

Atelectasis

It was a common experience to be called to see men with wounds of the chest, often associated with fracture of ribs or scapula, in whom urgent dyspnoea had convinced the medical officer that the pleura had been penetrated. In many no penetrating wound was found, but pain had led to shallow tachypnoea with voluntary suppression of cough; bronchial secretions had accumulated and rhonchi were audible throughout both lungs. In these cases local measures to relieve pain—of which the most important was removal of skin sutures—a dose of morphine, and persuasion to cough resulted in rapid emptying of the respiratory passages and the disappearance of distress. Untreated, atelectasis with subsequent infection was almost inevitable. In 5 cases with penetrating wounds the radiological findings were limited to those of collapse of one or other lower lobe. It was common, even with extensive intrathoracic damage, to find a high diaphragmatic shadow, and it seems likely that atelectasis from bronchial obstruction by aspirated blood or secretion is often a sequel of thoracic wounds. In three cases with haemothorax there was radiographic evidence of collapse of the contralateral lower lobe. Treatment of these five cases was confined to attempts to moderate the pain and to promote drainage by posture; infection was discouraged with sulphapyridine. In all five cases uneventful re-aeration was achieved.

This clinical picture is familiar in patients with simple fracture of a rib; its greater frequency and importance in those with wounds of the chest must serve for excuse if the point appears laboured. The chances of its occurrence can be minimized by relief of pain, and this should be achieved by local measures so far as is possible: a tightly sutured wound of the chest is often agonizing. Limitation of thoracic movement by exuberant strapping and prolonged inhibition of the cough reflex with morphine are undoubtedly important factors in its production.

Thoraco-abdominal Injuries

In 13 cases the missile had traversed both the thoracic and the abdominal cavities; six of these patients died. Details are not pertinent; but, where the entry wound was left-sided, intestinal perforation and, consequently, death was frequent. Hernia through the diaphragmatic wound was seen twice; in three a missile lodged in the upper part of the right lobe of the liver had provoked a sero-sanguineous subphrenic effusion.

The present relevance of this group of cases lies in the diagnostic difficulty they offer. This difficulty is increased by the frequent association of simple penetrating wounds of the thorax with abdominal pain, rigidity, and tenderness—symptoms which in four cases of uncomplicated haemothorax led to fruitless laparotomy. Survival depends on early exploration, and when the entry wound is in the lower third of the chest suspicions of abdominal as well as of thoracic injuries should be aroused.

Treatment of the Parietal Wound

The observations of a physician on this technical aspect of surgery will be regarded probably as worthless and certainly as impertinent. Thus it is with trepidation that these comments are offered, and because of the effect of the initial treatment of the parietal wound on the patient's subsequent course.

At this time there was little uniformity in the practice of surgeons in the forward areas, and Table V sets out the treatment

TABLE V.—Initial Treatment of Parietal Wounds in 127 Penetrating Injuries of the Chest

Dressing	No. of Cases
Simple dressing	80 (62.9%)
Strapping over vaselined-gauze pack	9 (7.1%)
Excision and strapping over vaselined-gauze pack	8 (6.3%)
Suture without excision	11 (8.6%)
Excision and suture	10 (7.8%)
Excision and suture over vaselined-gauze pack	4 (3.2%)
Exploration, excision, and suture	5 (3.9%)

applied to the wounds in the present series before admission to hospital. Suture, with or without excision, was almost invariably followed by infection of the chest wall; it always led to a painful wound and the possibilities discussed under the heading of atelectasis. The practice latterly was to remove skin

sutures immediately the patient was admitted to hospital. In three instances a sutured wound broke down to leave a pleuro-cutaneous fistula; this was particularly likely to happen when the edges of the wound were approximated under tension and the intrapleural pressure was raised by a large haemothorax. Two of five cases in which the wounds were explored and sutured subsequently developed infection of the lung.

From experience with this group of cases it was concluded that the immediate treatment of the parietal wound should be as conservative as possible. The indications are to control haemorrhage from the chest wall and to close an open pneumothorax. If there is no serious haemorrhage and the wound is not "sucking," simple dressing is adequate; if the wound is "sucking" it should be closed by strapping over an air-tight pad and the intrapleural pressure lowered by aspiration of the haemothorax. The strapping should not hamper breathing by encompassing the whole chest.

In three cases which reached hospital with an infected haemothorax and a parietal wound that had broken down, immediate closed drainage through a catheter inserted at a distance from the wound was the only way the open pneumothorax could be controlled.

Immediate exploration should be limited to cases in which haemorrhage demands it, and perhaps to those in which fragments of bone have been driven into the lung; for this type of injury is likely to be followed by pulmonary suppuration. Uncritical exploration carries the additional danger of converting a closed haemothorax into an open haemopneumothorax—an event which invites the entry of infection.

Summary

The management of 127 cases with penetrating wounds of the thorax, seen in a hospital working as a casualty clearing station, is described.

The intrathoracic sequels of these wounds were: haemothorax, 69.4%; pneumothorax, 3.9%; pulmonary haematoma, 11%; atelectasis, 3.9%; lung abscess, 1.6%; thoraco-abdominal injuries, 10.2%.

The early treatment of these conditions is discussed.

A plea is entered for the conservative treatment of the parietal thoracic wound in casualties of this type.

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VISCERAL LEISHMANIASIS (KALA-AZAR) IN AN ADULT CONTRACTED IN MALTA

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Although the occurrence in adults of kala-azar contracted in Malta is categorically denied by Neumann (1930), four cases have been recorded in which the history and the demonstration of leishmania leave no possible doubt as to the identity of the disease or that it was contracted in Malta (Bassett-Smith, 1913, 1914; Kerr, 1918; Walker and Gibson, 1933; Gibson and O'Flynn, 1934). Four further cases have been reported in which the diagnosis was proved but in which the possibility of infection having occurred elsewhere than in Malta cannot be absolutely excluded (Ward, 1916; Kerr, 1918; Bassett-Smith, 1923).

A fifth case falling within the former category has recently been under our care in a Royal Air Force hospital in England, and appears worthy of record not so much on account of its rarity as because it serves to illustrate how an easy diagnosis can be missed through failure to bear in mind the possibility of tropical disease in men returning from service abroad. In this case the splenomegaly, anaemia, and leucopenia with a low-grade pyrexia in a patient recently returned from Malta immediately suggested leishmaniasis, and enabled a positive diagnosis to be made and treatment to be started without delay.

Case Report

The patient was an air-gunner who in 1938, at the age of 20, proceeded to Malta, where he remained until he returned to this country at the end of his tour of duty in Jan., 1942. Although he had lived in Egypt and New Zealand in early childhood (1919 to 1926), he had not subsequently been out of England until his present tour, during which Malta was the only place visited. He remained fit until Dec., 1940, when he was admitted to hospital with a urethral discharge which proved to be non-gonococcal and very resistant to treatment. This persisted until July, 1941, and has relapsed periodically since then. In July, 1941, he started to have vague headaches, night sweats, and a troublesome cough, and was readmitted to hospital. Here he was found to have slight fever with a mild anaemia (4.6 millions) and leucopenia (5,800). Radiographs of the chest were normal, but it was noted that 2 st. in weight had been lost in the preceding four months. No definite diagnosis appears to have been made. It is of interest to note that during the preceding six months he had often been sleeping in air-raid shelters in various parts of the island without a sandfly net, that he recalls being repeatedly bitten by sandflies, and that he was in the habit of allowing a dog to sleep on his bed.

By the early autumn of 1941 he was flying again, but still felt "groggy," complaining of a dry irritating cough, frequent night sweats, catarrh, and tender epitrochlear, cervical, and inguinal glands. Several medical officers of all three fighting Services to whom he reported these symptoms did not apparently take them seriously, and he felt that he was suspected of malingering—so much so that he became embittered and lost confidence in himself, to the further detriment of his efficiency in the air.

After several short periods of non-effectiveness he returned direct to England at the end of his tour in Jan., 1942. During disembarkation leave he called in a local practitioner, who, after making an initial diagnosis of influenza, referred him to the medical consultant at a neighbouring civilian hospital. Here all investigations are stated to have proved negative (although a leucopenia of 5,600 with a relative lymphocytosis of 42% was recorded), and he was certified fit to return to duty.

On April 7, 1942, the patient was admitted to a Royal Air Force hospital for investigation. On admission he was seen to be pale, thin, worried-looking, and obviously ill. He had a dry irritating cough which kept him (and the rest of the ward) awake at night. The scanty sputum was repeatedly negative for tubercle bacilli, but there was clinical and radiological evidence of an imperfectly resolved right basal pneumonia. A few discrete cervical, epitrochlear, and inguinal glands were palpable and the gums were tender and bled easily. The spleen was enlarged three fingerbreadths below the costal margin, but was soft and the edge was not easily palpated. No other clinical abnormalities were found. There was a marked anaemia (3.5 millions, Hb 8.7 g.), and leucopenia (3,600) with a relative lymphocytosis of 47%. No leishmania or plasmodia were found in blood smears. The erythrocyte sedimentation rate (Westergren) was 60 mm. in the first hour. Agglutination tests against *Br. melitensis* and *Br. abortus*, Kahn test, Wassermann reaction, and gonococcal-fixation tests were all negative. Napier's formol-gel test became positive only after several hours. A provisional diagnosis of kala-azar was made.

After ten days of postural drainage the pneumonia had completely resolved, but pyrexia persisted, reaching 100–101° F. in the evening and falling to 98–99° F. in the morning. The typical "double peak" was rarely apparent, but the temperature was not recorded throughout the night.

On April 24 sternal puncture was performed and very numerous leishmania were found in the marrow smear, and were successfully cultured on Adler's medium. Leishmania were cultured also from venous blood at this time, although they were not found then or at any other period in blood smears even after prolonged search. At the same time a gland was removed from the groin, smears and sections of which revealed numerous leishmania. Sections of skin removed with the gland showed no leishmania.

From May 5 to 16 a course of 2.5 g. of neostam was given in daily intravenous injections, increasing from 0.05 g. to 0.3 g. The full course of 4.5 g. could not be completed owing to the distressing cough (chiefly at night), which was quite uncontrollable even with heroin. During the week following this course the fever declined somewhat, the spleen became appreciably harder and smaller, and the leucocyte count improved slightly (4,300). On May 29 numerous leishmania were still present in smears of sternal marrow, and so between June 6 and 25 a further 1.85 g. of neostam was administered in doses not exceeding 0.2 g. With this dosage the cough was a good deal less troublesome. On June 30 only a few degenerate leishmania were seen in sternal marrow and there was further slight improvement in the leucocyte count (4,800) and in the general clinical condition, although there was occasional evening pyrexia. A month's sick leave was then granted before deciding on further treatment.

On his return to hospital on Aug. 6 there was no appreciable change in the clinical condition. He reported three rigors and some bleeding from the gums during the preceding week. There was still slight evening pyrexia, with a definite dusky pigmentation of the temples. The blood picture had deteriorated (R.B.C. 3.3 millions, Hb 10.2 g., W.B.C. 2,600). His weight remained unchanged. On Aug. 16 a course of sodium antimony gluconate was started. Daily intravenous injections were given until a total of 86 c.cm. had been administered over a period of 15 days. No cough or other toxic manifestation was observed. Three weeks later the leucocyte count had risen to 5,000, but the anaemia persisted (3.4 millions). An occasional evening pyrexia was recorded, but 99° F. was never exceeded. Another month's sick leave was granted from Sept. 8.

On return from sick leave on Oct. 5 he felt considerably better and had played several games of tennis. A smear of lymph-gland juice was negative for leishmania and the leucocyte count had risen to 6,000, but as the anaemia persisted two pints of packed red cells were transfused on Oct. 15. This resulted in marked improvement, for when he was discharged to light duty on Nov. 4 the red cell count was 4.8 millions, Hb 13 g., and leucocytes 4,800. By Dec. 13 glands and spleen were still palpable and an occasional evening temperature not exceeding 99° F. had been recorded, but the leucocyte count had risen to 7,800 and there was no deterioration in the red cell count and haemoglobin.

The patient was seen again on Feb. 27, 1943. He had then been doing full ground duties for seven weeks and was feeling "perfectly fit." He looked well and had gained 20 lb. in weight. The edge of the spleen could just be felt and there was one palpable epitrochlear gland. The red cell count was unchanged at 4.79 millions, but the Hb had increased to 14.5 g. and the leucocyte count was 10,800 with a normal differential picture. The erythrocyte sedimentation rate (Westergren) was 2 mm. in the first hour. No leishmania were found in smears of peripheral blood or sternal marrow, and cultures from each remain sterile.

It now seems justifiable to regard the case as cured, but the patient is being kept under periodical observation. His return to full flying duties is unfortunately precluded by a dramatic complication, quite unconnected with the leishmaniasis or its treatment, which occurred four days after his resumption of ground duty on Nov. 4. On the afternoon of Nov. 8 he was readmitted to hospital unconscious and with a number of abrasions on the face and head. A history was given of his having suddenly fallen down while walking about the station. Further inquiries suggested epilepsy, and when consciousness was completely regained 48 hours later it was found that there was a short retrograde amnesia, and a history (previously unrevealed) of three similar episodes dating from the age of 14 was obtained. An electro-encephalogram two weeks later was grossly abnormal, and was stated to be typical of epilepsy.

Summary

A case of visceral leishmaniasis (kala-azar) in an adult contracted in Malta is described.

We can trace only four recorded cases in adults whose infection cannot have occurred elsewhere than in Malta.

The syndrome of low-grade fever, cough, adenitis, splenomegaly, and leucopenia was well marked. Nevertheless the disease remained unrecognized and apparently unsuspected for many months both in Malta and after the patient's return to this country.

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Barth (*Z. Immunforsch.*, 1942, **101**, 397) believes that through his culture method (agar with the blood of typhus cases) *Bact. proteus* X 19 acquires special properties. Positive Weil-Felix reaction was obtained with the serum of guinea-pigs inoculated with such a strain, and even with the serum of guinea-pigs inoculated with genuine typhus virus. A positive Weil-Felix reaction occurs not only in the apparent animal disease but also in animals which develop a symptomless or abortive disease. On the basis of the animal experiments, the author believes it will be possible to carry out mass immunizations with this strain against typhus in man.