Kahn and Wassermann reactions negative. X-ray examination disclosed great delay, chiefly in the ascending and transverse colons, and a barium enema ran easily back to the caecum, causing huge dilatation of the whole large bowel. The blood, urine, and faeces showed no abnormality. In view of his mental state, and realizing the futility of further medical treatment, I decided to operate.

Laparotomy was performed on Jan. 20, 1940. There were no adhesions or bands, and the only pathological feature was a slightly dilated extremely mobile colon. The dilatation was most pronounced in the ascending and transverse colons, and beyond the splenic flexure the gut was empty and collapsed. There was a remarkable lack of tone throughout the whole of the large bowel.

It seemed possible that some kinking was occurring at the splenic flexure owing to the abnormal mobility, and accordingly an anastomosis was made between the transverse and descending colons. The patient made a good recovery. His defeatist outlook was jolted when he passed a daily motion with the aid of liquid paraffin only, from the seventh day onwards. He left hospital on the twenty-first day after operation considerably cheered, but firmly convinced that he would soon return to his former state—and he did!

Four months later he returned as depressed and as constipated as ever. I reopened his abdomen on May 24. The caecum and all the large bowel down to the centre of the pelvic colon were removed, and the ileum was anastomosed to the lower end of the pelvic colon. He made a good recovery, and liquid stools were passed daily, without medicine, from the fifth day after operation. He was discharged from hospital on June 25, feeling well, and passing one or two liquid stools a day. His mental outlook, despite encouragement, was still poor; he felt certain that the old trouble would reassert itself before long. He was then transferred to a small out-station, and I heard nothing more from him until June 6, 1944, when I received a letter, part of which I quote: "I am pleased to say that I am now in perfect health. I am sure you would not recognize me now as I have grown quite fat. My health seems to improve every day, and I am not taking any medicine at all; a little brown bread is all I need if I get at all constipated. The last operation seems to have been a wonderful success."

The pathology of the bowel in this case is not clear. The small intestine was slightly dilated and thickened, but in the colon there was no hypertrophy of the muscular coat or thickening of the mucosa as seen in Hirschsprung's disease or megacolon. There appeared to be a lack of tone in the musculature which allowed the bowel to distend to a great size without causing either pain or peristaltic movements.

Gwelo, S. Rhodesia.

T. W. STEPHENS, F.R.C.S.Ed.

Three Cases of Agranulocytosis

In view of the report by Drs. Librach and Cronin of a case of primary agranulocytic angina (*Journal*, Dec. 14, 1946, p. 897), I am prompted to publish notes of three cases of agranulocytosis in British prisoners of war in Singapore.

CASE REPORTS

Case 1.—A medical officer of the I.M.S.—a personal friend—aged about 35 was in good health, so far as the diet and conditions allowed, at the time of the onset of his illness. He had suffered from "painful feet" the previous year, which had been greatly relieved by injections of "nicamide." In April, 1944, a further series of injections of nicamide had been given for an increase in these pains. On May 7, 1944, he had noticed tenderness of his jaws and teeth, and during the night had had several attacks of shivering, followed by sweats. Next morning he was admitted to hospital. The temperature was 103° F. (39.4° C.) and it continued at about this level until May 13. The only physical finding on admission, apart from the pyrexia, was tenderness and slight enlargement of the neck glands. Repeated blood slides were negative for malaria parasites. The white blood cell counts were as follows:

Date	Total per c.mm.	N. Polymorphs %	Lymphocytes %	Mono-nuclear %	Myelocytes %	Myeloblasts %	Other Cells %
May 8	4,600	2	76	12	—	—	10
" 10	3,600	0	89	6	5	—	—
" 11	2,900	7	71	8	6	2	6
" 13	8,400	32	58	5	5	—	—
" 16	12,800	41	30	3	17	2	7

The tenderness of the jaws developed into severe pain, which necessitated repeated injections of morphine for the next 48 hours. On May 9 he was given 4 ml. of liver extract and 10 ml. of "pent-nucleotide." Next day these doses were repeated. Three sloughs

had now appeared on the gums. A course of sulphapyridine was started, 5 g. being given on the first day and 3 g. the next day. No further liver, pentnucleotide, or sulphapyridine was given; as the blood counts showed a gradual improvement. Fragments of alveolar margin separated during his convalescence, which was otherwise uneventful.

Case 2.—An assistant surgeon aged about 35 was taken ill with fever and general malaise on April 6, 1944. Between April 6 and 13 repeated blood slides proved negative for malaria parasites, stools were negative for amoebae, and a blood count was normal. When seen on April 13, the eighth day of illness, he presented a flushed dry skin, suffusion of the eyes, injection of the throat, and a temperature of 104° F. (40° C.). There were several small superficial crusted sores on his legs, buttocks, and hands, and a moderate degree of axillary and inguinal adenitis. The white blood cell counts were as follows:

Date	Total per c.mm.	N. Polymorphs %	Lymphocytes %	Mono-nuclear %	Myelocytes %	Myeloblasts %	Other Cells %
April 13	3,000	23	71	4	—	—	2
" 14	3,200	5	86	8	—	—	1
" 16	2,400	10	81	8	—	—	—
" 18	4,200	38	51	6	5	—	—
" 20	9,000	77	19	2	—	—	2
" 24	13,000	77	—	—	—	—	—
" 26	11,000	66	—	—	—	—	—
May 12	5,200	66	—	—	—	—	—

The pyrexia continued at a high level for some days after sulphapyridine treatment was started on April 15, 18 g. being given in six days. The pyrexia did not settle finally until May 12.

Case 3.—A staff-sergeant aged about 35 had had an area of eczema on the left leg for 2½ years. He noted that the lesion was spreading, and reported for treatment on March 25, 1945. On April 10 he developed a pyrexia of 100° F. (37.8° C.) and complained of pain at the site of the eczema. Routine blood slides were negative for malaria parasites. I saw him the next day. His temperature had risen without remission to 104° F. (40° C.). He was very cheerful and mentally alert. In the patch of eczema on the left lower leg were three small scabs which were tender to pressure. The inguinal glands on that side were slightly tender and enlarged. The white blood cell counts were as follows:

Date	Total per c.mm.	N. Polymorphs %	Lymphocytes %	Mono-nuclear %	Myelocytes %	Myeloblasts %	Other Cells %
April 10	3,200	1	89	—	10	—	—
" 12	2,000	14	70	2	14	—	—
" 13	1,800	40	39	—	—	—	—
" 16	3,800	59	33	—	8	—	—

On April 11 treatment with sulphapyridine was started, 22 g. being given by April 14. Pentnucleotide was not available, and the only specific drug, sodium nucleinate, was exhausted after injections of 5 ml. and 3 ml. on successive days. The fever gradually abated and was normal by April 17, when there were signs of necrosis of the skin, fluctuation under the skin of the eczematous area, and lymphangitis spreading up the leg and thigh. He was transferred to our surgical colleagues, who then assisted his return to health.

DISCUSSION

Many cases of agranulocytosis can be attributed to recognized poisons—organic, inorganic, and bacterial. Various other causes are cited as being responsible, including nutritional deficiency. The latter was a common factor to all three cases, and infection was a common factor to Cases 2 and 3. Despite the thousands of cases of uncomplicated nutritional deficiency which were seen, Case 1 was the only example of agranulocytosis, and I feel inclined to regard it as one of primary agranulocytosis.

An annotation in the *Journal* of Dec. 14, 1946 (p. 905), gives a brief résumé of the treatment of agranulocytosis. No whole-hearted support is given to any particular method of stimulating leucopoiesis. As no certain line of treatment is available for this grave condition, the physician in charge feels bound to use nucleic acid in some form and liver extract; penicillin or one of the sulphonamides is given to counteract the infection which follows in the course of the disease. When infection appears to be the causative factor, these latter drugs take prior place in treatment.

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