TABLE I.—*Distribution by Age and Sex*

Age Groups (Years)	Cases of Pleural Effusion			No. Developing Tuberculosis	Deaths
	Male	Female	Total		
0-4	1	1	2	—	—
5-9	7	5	12	1	—
10-14	6	7	13	4	1
15-19	44	21	65	15	2
20-24	23	25	48	10	1
25-29	12	10	22	7	1
30-34	5	3	8	—	—
35-39	5	2	7	2	—
40-44	1	3	4	—	—
45+	3	6	9	1	1
Total ..	107	83	190	40	6

lesion, with two exceptions in which there was a lapse from observation of four years between recovery from the initial pleurisy and the detection by skiagram of parenchymal disease; these two cases are shown in Table II as developing in the fifth year.

TABLE II.—*Annual Morbidity*

Year	Total Patients	No. Developing Tuberculosis in Each Year of Observation							
		1st	2nd	3rd	4th	5th	6th	7th	8th
1937	8	—	—	1	—	—	—	—	—
1938	16	2	1	—	2	—	—	—	—
1939	15	—	2	—	—	—	—	—	—
1940	22	2	4	1	1	2	—	—	—
1941	28	1	2	—	—	—	—	—	—
1942	34	5	1	—	—	—	—	—	—
1943	28	7	1	—	—	—	—	—	—
1944	39	5	—	—	—	—	—	—	—
Total ..	190	22	11	2	3	2	—	—	—
No. exposed to risk in each successive year	190	134	102	72	45	—	—	—	—
Probability of developing tuberculosis in each year	0.12	0.08	0.02	0.04	0.01	—	—	—	—
This probability applied to a basic 1,000 patients:									
No. affected during each year	120	70	16	32	8	—	—	—	—
No. remaining unaffected on each anniversary	880	810	794	762	754	—	—	—	—

The number exposed to risk each year is calculated by the life-table method described by Bradford Hill (1939), its several stages here being compressed for economy of space. The total 190 patients were observed for one year. The 39 originally seen in 1944 could of course not be followed beyond the end of 1945, when the survey was closed, so these must be subtracted, together with the 17 of the remainder who had already developed tuberculosis during the first year, leaving 134 at risk during the second year. A similar calculation is required in each succeeding year not forgetting the further subtraction of the one patient lost sight of in the third year of observation.

The "probability" of developing tuberculosis in any given year for those entering it so far unaffected is simply the number of cases divided by the number at risk. The two fifth-year cases, whose date of onset is unknown, must be divided by the total 190, giving a probability figure of 0.01.

The next step is to apply these probability ratios to an arbitrary total of 1,000 patients, subtracting each year the number that would become affected, leaving the remainder at risk for the following year. The progressive depletion thus taking place leaves us at the end of five years with 754 of our original 1,000 patients still unaffected: in other words, 246 have developed pulmonary or extrapulmonary tuberculosis—approximately 25%.

A similar calculation from the observed fatalities in the original series gives a death rate of 3.5% over the five-year period. This, however, is of limited value, as the

insidious and progressive character of many of the pulmonary lesions encountered leads one to expect a considerable mortality in later years.

Conclusions

Observation of 190 patients with primary pleurisy with effusion shows that one-quarter of all such patients developed systemic tuberculosis within five years. Nearly half the cases arose within one year of the initial pleurisy. No case has been found to occur after five years.

Of the tuberculous lesions that developed 15% were extrapulmonary. The remainder first became evident in the lung, though in either case spread to other systems tended to occur, as in any similar lesion acquired in other ways.

The death rate for the five-year period was 3.5%.

The age of the patient did not seem to influence either the incidence or the character of any subsequent tuberculosis.

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A CASE OF BILATERAL SIMULTANEOUS SPONTANEOUS PNEUMOTHORAX

BY

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Bilateral simultaneous spontaneous pneumothorax is relatively uncommon (Glickman and Schlomovitz in 1936 reported only 82 cases in the literature) and is often fatal. The following case is presented because of the rapid uninterrupted recovery and the methods employed to reduce the dangerous positive pleural pressures.

Case Report

A soldier was admitted to hospital on Nov. 28, 1944, with the following history: He awoke that day with a slight pain in the right chest, not associated with cough or dyspnoea, but these symptoms became well established when he began his daily duties, and in the afternoon he reported to the out-patient department, where a spontaneous pneumothorax was discovered. Inquiry into his family and previous medical history revealed nothing of significance.

On examination he was seen to be a well-built healthy individual with little cyanosis and no dyspnoea when at rest. His trachea was displaced to the left, and his apex beat was located 1 in. (2.5 cm.) external to the mid-clavicular line. There was diminished movement of the right chest, the percussion note was more resonant on the right side, and breath sounds were diminished in the right lung. X-ray examination confirmed the diagnosis of a complete right pneumothorax and he was ordered complete bed rest. On Nov. 30, when using a bed-pan, he experienced a sudden pain in the left chest and rapidly became extremely cyanosed and dyspnoeic. Examination revealed the presence of a bilateral pneumothorax, and efforts were immediately made to relieve the man's respiratory embarrassment. His intrapleural pressures were: right, + 3 → + 8; left, + 3 → + 6; after the removal of 1,200 ml. of air from each pleural cavity they became: right, - 3 → + 4; left, - 3 → + 4. His general condition improved for a short time but his cyanosis and extreme dyspnoea soon

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 aspirated 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