returned, and decompression was again carried out in the early evening, a further 1,200 ml. being removed from each pleural cavity.

Whilst considering how we might best leave him for the night, our radiologist, Capt. Tomlinson, produced an article by Major H. Fuld (1944) describing a simple device for the control of tension pneumothorax. It was decided to try this method of decompression, and a modified French blood-transfusion needle which passed through the centre of a rubber diaphragm was inserted into each second intercostal space close to the sternum. Each needle was connected to a one-way outlet valve of a standard transfusion apparatus which permitted only the egress of air. These in their turn were connected to short lengths of rubber tubing which were strapped to the chest wall. The man's general condition improved considerably until the early morning, when the needles slipped a little and became blocked, necessitating clearance with a stylet and readjustment. As a result he developed emphysema of the chest wall, neck, and face. On Dec. 1, the needles were removed and reinserted in the fifth intercostal spaces in the anterior axillary line, and in the afternoon the intrapleural pressures were: right, 0 $\rightarrow$ - 2; left, 0 $\rightarrow$ - 2.

The needles were finally removed the next day, as there was no cyanosis or dyspnoea, and a course of sulphadiazine (30 g. in all) was started—it was thought that he might develop an infected effusion as a result of the repeated needlings. However, he made an uninterrupted recovery from this date; his lungs expanded steadily, there was no pleural effusion, and the emphysema subsided. By Dec. 10, ten days after the onset of symptoms, his lungs had almost completely re-expanded and he was evacuated to England by hospital ship.

Unfortunately, the photographic copies of the x-ray films are very indifferent and would not bear reproduction. The first film, taken soon after the left lung collapsed, showed a small nubble of lung at each hilum, surrounded by air. There were no adhesions and no mediastinal shift. Both lungs expanded evenly, but the left side eventually lagged a little behind the right, and when the patient was evacuated the right lung had expanded completely.

Discussion

The literature lays great stress on the frequency of evolutive pulmonary tuberculosis in the causation of bilateral spontaneous pneumothorax, McMahon (1932) giving a mortality rate of 58%, compared with 16% due to emphysema. Glickman and Schlomovitz (1936) in their review of 82 cases (fatal and non-fatal) state that 38% were tuberculous, 12.5% were due to emphysema, and 21% were in the "idiopathic" group; pneumoconiosis, congenital cysts, bronchopneumonia, and tumours accounted for the remainder. Emphysema was found to be the cause of death in the cases recorded by Meyer (1917), Werner and Thearle (1942), and King and Benson (1944).

Olbrechts (1930) divided the bilateral condition into simultaneous and successive; in the former both lungs collapse at the same time or one follows the other before the air has been absorbed. In discussing the aetiology he suggests that it is either a coincidence or an anatomical disposition (congenital or acquired) which leads to an added fragility of the surface of the lungs. Le Wald (1926) suggested the passage of air from the right to the left pleural cavity across an orifice in the mediastinum, and commented on the occasional fistulization of the mediastinum in the course of a therapeutic pneumothorax. This theory was also mentioned by Bedford and Joules (1929), who suggested that it might explain the fact that they aspired only one side of the chest, with complete recovery. The prognosis is very poor in tuberculous cases and is little better in emphysema, whereas the "idiopathic" cases usually make a complete recovery.

There is no evidence of tuberculosis, emphysema, pneumoconiosis, or lung infection in my case, and it would appear to come into the "idiopathic" group. In order to

prevent a recurrence the patient was sent home to England, for consideration of the artificial production of adhesions. In considering the conduct of the case it should be remembered that the needles must be long enough to pass into the pleural cavity in comfort and so obviate the possibility of surgical emphysema; that it is not necessary to take the rubber tubing under water (thus allowing greater nursing freedom); and that it is safer to check the pressures at regular intervals in order to determine the progress of the condition and the amounts of air to be removed. Finally, sulphadiazine was given prophylactically, but it is impossible to state whether it had any beneficial influence on the uncomplicated recovery.

Summary

A case of bilateral simultaneous pneumothorax is presented, with a description of the method employed in an endeavour to overcome the tension pneumothoraces.

The literature has been reviewed from the point of view of aetiology and of prognosis, and the suggestion is made that the case falls into the "idiopathic" group, in which the outlook is reasonably good.

I wish to thank Major W. R. Trotter, R.A.M.C., and Capt. M. N. Tomlinson, R.A.M.C., for their assistance, and Col. R. W. Savage for his permission to publish this case report.

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Medical Memoranda

End-Result of Colectomy for a Case of Chronic Constipation

The following is a report of a case of chronic constipation due to lack of tone in the musculature of the large bowel. After extensive medical measures had been tried unsuccessfully colectomy, with implantation of the ileum into the lower third of the pelvic colon, cured the constipation and produced great improvement in the mental and physical health of the patient.

CASE REPORT

In January, 1940, a young man of 21 came to me with intractable constipation. He was thin, sallow in complexion, and very worried. He had consulted many doctors in the past four years without success, and if nothing further could be done he said he would take steps to end his life. He had been treated by massage, daily enemas, and colonic wash-outs, diet, liquid paraffin and other drugs, physical exercises, and suggestive treatment. Nothing had helped him, and heroic doses of purgatives and violent exercise were necessary to get his bowels to act as often as once a week. As the days went by without a bowel action he developed persistent headaches, an increasing feeling of lassitude, and complete anorexia. His chemist's bills were getting him down, and he considered that if he had to spend so much of his day for the rest of his life endeavouring to get an action of his bowels, life would not be worth living. He was very pessimistic about the outcome of his visit to me, and his case seemed most unpromising. His past history was negative: no serious illnesses, no history of dysentery or excessive constipation as a child. He was fond of exercise, chiefly walking, tennis, and riding. He had been fit and healthy until four years before, when constipation of increasing severity began to trouble him.

Examination showed him to be much under weight, with a dry inelastic skin. His tongue was furred. The abdomen was normal except for many borborygmi. Reflexes were normal, and the

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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