ON THE
OCCURRENCE OF PLEURAL EFFUSION
IN
ASSOCIATION WITH DISEASE OF THE
ABDOMEN.

BY
LAWSON TAIT, F.R.C.S.,
PROFESSOR OF GYNÆCOLOGY IN QUEEN'S COLLEGE, BIRMINGHAM.

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I HAVE devoted as much time as my engagements have permitted during the last few months, and more casually for some time before that, to an examination of the literature of diseases of the chest, to discover if any author has drawn attention to the occasional occurrence of effusion of serum into the pleura as a symptom occurring in diseases of the abdomen. Up to the present, however, I have not met even with a record of an instance of the kind. My own experience is sufficiently large now to make it perfectly certain that in a considerable number of cases pleural effusion occurs, and when it does occur it may be a symptom of very great, indeed of grave importance. My principal object is to draw attention to

this occurrence, so that others whose special experience in diseases of the chest must be much larger than mine, may lend their assistance to a more complete investigation of this phenomenon.

I have now performed very nearly 3000 abdominal sections. I have seen in addition a large number of cases of disease in the abdomen, where for one reason or another operations have not been performed, or where they have been performed by other surgeons, and therefore I am not in a position to give any statement as to the exact conditions. Indeed, I cannot lay claim to have got an accurate statement of the total number of cases in which even in my own experience pleural effusion has been a prominent feature; but I think that probably I have not had my attention drawn to it, nor have I had occasion to discover its presence in more than twenty cases, and save in five of these cases I can do little more than trust to my memory for the details. But in the fourteen or fifteen cases in which only the ultimate results are accurately recorded, these are so uniform that there could be little doubt in which direction the bulk of my experience points. In the group of cases in which I have detailed records the experience uniformly points in the same direction as in the other fourteen or fifteen, and this is to establish the conclusion that pleural effusion in the presence of an abdominal tumour or of serious abdominal disease is an indication of the very gravest possible kind.

In order that I may make my meaning clear, permit me to give in detail the first case in which my attention was drawn to the symptoms :

On the 2nd of March, 1878, I was summoned down into Merionethshire to see a patient aged twenty-six, under the care of Dr. Price Jones, of Llangollen. She had been married eleven months, and had been confined on the 21st of February of a child, the labour being in every respect ordinary except that the child was stillborn and

the placenta somewhat friable, but it came away easily. All went well except that the abdomen did not go down completely as usual after labour; indeed, the midwife who attended the labour says that it diminished very little in size after the confinement. Symptoms resembling those of peritonitis came on next day, and on February the 28th she is reported as presenting a sunken, dejected appearance, pulse 100 and temp. 99°, and abdomen immensely distended, with a uniform dull note all over. The motion of the diaphragm was impeded, so as greatly to interfere with breathing. I saw her on the morning of March the 3rd at about 2 a.m., and found the above condition increased; pulse was 180, and breathing 50 to the minute; the patient was extremely exhausted, the uterus was fixed high up in front, and associated intimately with a large bulging tumour which occupied the whole abdomen. In order to save her from threatened suffocation I tapped her above the fundus of the uterus, and removed nearly five quarts of what seemed to me almost pure blood. This greatly relieved her, so that at seven o'clock on the morning of the 3rd her pulse had fallen to 120, and respiration to 32. There was left in the abdomen a large doughy mass, which seemed to me evidently to contain blood-clot. She improved, however, during the next few weeks very rapidly, and she was removed to Birmingham and admitted to the Hospital for Women on March the 30th, but the journey had evidently been a great deal too much for her, as next day acute oedema of the legs came on, and on April the 2nd the abdomen was again so distended as to induce great dyspnoea, and made it necessary for me to tap again. On this occasion I removed eight and a half pints of a fluid, half blood and water. The patient was greatly relieved, but in the afternoon of the 3rd of April dyspnoea was again so urgent that Dr. Heslop saw her in my absence, and recognising effusion into the chest, recommended that I should tap the left pleura at once on my return. This I did, and I removed three and a half pints of bloody serum; on the 4th I removed two and a half

pints of bloody serum from the right pleura, and we came to the conclusion that there was malignant disease in the chest. The effusion, which must have occurred very rapidly, did not recur, and the patient's sufferings from abdominal distension were so great that on the 6th I determined to perform abdominal section, and in this I had the advantage of the assistance of my colleague, Dr. Savage, and the aid and advice of Dr. Marion Sims, who was my guest at the time.

I made a median incision five inches long, and passed through the ordinary textures and then through a jelly-like layer, which was undoubtedly a mass of malignant disease, and then came into a large cavity lined with thick layers of firm blood-clot. We did not think it desirable to disturb this, nor to separate what looked like a cyst wall from the abdomen, on account of the possibility of unrestrainable hæmorrhage. A drainage-tube was inserted and the wound closed. She did fairly well during the 7th and 8th of April, but on the evening of the 9th bilious vomiting came on, and she died about 5.30 p.m.

A post-mortem examination was made by Dr. Saundby on the 10th of April, and he favoured me with the following report :

The body was that of a young woman fairly developed, emaciated, yellow fluid issuing from mouth ; a partially healed linear incision ran from the umbilicus to the pubes ; hypostatic congestion and rigor mortis were present. The head was not examined.

The left pleural cavity contained about two quarts of blood-stained serum ; the lung collapsed, but healthy in texture. There was a fungating ulcerated growth, about the size of a walnut, covered with blood-clot, on the pleural surface of the diaphragm. The right pleural cavity contained about a pint and a half of similar fluid ; lung floating, healthy. There was a growth similar to that on the left side on the surface of the diaphragm, pleura, and also on the ribs, under the parietal pleura. The pericardium

and heart were healthy, the ventricular cavities full of clots. The posterior mediastinal glands were swollen to the size of hens' eggs by cancerous infiltration.

The lower part of the cavity of the abdomen was filled by a large cystic mass adherent anteriorly to the abdominal wall and to the uterus, broad ligaments, and lower part of rectum. It was removed *en masse*, and on examination was found to consist of a large cystic cancerous tumour of the left ovary, situated behind the uterus and pressing down posteriorly behind that organ and the rectum and extending upwards, and anteriorly till it came in contact with the abdominal wall. It did not involve the coats of the bowel.

The large cyst which had been opened by the incision through the abdominal wall was of varying thickness; its walls were irregular, and in many places covered with blood-clot. Anteriorly it was adherent, but easily separable from the uterus and vagina, the structures of which were not involved. The other ovary was also adherent, but free from disease. The microscopical appearances of the growth were those of encephaloid cancer. There was a cancerous mass in the line of incision of the abdominal wall, and the mesenteric glands were cancerous. All the other organs were healthy.

In the case just narrated the onset of the hydrothorax was probably very rapid; indeed, it wants but little consideration of the case to see that the whole dreadful state of the patient was an example of how rapid cancerous pathological processes may be. The lesson was so fervidly imprinted upon my mind that from that moment I regarded pleural effusion in all abdominal cases as very serious, and I established for myself a conclusion that when the pleural effusion had an infusion of blood in it the only opinion that could be maintained was that the whole disease was due to cancerous development.

The other cases in which this symptom has been brought to my notice have had, so far as any fact in connection with them in my memory serves me, uniformly fatal end-

ings, and I think I am justified in concluding that they were all malignant; and I believed that this conclusion from the experience just narrated was likely to be accurate in the majority of the cases. Acting upon such an accumulated experience, I had determined in my own mind to discourage all operative proceedings in cases where, as well as abdominal disease, there was ascitic effusion with well-marked pleural effusion on both sides, especially if the latter were determined by aspiration to be of a sanguinolent character, on the ground that the certainty of these cases being malignant was almost absolute, and as the probability was that the pleural lining was infected as well as the peritoneal surface, no hope could be entertained of relieving them by any operation. I have now, however, to place on record a case which shows that such a conclusion may be quite erroneous. The following case displays a remarkable example of a combination of peritoneal and double pleural effusion, the fluid in all three cavities being markedly bloody. I think it is perfectly certain from the result that the disease was not cancerous, and an operation has resulted in a cure absolute and, I trust, permanent.

L. T—, single, æt. 36, was sent to me by Dr. Brown, of Tintern, in January, 1890, with a large abdominal swelling.

Her menses began at the age of sixteen, were never quite regular, occurring only every five to eight weeks (never four weeks), lasting four days, scanty, not painful. She menstruated four weeks before admission. She was always subject to indigestion and irregularity of the bowels, sometimes having diarrhœa, and sometimes obstinate constipation. For five years before admission she had symptoms of irritation of the bladder. She had occasionally retention of urine for many hours, and then suddenly the obstruction would be removed, and she would pass a large quantity of urine. She had no leucorrhœa. About June, 1889, her abdomen was noticed to be enlarged. This

steadily increased, very rapidly during December, 1889. There was never any pain in the abdomen or back.

For a month before admission she had severe cough, shortness of breath, and night sweats, with profuse expectoration of much black-coloured stuff.

Condition on admission (January, 1890).—Face thin and anxious, body generally emaciated, abdomen greatly enlarged. She breathed rapidly and with difficulty. On examining the chest the left side was absolutely dull nearly up to the clavicle. There was no vocal fremitus or vocal resonance, the intercostal spaces were increased and bulged, the left side of the chest moved but slightly during respiration, and the heart was displaced to the right. The heart was rapid and weak, with its first sound faint. In addition to the evident hydrothorax of the left side there was some bronchitis on the right side.

On examining the abdomen it was found to be greatly distended, the superficial veins were enlarged, and the umbilicus was everted. There were all the physical signs of ascitic effusion free in the peritoneal cavity. In addition there could be felt on deep pressure through the fluid a large rounded solid tumour, apparently moored in the pelvis and floating freely in the ascitic fluid. As the breathing was much distressed the left pleural cavity was aspirated, and ninety-five ounces of blood-stained serum removed. A few days after the tapping of the left side fluid was discovered in the right pleura, and was similarly removed. It contained a quantity of blood. The diagnosis of malignant disease of the peritoneum with secondary infection of the pleural surfaces was made. I declined to operate on the abdominal tumour, and the patient returned home to die.

About a fortnight after returning home her left pleura was again tapped, and eighty ounces of pale yellowish fluid removed. After this she had a slight attack of inflammatory pleurisy. In February, 1890, the abdomen was tapped, and eleven quarts of pale yellow thin ascitic fluid removed. From this time until February, 1891, her

abdomen was tapped over thirty times, from eight to fourteen quarts of thin clear yellowish fluid being removed at each operation. She was last tapped on February 28th, 1891, when eleven and a half quarts was removed. The pleural effusions did not recur. During the summer of 1890 her legs became œdematous; but this complication subsided, and when readmitted had quite gone. After each tapping the solid abdominal tumour could easily be felt. Before readmission her general health had greatly improved, her bowels were regular, and her appetite fair. Her urine was scanty, and deposited abundant urates. There was no albuminuria. The patient was readmitted into my private hospital on March 4th, 1891; she was then in much better health. She had no pulmonary symptoms, and she was not so emaciated. The pleural effusion had not reappeared since the last thoracentesis in January, 1890.

On examination there was an impaired percussion note over the base of the left lung behind, and distant breath-sounds. The abdomen was distended with free ascitic fluid, floating in which could be felt the solid tumour before described. It had increased during the interval, but not greatly. It felt multinodular and was slightly tender. It was quite solid, and freely mobile from side to side. It appeared to rise out of the pelvis, and reached up to the umbilicus. *Per vaginam* the uterus was small, and did not move with the tumour, which could be felt behind and above it.

There was no œdema of the legs and no albumen in the urine.

Operation on March 5th, 1891.—I opened the abdomen by a short vertical incision in the middle line, midway between the pubes and the umbilicus. As soon as the peritoneal cavity was reached a large quantity of ascitic fluid escaped. The tumour was now discovered to be a large solid growth of the right ovary. It was quite free from adhesions save to the ovary of the other side. The abdominal incision was increased up to the umbilicus, the

tumour delivered through the opening, and the pedicle—which was formed by the elongated broad ligament—transfixed and tied with the Staffordshire knot. The ovary of the other side was so adherent that it was removed with the tumour, its pedicle being tied also with the Staffordshire knot. But the Fallopian tube on the left side was not removed. The tumour was now cut away, the peritoneal toilet carefully made, a glass drainage-tube inserted, and the wound closed with ten silk sutures. The patient rallied well from the operation. Very little fluid came through the drainage-tube, and at the end of twenty-four hours it was removed. The bowels moved spontaneously on the third day. Six sutures were removed on the sixth day, and the remaining four on the eighth day. She developed urticaria on the eighth day, affecting chiefly the arms and the abdomen. About the fifteenth day her evening temperature began to rise, and she had pain in the back and the pelvis. On examination a tense rounded fluctuating swelling was discovered behind the uterus. On the twentieth day this was aspirated *per vaginam*, and twelve ounces of thick offensive grumous pus removed. The febrile symptoms subsided but recurred five days later, and the suppurating cavity refilled. It was aspirated on the twenty-sixth day when five ounces of pus were removed. Three days later the pus again accumulated. This time, however, it burst into the vagina spontaneously, and continued to discharge for about a week. After this her recovery was uninterrupted but slow. The exudation mass behind and to the right of the uterus slowly became absorbed, and when the patient left the hospital six weeks after the operation it had almost entirely disappeared. The abdominal incision healed by first intention.

The tumour weighed 2 lbs. 2 oz. It was nearly globular in form and quite solid. Attached to it were the ovary of the other side and the Fallopian tube of its own side. Microscopic examination showed it to be a fibroma. On its free surface were a few small cysts containing clear fluid.

The lesson in this case is, in my opinion, a very valuable indication that no set of conditions in the abdomen, however apparently unfavourable, are sufficient to justify us in an absolutely unfavourable condemnation in any particular case. Looking back upon my experience of pleural effusion as complicated by abdominal disease, which I have said probably gives the somewhat insignificant number of twenty cases out of more than three thousand, I think that probably my general impression that it is a very fatal complication, especially when the fluid is of a bloody character, is correct; and if half of the cases had been submitted to abdominal section, simply for the purpose of exploration and removing the bulk of fluid, the likelihood is not great that permanent benefit would have accrued in many of them; but if one of the lives had been saved by the discovery of a mistake, I think it would have quite justified the performance of the incision in all the rest, for under such circumstances the mere opening of the abdomen has risk very little, if any, greater than the process of tapping, which has to be employed for the purpose of giving the patient relief. Tapping, however, has the disadvantage that it leaves the condition of diagnosis quite as imperfect as it was before the operation, and I have never in a single instance seen anything like a curative effect from the process of tapping in the abdomen. Even in the successful case I have given in detail, tapping of the pleura did not seem to have the controlling influence preventing further secretion; whilst in the abdomen it had no curative influence at all, having had to be repeated over thirty times. The striking results obtained in this case by the correction of my initial mistake have gone a long way to confirm me in the advisability of extending the principles of exploratory and confirmatory incisions in abdominal disease to an almost universal application.

(For report of the discussion on this paper, see 'Proceedings of the Royal Medical and Chirurgical Society,' Third Series, vol. iv, p. 23.)