cough was very troublesome, the slightest change of position bringing on a severe paroxysm, with copious fetid expectoration. On examination of the chest the left side was found normal to percussion, whilst on the right side some impairment was met with all over the upper part, and dullness was found over the lower part, especially laterally, where the dull note extended as high as the level of the fifth rib. Auscultation, which was extremely difficult owing to the very feeble condition of the patient and the paroxysms of cough, revealed rhonchi and crepitations over both sides of the chest and very much enfeebled breath sounds over the right base posteriorly. The other organs appeared fairly healthy, except that the urine contained a small quantity of albumen.

Progress.—In this case I believed that I had to deal with a bronchiectasis at the base of the right lung, the result most probably of a fetid empyema which had burst into the bronchial tube. I felt that the only possible way of doing good in the case was to drain, and I therefore on several occasions, made exploratory punctures to locate the cavity or cavities. Distinctly to my surprise, however, I never could strike pus, nor could I feel that the exploring needle passed through dense tissue. I was content, therefore, to limit my treatment to antiseptic inhalations, and cardiac and general stimulants. The patient got rapidly worse, the cough and fetid expectoration continued, some days more, some days less. Paresis of the right arm was noticed, and pericarditis supervened, death occurring on April 11th.

Necropsy.—April 12th. External appearances: Body somewhat emaciated, general pallor of surface, slight rigidity in lower limbs only. Thorax: Pericardium showed a recent purulent inflammation. Sac contained about half a pint of turbid fluid. The parietal layer was somewhat thickened and covered with fibrinous exudation. The left pleural sac contained about 6 oz. of turbid fluid; no adhesions. The right pleural sac showed a very peculiar condition. Over the upper lobe of the lung anteriorly the pulmonary pleura showed dense chronic thickening ($\frac{1}{8}$ in.) and was firmly adherent to the thoracic wall. When this was perforated an empyema cavity was exposed containing over 15 oz. of fetid brownish pus. This cavity was confined to the anterior portion of the upper lobe of the lung by dense fibrous adhesions, but closer investigation showed that the pus had burrowed, both into the chest wall in front and into the lung below. As regards the chest wall, it had burrowed through the first and second right intercostal spaces, and had caused gangrenous changes in the muscular tissues there. As regards the lung, it had burrowed through the fibrous adhesions into the anterior portion of the lower lobe.

Right lung: On section this showed extensive collapse. The pleura all round was much thickened, and the lobes were all adherent. In the lower lobe was found a cavity of about the size of a walnut, with soft gangrenous walls, and into this cavity opened three or four bronchi of about $\frac{1}{4}$ in. in diameter, with greatly thickened walls. The entire right lung was much collapsed, so that the liver had risen high into the thoracic cavity. The other organs showed nothing specially noteworthy.

This was a case in which there had been a fetid empyema bursting into the lung, and the fact that the purulent expectoration varied much in amount was due probably to the very imperfect communication between the empyema cavity and the lung tissue. The fact that the empyema cavity was not diagnosed was probably due to its being at the times of examination comparatively empty. The dullness and feeble breathing at the base of the right lung were accounted for by the great collapse and high position of the diaphragm. The slight paresis of the right arm was a condition not at all uncommon in empyema.

THREE CASES OF ABSCESS OF THE LUNG.*

By D. J. WILLIAMS, F.R.C.S.ENG.,
Llanelli.

THE surgical treatment of suppuration within the thorax has been marked by slower progress than that of allied conditions within the abdominal cavity. Successful if primitive operations on lung abscesses are recorded in medical literature from the time of Hippocrates down to the latter half of the last century, but operative interference in these cases was not recognized as a justifiable proceeding until Lister's antiseptic methods were fully appreciated.

The cases I have to report are—first, one of tuberculous abscess diagnosed as an empyema; secondly, one of abscess following fibrinous pneumonia, on which no operation was performed; and thirdly, a case of septic embolism and abscess which recovered after operation.

CASE I.—A. D., aged 14, a pale anaemic girl, gave the following history: About six months ago she had measles, followed by bronchitis and pneumonia on the right side, from which she had not completely recovered. Her father had died of phthisis a year before.

State on Examination.—Movement was impaired over the right side and slight flattening over the left apex. The heart's apex beat was in the left nipple line. There was complete dullness on the right side from

he level of the fourth rib in front and seventh behind, downwards and continuous with that of the liver, which projected two finger-breadths below the costal margin. Vocal fremitus and resonance were absent over the same area. The breath sounds were weak over the left apex, but no adventitious sounds were noted on either side. An exploring needle being introduced above the sixth rib some thick pus was readily withdrawn. Empyema was diagnosed and operation advised.

Operation.—On May 8th, 1891, the patient being anaesthetised, a portion of the eighth rib was removed, and on opening the pleura about two pints of a slightly opalescent fluid escaped, totally different in character from that withdrawn by the exploring needle. The pulmonary pleura seemed fairly glistening, but on introducing the finger it was found adherent to the costal pleura above. On exploring again above the sixth rib thick pus was again withdrawn. The wound was closed, carefully sutured and sealed with collodion. A second incision was made over the sixth rib and about an inch of it removed. A sinus forceps was then pushed in by the side of the exploring needle, the cavity freely opened, and about 10 to 12 oz. of thick pus evacuated. Some iodoform was introduced, a large drainage tube inserted, and the wound dressed. There was no communication with the bronchus.

Progress.—The little patient soon improved in health, appetite improved, and when seen three months later she had gained 10 lb. in weight, but some pus had discharged from the wound in the interval. I did not see her again, but I heard she died three years later from acute tuberculosis of the left lung.

CASE II.—W. G., aged 26, returned home ill on November 25th, 1899, and I saw him on the following morning, when he gave the following history: He was quite well up to a month previously, when he had influenza, but did not give up his work—that of an engineer. He had a bad cough, had rusty expectoration, and pain in the left side. He was allowed to go to his office daily until his return home.

State on Examination.—His left thorax was absolutely dull from apex to base. The heart's apex beat could scarcely be made out, but cardiac dullness extended well beyond the sternum to the right, and all the symptoms of fluid in the left pleural cavity were noted. An exploratory aspiration gave clear fibrinous serum. His temperature was 101° F., pulse 112, respirations 32, and he looked exceedingly pale and ill.

Progress.—Counter-irritation and general treatment resulted, after a week's trial, in no improvement, and it was decided on December 3rd to aspirate, and four pints of fluid was withdrawn. Examination of the chest immediately after gave physical signs of consolidation and a guarded prognosis was given. The dry, hacking cough continued, but his general condition was, for a time, improved. Signs of fluid in the pleura cavity reappeared, and on December 22nd it was decided again to aspirate, and a further two pints of fluid were removed. On examination immediately after it was found that the dullness over the lower lobe was increased; the temperature continued high—104° in the evening, with morning remissions to 101°—and from the general symptoms abscess of the lung was diagnosed. There was no further reaccumulation of fluid in the pleura, but the general condition deteriorated, and the lung symptoms became predominant. I strongly advised operation, and with this view had a consultation on January 27th. I have this note of his condition on that date: "Temperature 103°, pulse 120, respirations 30; looks worn out, thin, emaciated, and hectic, percussion note over the left upper lobe, front and back fairly resonant, breath sounds distinct but distant, percussion note dull over base, reaching as high as sixth rib in posterior axillary line, breath sounds absent."

RESULT.

The patient's friends adopted the consultant's advice to postpone operation notwithstanding my expressed reluctance. The condition of the patient became gradually worse, and I continued impressing the necessity of operating. Another consultation and another consultant resulted in a further postponement, this time for three days, but before its termination the abscess perforated into the abdomen, probably the colon, and the patient died on March 1st, without any operation having been performed.

CASE III.—I was called to see the patient (Mrs. J., aged 33) on June 23rd, 1901, when the following history was elicited. She was taken ill on June 7th with what was supposed to be influenza; she miscarried at the fifth month, on June 12th, and became seriously ill three days later, and the local practitioner was called in.

State on Examination.—At my visit on June 23rd she complained of pain and distension in the abdomen, especially in the pelvic region. There was no cough, but she was constantly sick and the bowels constipated. Her face was flushed, and she complained of great thirst. Her tongue was very dry. Temperature 104°; pulse 120; respirations 28. On examination the abdomen was distended and tympanitic, and very tender over the uterus, which could be felt through the abdominal wall and enlarged. Per vaginam the os was patulous, the uterus enlarged and tender and the discharge offensive. The temperature as taken in the vagina was 105°. The patient complained of tenderness in the left hypochondrium, and a rounded swelling was felt under the costal margin in the left mid-axillary line. It was not movable, tender on pressure, and dull on percussion; this note was continued upwards over the thorax to the level of the fifth rib in the mid-axillary line. There was defective movement of the left side of the thorax, percussion and auscultation normal, breath sounds distinct at the base behind,

* Read at the Tenby meeting of the South-West Wales Division of the South Wales and Monmouthshire Branch of the British Medical Association.

and there was no adventitious sound, and no cough or expectoration. The only area of dullness was the one alluded to. This was triangular in shape, with the apex at the fifth rib in the mid-axillary line, becoming broader towards the costal margin, where it was continuous with the swelling felt below. There were no vocal fremitus, *râles*, or crepitation to be detected over the area. The uterus was repeatedly irrigated, and portions of fetid secundines removed. Quinine and opium were administered internally, and enemata to relieve the bowels.

Progress.—June 27th. Condition much improved; there was no sickness, and she was able to take liquid nourishment. Temperature, 102° ; pulse, 108; respirations 32. I was called hurriedly on June 30th, and the patient complained of pain in the left side over the dull area, which I found increased. There was pain at the end of inspiration, and a pleuritic rub was audible over the area. Temperature 104° , pulse 124; respirations 36. On July 2nd, Dr. Tudor Thomas, who visited her for me, found symptoms of effusion into the pleura, and her condition very grave. On July 3rd I made an exploratory examination with a long needle of large bore in the seventh space in the mid-axillary line, and from a depth of $2\frac{1}{2}$ in. withdrew a syringeful of thick, reddish offensive pus, and an operation was advised as the only means of saving the patient.

Operation.—The condition of the patient was extremely grave. The pulse 140, temperature 103° , respirations 40. It was a question whether she would stand the shock of the operation. Dr. Edgar Davies, who gave the anaesthetic, examined the patient and found incidentally a patch of consolidation in the right base. I made a $3\frac{1}{2}$ in. incision over the eighth rib and removed about 2 in. of its length, and on opening the pleural cavity a considerable quantity of thin blood-stained serum escaped from the sac. Portions of costal pleura were excised, and in a window about 2 in. square, the lung presented. The needle was again plunged into abscess and a long sinus forceps was with difficulty forced into the abscess cavity, but so dense and tough was the lung substance that I had to introduce a grooved director and cut it freely with a scalpel before I could introduce the finger. About 10 oz. of thick reddish and most offensive pus was evacuated. The cavity had a craggy uneven wall and extended to the pericardium, the finger feeling in detail the movements of the heart in its sac. Iodoform was introduced into the abscess cavity, two large drainage tubes inserted, the wound around the tubes packed with iodoform gauze, a large padding of alembroth wool applied, and the patient put back to bed. Dr. Davies injected strychnine before and during the administration of the anaesthetic. She bore the operation (which did not last 20 minutes) well.

Progress.—The case was dressed daily, and a great deal of pus continued to be discharged for ten or twelve days. The temperature continued high, 101° to 103° , and though she took nourishment well her condition continued grave through the continuous septic absorption. I now irrigated the abscess cavity with 1 in 40 carbolic, and in this way removed several masses of lymph or necrotic tissue, and improvement was soon evident. Her temperature went down to 99° to 101° , appetite improved, and she began to gain flesh, but the discharge continued in lessening quantities until September 2nd, when the tube was not further used.

She has made a perfect recovery. I examined her chest recently, and the physical signs are normal, excepting a circular area of an inch and a half in diameter over the cicatrix.

REMARKS.

In Case I the signs of pleuritic effusion masked those of pulmonary abscess, and the operation was performed with the idea that the condition was one for empyema. Had I known the case was one of tuberculous abscess of the lung I should not have advised operative measures; but once committed to it, the operation was completed. The result justified the procedure, for the patient's health was improved, and, I have no doubt, her life prolonged. The results of operation on tuberculous cavities have not been satisfactory, and I would not recommend operation excepting in large basic cavities, especially if septic, and then only in the hope of relieving the constant distressing cough and arresting septic absorption.

Case II I have reported in some detail as an example of those that should in my opinion be operated upon. Had this been done in January, in all probability the patient would have recovered. It is a curious pathological fact that most basic abscesses due to pneumonia perforate downwards, and those secondary to abdominal lesions generally open into the bronchus. In my earlier experience three basic abscesses (two following acute lobar pneumonia and one following enteric fever) perforated into the abdominal cavity, and one following typhilitis (or appendicitis) and subphrenic abscess perforated finally into the bronchus, death being due to septic absorption. No attempt was made, or would then have been regarded as justifiable, to operate. In my opinion all were cases that should have been operated upon and with every prospect of success. When non-tuberculous, I regard the aphorism "*Ubi pus ibi incisio*," as being as applicable to the lung as to any other organ, provided Paquelin's cautery and a scalpel are regarded as convertible terms. In Case II every condition favourable to operation were present. The abscess could be definitely

located, the costal and pulmonary pleurae were adherent and yet fatal delay was recommended and adopted by the friends, for the intercession, I suppose, of some special providence.

In Case III the diagnosis was fairly clear when I first saw the patient, and the operation was performed shortly after the appearance of the secondary pleurisy. As to the operation, when the abscess can be accurately located the opening into the pleura need not be large. A long linear incision down to the rib and the removal of 2 in. of its length will be enough. It is stated by Truc that the lung should not be opened if the costal and pulmonary pleurae are not already adherent or sutured together so as to shut off the pleural cavity. This was not done, though the cavity was at any rate partially open, and yet no empyema ensued. The lung tissue was so dense and infiltrated that it was thought safe to open with the knife and not with the cautery. There was scarcely any haemorrhage. It is also laid down as a rule by the same authority that on no account should the abscess cavity be irrigated. For some time after the operation there was evidence of septic absorption, the temperature continued high, and the patient's condition most precarious. There being no communication between the abscess and the bronchus, I irrigated the cavity daily with a 1 in 40 carbolic lotion with immediate benefit, and with no other untoward result than a transient carboloria, which I met by using a weaker solution.

A CASE OF PURULENT PERICARDITIS ASSOCIATED WITH EMPYEMA IN A CHILD AGED TWO AND A-HALF YEARS.

DEATH NEARLY FOUR MONTHS AFTER A DOUBLE OPERATION.

BY

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PURULENT pericarditis is a not infrequent disorder in children, but cases of operation for its relief are sufficiently rare to justify the putting each one on record. The present case is a specially noteworthy one, both from the youthful age of the patient and the time he lived after the operation. The notes are abridged and slightly altered from the careful ones taken by Dr. A. Emerson, formerly House-Physician at the East London Hospital for Children.

M. P., a Jewish child, aged $2\frac{1}{2}$ years, was admitted into the East London Hospital for Children on February 11th, 1903, under the care of Dr. Coutts.

Family History.

In the family history there was little to note. The father had been drowned. The mother was healthy, and there were no other children. There was no family history of tuberculosis.

History.

The present illness commenced with pneumonia a month ago, and the child has never been well since. He has had a bad cough ever since pneumonia, and he has suffered from loss of appetite and languor, with occasional vomiting. The bowels were regular. During the past few weeks he has wasted somewhat.

Condition on Admission.

The patient was a fairly well-nourished child, presenting distinct evidence of rickets. There was well-marked beading of the ribs, along with slight enlargement of the epiphyses of the long bones with bowing of the tibiae. The abdomen was not distended, the liver was not enlarged, but the spleen could just be felt below the costal margin. On examination of the thorax, the cardiac dullness was found to be slightly increased, and the heart's apex beat almost impalpable. The heart sounds were weak, but apparently pure. There was no audible pericardial friction. The pulse was 136, regular in force and rhythm, and of fair tension. On the right side posteriorly the percussion note was impaired at the apex, and from the sixth rib downwards absolutely dull. This dull area extended into the axilla and right round to the front of the chest. Over the dull area the breath sounds were extremely weak and faintly bronchial in character. Over the rest of the right chest both percussion and breath sounds were normal. The left lung was normal both to percussion and auscultation, with the exception of a patch at the extreme apex where there was some doubtful bronchial breathing and increased vocal resonance. The respirations were rapid—58 per minute. The child was wakeful and peevish, and seemed in pain; giving a short grunt with each expiration. The tongue was clean, but the appetite poor. There was no diarrhoea or vomiting. On admission the temperature was 99° , but in the evening it rose to 101° .