illness, the right popliteal vein became affected. In this case no involvement of visceral veins took place; but recovery was very tedious, and the patient was only able to resume work about two years after the beginning of her illness. Various treatments, including colossal manganese and peptone, were employed, but do not require detailed comment.

It will be seen that the main feature of these cases is the tendency to metastatic extension, often at long intervals. The trouble commences in a segment of a peripheral vein, which becomes painful and tender. Redness and swelling ensue, and there is slight or moderate pyrexia. Soon the symptoms begin to subside, only to reappear in some portion of the same vein or of a distant vein. All four limbs may be involved, and with each recurrence of phlebitis there is a recurrence of pyrexia.

In association with the tendency to extension we note implication of visceral veins. Thus the pulmonary involvement with haemoptysis, noted in three of our cases, was referred by us to a process in pulmonary veins similar to that met with in the peripheral veins. Embolism was negatived by the definite absence of characteristic symptoms associated with this condition. In this connexion we would like to stress the conspicuous absence of embolic symptoms in our cases, though the patients were not confined to bed throughout their illness, and must therefore at one time or another have been in a condition most favourable to the production of embolus. In two of our cases symptoms of mesenteric thrombosis were encountered, and in one patient symptoms occurred which suggested involvement of a coronary vein. This implication of a coronary vein is unique so far as the literature is concerned, though it seems likely that the paroxysm of tachycardia in a case described by Legrand⁵ was due to this cause.

The etiology of the condition is obscure, though the local signs of inflammation and the method of spread suggest forcibly the presence of a blood infection. This view is strongly advocated by Vaquez and Leconte,⁶ and later by Legrand,⁷ in connexion with a series of analogous cases described by them under the title "subacute venous septicaemia." Legrand quotes two cases in which the streptococcus was isolated from the blood stream. In our cases blood culture was uniformly negative, but was not repeated with sufficient frequency to permit definite conclusions. In one case severe pyorrhoea was present. Apart from this no septic focus was found in any of our patients.

The disease follows a prolonged course with alternations of remissions, more or less complete, and of subacute recurrences. The ultimate prognosis seems to be favourable, though functional disability may persist. It is interesting, though perhaps inapposite, to draw attention to cases quoted by Buerger⁸ in which recurrent phlebitis of superficial veins was the precursor of thrombo-angiitis obliterans. Such a sequel has not been encountered by us, and it is likely that Buerger's cases did not belong to the group with which we are dealing.

Summary.

We publish four cases of phlebitis of extensive distribution and migratory character, showing involvement of peripheral and visceral veins, prolonged course, and relative benignity. We can throw no light on the etiology, but present our short paper in the hope that it will stimulate research which will elucidate the cause of this unusual but interesting malady, and place therapeutic efforts on a scientific basis.

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THE HISTORY OF AN OUTBREAK OF TYPHOID FEVER IN PRETORIA:

WITH SPECIAL REFERENCE TO THE DETECTION OF TYPHOID CARRIERS.

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THE history of this outbreak is of interest in that it illustrates the necessity of empowering medical officers of health to exercise a closer supervision of dairies than has been the case hitherto, especially so far as the native element in such places is concerned. It also shows the superiority of the complement-fixation test over the agglutination test of Widal for tracing the course of an outbreak and discovering carriers.

The total number of cases in this outbreak was twenty-eight, including seven among natives. Only one patient died, a European female child, one of the first to be infected. This low mortality is probably due partly to the prompt recognition of the disease in the later cases, when medical practitioners and the public were aware of the probability that slight illness in a family supplied by the incriminated dairy would probably turn out to be typhoid fever. The typhoid case mortality in Pretoria is ordinarily about 7.5 per cent.

The first patient was a European boy. The usual inquiries were made as to the supply of milk and food to the household, but since nothing suspicious was found, and it was said that the child drank very little unboiled milk, no further steps were taken. Quite a different light was thrown on the matter, however, when, two days after this child had been notified (complement-fixation test positive, Widal test positive, typhoid bacilli recovered from blood), the daughter of the proprietress of the dairy which supplied this household, who had been ailing for some time, was subjected to a typhoid complement-fixation test, and her reaction was found to be positive. This patient was removed to hospital as soon as the diagnosis was established, and on the same day blood specimens were taken from the eleven natives employed at the dairy, who were all "healthy" and at work. The result was surprising, for seven of them reacted positively to the typhoid complement-fixation test. Of these seven, five were strongly positive, one just positive, and one weakly positive. Widal tests were performed at the same time, but only two positive reactions were obtained: the serum of one boy, which was definitely positive with the complement-fixation test, agglutinated only in serum dilutions up to 1 in 20, while the serum of the boy whose complement-fixation reaction was just positive only reached 1 in 40.

This large number of positive findings made the position very difficult. From past experience we know that carriers as a rule give a positive complement-fixation reaction, but we also know that this test remains positive for a varying period after convalescence. It seemed absurd to assume that seven out of eleven natives employed at one dairy were carriers. A much more probable explanation of the situation was that there had been a local epidemic at the dairy among the native servants, and that we were concerned with the tail-end of this epidemic. Interrogation of the proprietress and the natives at first seemed to elicit facts which supported this view. There was a vague history of several of the natives having been down with "malaria" off and on during the previous weeks, and having been dosed with quinine for that reason; and there was also a tale of a young native who had been engaged two or three months before this trouble started, but who had never done any work and had been either malingering or ill most of the time. This rather imaginary young native had now disappeared, and all our attempts to trace him proved in vain. Moreover, the more we pressed for further details about the illnesses of the natives in the past weeks the more vague, confused, and unreliable the information became. There