PLEUROTOMY FOR EMPYEMA.

RECOVERY.

BY

F. C. FERNALD, M.D. (HARVARD),

OF WASHINGTON, D. C.

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J. M. T.; male; colored; aged 40; married; one healthy child; always well until two years ago, when he had a severe attack of dysentery, followed by a hepatic abscess that pointed in the epigastrium, where it was opened by a physician; a drainage-tube was inserted and antiseptic injections employed; no antiseptic dressings; discharge ceased in four months, after which he regained his usual health.

He had no other illness until April of this year, when he began to have malaise. In June he began to have pain in right shoulder and arm; no pain, however, referable to hepatic region; later pain changed to right side of chest; then he lost flesh and strength; had hectic, night sweats, anorexia, slight dry cough, gradually increasing dyspnœa. Until he came under my care, August 8, he had worked as usual but, although his duties were very light, he was scarcely able to perform them.

Physical Examination—Inspection.—Patient looked much worn and very ill, marked dyspnœa, moderate emaciation, movements of right side of thorax in respiration markedly diminished, fulness of intercostal spaces on that side; decubitus on back, right side being too sore to lie on, and, if lying upon left side, increase of dyspnœa; right side measured one inch more than left.

Percussion and Auscultation.—On *left* side, exaggerated respiratory murmur, increased resonance. On *right* side, the usual signs of fluid in a pleural cavity. The whole of lower back was flat on percussion, upper back dull; in front flatness extended to upper border of fifth rib, and a little higher in axillary region, when patient was erect; in recumbent position the line of flatness noticeably lower, but its exact position was not accurately noted.

The patient was informed that there was probably pus in his chest, but that an exploratory puncture would be necessary. To this he consented, provided it was deferred for a few days. Four days later, at his house, the exploration was made. A long needle attached to an ordinary hypodermic syringe was used; a syringeful of dark-colored fluid, free from odor, was obtained. Patient was told that immediate aspiration was demanded, but that it would probably be necessary soon to open his chest and introduce drainage-tubes.

On the next day, August 13, T. 103°, P. 110, R. 30. Assisted by Dr. Cuthbert, I aspirated in the sixth intercostal space posterior axillary line; needle went in one and a half inches without striking fluid; it was then pushed a little further, and felt to pass through some resisting substance, after which fluid was obtained; aspiration was done very slowly; patient experienced no discomfort whatever, not even coughing; thirty-eight f. ℥ of thick fluid drawn off, of consistency and color of thick chocolate, odor of beef tea.

Microscopical examination of fluid by Dr. Shute and myself, independently, revealed a great quantity of leucocytes, granular and fatty detritus, clumps of amorphous coloring matter which was amber where thin, where thick, reddish; no liver cells and no crystals of any kind; a few red blood corpuscles.

He slept well that night; no pain. On the following day he breathed easier, appetite better, respiratory murmur over whole of previously flat area. In a few days later, however, patient gradually got worse, fluid reaccumulated; *pleurotomy* was decided upon.

August 22d, day of operation, nine days subsequent to aspiration, T. 100°, P. 120, R. 30. Noticed bulging in right axillary region, apparently due to serous infiltration of subcutaneous tissues, but no pitting on pressure. The seventh intercostal space posterior

axillary line was chosen as point of incision; an exploratory puncture made at that point proved the presence of fluid, which was free in the cavity as indicated by change of line of flatness with change of position of patient. A great amount of serum oozed from the subcutaneous tissues at the point of puncture, and noticeable diminution of the bulging mentioned ensued. Fifty minims of four per cent. solution of cocaine were then injected along the line of proposed incision; five minutes later a free incision was made through the tissues into the pleural cavity. Patient suffered no pain, and was hardly conscious that anything had been done. Full antiseptic precautions were taken, including carbolic spray. Thirty-two f. ℥ of fluid of same kind as that previously obtained by aspiration, escaped. Cavity was *not* washed out. Two one-fourth inch rubber tubes were inserted, their ends barely reaching the inner wall of chest; they were then fastened by a safety pin and by adhesive plaster, their ends cut off close to the skin. The following dressing, devised by Dr. A. T. Cabot, of Boston, was then applied: First, a handful of antiseptic gauze, loosely made into a ring, was put around the tubes; a little loose gauze placed over this; next, a piece of Mackintosh, about twelve inches square, large enough to go beyond the gauze in every direction on to the bare skin; finally, twelve layers of antiseptic gauze, outside of which a layer of cotton wadding was laid, and the whole firmly bandaged, a turn being taken over the shoulder to keep the dressing from slipping down.

Patient was much more comfortable after than before the operation. Drs. Cuthbert and Shute assisted me. That evening patient was very easy; temperature normal, being 1½° lower than in the morning. The dressing was soaked through somewhat, but was not changed. Subsequently, with one or two exceptions, the dressings were changed every morning under the spray.

Two days later the urine became olive-green when passed, almost black on standing. A 1 to 15 solution of chlorinated soda was then substituted for the carbolic acid in the spray, and in a day or two later, as the urine continued dark, the carbolic acid was rinsed from the gauze that went next the skin; a few days later still bichloride gauze was used throughout. After September 17, gutta-percha cloth used instead of Mackintosh. One of the tubes was omitted as soon as the discharge became considerably diminished.

Nothing of interest occurred until about a week after operation, when there was a slight rise of temperature for a few days, during which patient complained of pain and tenderness of right side. August 31, just after taking morning temperature, patient had an urgent call to evacuate bowels; on coming from closet, said he had passed a large amount of matter like the discharge from his side, but had not preserved it; temperature had fallen .6. The two following days he said he had five or six similar evacuations, all accompanied with slight pain, but he did not save them, although directed to do so.

Up to that time the discharge from chest was very copious, but from that date there was a marked decrease in quantity; color gradually became less and less chocolate-like, but more yellowish, until it was only a few drops in twenty-four hours. On September 26 *the tube was removed, just thirty-five days after operation*, and the following day he went to his work.

Improvement in his general condition followed immediately the operation, and marked improvement from the time of the unusual discharge from the bowels. He was kept in bed but two or three days.

On October 10 the sinus was entirely healed; he had gained twenty pounds in weight, and was feeling perfectly well and strong. Patient was examined by Dr. Cuthbert and myself, and we found but little retraction of the chest wall, lung normal, except a little enfeeblement of respiratory murmur at the base.

The medicinal treatment consisted of the exhibition of: Stimulants, ½ ℥ doses of sulphate of soda for a few days to counteract the toxic effects of the carbolic acid; tinct. of chloride of iron and tinct. of digitalis for about a week; afterwards, elixir of iron, quinine and strychnine and cod-liver oil.

Having given the history of the case, I wish now to discuss, as briefly as possible, its most interesting features.

Diagnosis.—It is sometimes difficult to differentiate right sided pleurisy from a large abscess of the convexity of the right lobe of the liver. In this case, however, the variation of the line of flatness with the position of patient indicates the presence of free fluid, which can only be the case of fluid in the pleural cavity. The purulent character of the fluid can only be determined with certainty by the exploratory puncture, although the hectic, night sweats and great constitutional disturbance lead one to suspect such. A writer in "Pepper's System" says that œdema of the chest wall is almost characteristic of pus in the pleural cavity. This symptom was present in my patient.

Here I desire to make a plea for the more frequent use of the hypodermic needle for exploratory purposes; it is of invaluable aid in diagnosis, and with antiseptic precautions is free from danger. A little longer and somewhat stouter needle is preferable in order to insure its passage through a thickened pleura, and to avoid the slight danger of its breaking.

Etiology.—As is usual in empyema, the cause in this case is obscure, yet one can not help suspecting the liver to be primarily at fault, although the evidence in that direction is by no means conclusive. The patient first had pain in right shoulder and arm, a not unusual symptom in hepatic trouble. The fluid is not what one usually gets in empyema, nor can I find a description of such ever having been found, but a writer in "Quain's Dictionary" states that in abscess of the liver a chocolate-colored fluid

is sometimes present; he also says, if a patient has a sudden and copious expectoration of such colored matter, we may consider this sufficient evidence that a liver abscess has burst into a bronchus. *May not the fluid in my patient's chest also have come from the rupture of a liver abscess?* Had this been the case, however, one would expect the history of sudden and acute pain in the chest, accompanied by marked prostration or even collapse. The patient had nothing the kind, but he does say that pain and soreness of chest, with dyspnœa, followed and replaced the pain in shoulder.

You will remember that two years ago the patient had a liver abscess. *May not a purulent focus have remained dormant from that time until his present illness?* It is well known that abscess of liver is frequently multiple, and may give rise to no symptoms for years. On the other hand, had the abscess been at the convexity, he may very naturally have referred the pain and tenderness to the chest. The microscopical examination of fluid was negative as far as the liver is concerned. It is to be regretted that the patient's description of the unusual discharge from bowels can not be verified. Assuming that he was correct, *where did the matter come from?* One would suspect from the sudden decrease in the amount of discharge from the chest that followed this event, that there must have been a communication between the pleural cavity and the intestinal canal.

As was remarked before, the etiology of this case is uncertain, although one is tempted to regard the liver as the primary seat of the mischief.

Prognosis.—Cases of empyema after operation by the usual methods, even under the most favorable circumstances, usually require months and sometimes years before the final closure of the cavity. Dr. Cabot reported in *Boston Med. and Surg. Journal*, Aug. 16, 1883, fourteen cases in which he used his dressing; the ages of his patients varied from 1¼

years to 33 years; eleven recovered; two died of phthisis; one of unknown cause; the average length of time before removal of tubes was only twenty-four days. He recently told me that he has since used the same method with excellent results, and still clings to the spray. In this case reported above the tube was removed in thirty-five days.

The completeness as well as the rapidity of recovery is noteworthy. This result is due partly to the prompt recognition of the disease and to the speedy performance of the operation, but especially to the peculiar dressing used, its antiseptic character, and to careful antisepsis throughout.

A free opening into a pleural cavity, of necessity, permits ready entrance and exit of air. As a result, the lung is semi-collapsed, and expands only in proportion as the cavity is obliterated by the formation of adhesions between the pulmonary and parietal pleuræ, and by sinking in of ribs. It sometimes happens, under the ordinary treatment, that this process takes place so slowly that the lung is permanently kept high in the cavity by adhesions sufficiently strong to completely prevent its further expansion and descent, recovery then only taking place after resection of some of the ribs.

It is believed that in the Cabot dressing, the Mackintosh, lying snug to the skin as it does, acts as a valve, allowing the exit of air and fluid but preventing the reëntrance of air, thus giving the lung an excellent opportunity to expand fully and at once. The entrance of air is also hindered to a certain extent by the many layers of gauze outside the Mackintosh. The cotton wadding secures elastic pressure and keeps the Mackintosh firmly applied to the skin, yet allowing it to be lifted up for escape of air and fluid.

As to injections into the cavity, one finds equal authority for and against. It is usually a safe thing to do, but sudden death has occurred with sufficient

frequency to warn us to be very careful to use great gentleness, and not to inject a large quantity of fluid suddenly. Carbolic acid should be used neither in the injecting fluid nor in dressings next the skin. Dr. Cabot had serious symptoms in one of his cases from absorption of an exceedingly small amount of carbolic acid. In my case the prompt occurrence of melanuria gave ample evidence of absorption, although there were no other toxic symptoms.

No injections were used at any time in this case, because there were no clots in the cavity, no fetor, and because it seemed to me that by separating the pleural surfaces and by mechanical violence they would prevent the formation of the needful adhesions.

The object of having the tubes barely long enough to reach the cavity is to avoid irritating the pleura, for long tubes and catheters act as foreign bodies, and tend to keep up suppuration.