LUMLEIAN LECTURES

ON THE

NATURAL HISTORY AND DIAGNOSIS OF
INTRATHORACIC CANCER.*Delivered before the Royal College of Physicians, 1870.*By JAMES RISDON BENNETT, M.D.,
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V.

A MARKED distinction between the progress of an intrathoracic aneurism and cancer is the well known tendency of the former to produce *absorption of bone and external tumour*. Dr. Stokes says that he has seen no instance of cancer of the mediastinum inducing either one or the other; nor have I met with any instance of absorption of bone. But of external tumours, thus induced, I have met with several instances. Mr. Holmes, however, records a case in which both external tumour and absorption of bone resulted from the outward growth of a malignant mediastinal tumour. The man, twenty-three years of age, was a patient of Dr. Pitman, and was admitted with a tumour presenting towards the right of the upper part of the sternum; it felt almost solid, and pulsated strongly. No aneurismal *bruit* could be detected; but a systolic murmur was heard over the tumour and at the base of the heart. The pulse was full and bounding, and there was an inequality in the successive beats at the right wrist. The man was stout and of florid complexion, and had had hæmoptysis. It was found, after death, that the tumour had completely absorbed the sternum in many places.

In a case recorded by Dr. Pollock, a tumour appeared in the suspicious situation of the second intercostal space, hard, exquisitely tender, and the seat of lancinating pains. I could also quote other cases in which distinct external tumours and limited protrusions of the thoracic parietes have been met with.

The spinal column is not infrequently invaded by intrathoracic cancer, though seldom to the extent seen in the case last detailed; and here it was accompanied by an external tumour in the dorsal region. My friend Dr. Stone has also related to me the case of a lady who, having for some time had a small scirrhus tumour of the mamma, gradually became paraplegic. The auscultatory phenomena for a long time gave no indications of thoracic disease; but a tumour made its appearance between the scapulae, which was the seat of much pain and tenderness. Ultimately, there was a systolic murmur; and signs of pressure on the heart and aorta supervened. After death, the lungs and heart were found to be pressed forward against the sternum, and the aorta flattened by enlargement of the bodies of three of the dorsal vertebrae, which were converted into a tapioca-like mass by colloid cancer. The interscapular tumour was produced by enlargement of these vertebrae, the seat of colloid cancer—a form of cancer very rarely met with in the spinal column.

As a general rule, cancer invading the spinal column does not extend through the meninges and infect the cord, or even induce inflammatory changes in the nervous substance. The cord itself was not implicated in the case of the young woman just detailed. In the following case, however, inflammatory softening of the cord resulted from the cancerous disease of the vertebrae and meninges. This case, moreover, is remarkable from the early age of the patient, a boy eleven years old; and from the wide diffusion of cancer through the system.

April 1864. G. C., a lad, aged 11, of rather pale and delicate aspect for a country boy, stated, when admitted into St. Thomas's Hospital, that he had never had any illness, and that a week previously he was at work in the fields with his father. On returning home, he complained of pain in his back and loins, and was unable to walk or even stand. On questioning him, he said that the pain of his back was now gone, but he had lost the use of his lower extremities. Sensation was a little impaired. The sphincters were impaired; and the bladder was now enormously distended, the urine having dribbled away for some days before admission. The skin was warm; pulse quickened; tongue slightly furred and coated. He was ordered a purgative, a saline diaphoretic mixture, and hot wet blankets, with the use of the catheter at regular intervals. Two days after admission, he had some power of motion of the right leg, but none of the left. The left leg and thigh were swollen and cedematous. There was also some cedema over the back towards the middle, but no tenderness or pain along the whole course of the spine. He did not make any complaint of pain. There

was no twitching or other spasmodic action. He slept well after the use of the blanket, in which he sweated freely. Pulse 100, soft; tongue not dry, but somewhat furred. He took food well. The breathing was quiet. He had no cough. The urine was pale, exalbuminous, and free from sugar.

A day or two after this, enlarged glands were observed in the groin. The oedema of the left extremity and of the back continued. He had regained some power of the sphincter ani, but none of the bladder. The secretion of urine continued free. On April 11th, he lay on the left side, and had some numbness of the left arm. The leg was much swollen, and there was a superficial sore of the sacrum. A month later—viz., May 13th—there was oedema of the abdominal integuments of the left side, as well as of the leg; and there was some enlargement of the veins, as well as tenderness. On June 9th—a month later—he had become very anæmic. The hypochondria were dilated and tense. There were some nodules on the sternum, and deep depressions of the ribs on each side. The abdomen was swollen and tympanitic. The liver, however, could not be felt below the ribs. The respiration was quiet, and could be heard quite low down. There was no dyspnoea, cough, or other pulmonary symptoms. The heart was *in situ*. There was considerable distension of the superficial veins. He did not appear to be suffering much in any way, and took his food tolerably well. He died on June 23rd.

Autopsy.—The body was extremely emaciated. The lower extremities and the lower part of the trunk were highly anasarcaous, the left leg being rather more swollen than the right. The skin was quite pale. The brain and its membranes were quite healthy. The muscles of the back contained several masses of white soft cancer, apparently taking the place of the muscular tissue on each side of the dorsal spines. The anterior part of the vertebral canal contained similar growths, extending from the middle dorsal region downwards to the sacrum, in front of, and somewhat adherent to, the anterior surface of the dura mater. The internal surface of the dura mater and the surface of the spinal cord appeared healthy; but, on microscopic examination of the tissue of the cord, that of the middle dorsal region was found to contain numerous spherical granule-corpuscles; and many of the nerve-cells seemed granular, as if in process of conversion into granule-corpuscles. The tissues of the cervical and lower dorsal portions of the cord appeared healthy. There was a collection of turbid brownish fluid in the left pleura, and some shreds of lymph were adherent loosely to the left lung. The pleurae and the lungs contained numerous masses of white soft cancer, varying in size from an egg down to the smallest visible particles projecting from the surface of the pleurae. Many similar masses were found in the anterior and posterior mediastinal spaces and in front of the lumbar vertebrae, forming a continuous series from the neck to the sacrum. The cancer was white, and all more or less soft and juicy, some masses appearing quite soft and creamy in the centre. Some of the masses in the lungs involved portions of the bronchial tubes—without, however, rendering them impervious; the affected portions of the tube being quite white and opaque. The heart and its valves appeared healthy. The pericardium presented old cellular adhesions. The liver was much enlarged and somewhat fatty. The spleen was also very large; but neither of these viscera contained any cancer. The right kidney was large and somewhat congested, weighing six ounces. The left kidney was small, weighing three ounces; its cortical substance was inflamed and partially destroyed by pressure from within outwards, the pelvis and the upper portion of the ureter being distended with urine. Near the bladder, the ureter was completely occluded by a mass of encephaloid, apparently springing from the outer surface of the bladder on the left side, and occupying a great part of the cavity of the pelvis, considerably compressing the rectum. The right ureter was pervious; the bladder was contracted, its walls thick; its mucous membrane was apparently healthy. The suprarenal bodies and pancreas appeared healthy. The stomach and intestines also seemed healthy, except that the colon was much distended with solid fecal matter; the sigmoid flexure especially forming a large pouch, which projected forwards above the bladder and pubes. There were several enlarged glands in the groin, converted into masses of soft cancer, and pressing on the iliac veins, which were filled with adherent brownish-coloured clot. The glands in the left groin were especially enlarged; and on this side the obstruction to the venous circulation extended rather higher up, and was more complete.

There are, I believe, very few cases on record in which the heart has been the seat of cancer, except as associated with the same disease of the lungs or mediastinum. It is not, however, very rare to find the pericardium and heart invaded by the progress of cancer commencing in other parts of the thoracic cavity. We have seen that the heart may be pressed on and displaced by mediastinal growths, and its action thus seriously deranged. It is not, therefore, remarkable that we should

frequently meet with cardiac *bruits* and modifications of rhythm and impulse in connexion with various forms of intrathoracic cancer. This should be borne in mind in obscure cases, where there may be any question as to the existence of aneurism. It has in several instances been found to mislead, when the real cause of signs of pressure has not been ascertained. I have not myself met with an instance in which the cancer was confined to the heart. A few years ago, however, Bricheteau published a very interesting case in which the heart alone was the seat of disease within the thorax, but associated with similar disease of the ovaries. The cardiac affection was not suspected during life; the patient, a girl aged 24, having been admitted with slight signs of pleuropneumonia, which subsided. When apparently going on well, the pulse suddenly rose to 156 or 160; and the sphygmographic tracing showed a series of curves, without any line of ascent. The heart's sounds continued normal, and the patient complained only of a feeling of weakness and oppression. She had no palpitation. On the morning of the last visit paid, she seemed better, and the pulse had fallen to 140. Two hours afterwards, when trying to reach a morsel of sugar from the stand by the bedside, she fell back and died. On opening the thorax, numerous pleuritic adhesions were discovered. The pericardium contained a little serum, and the heart rested in it perpendicularly. The left ventricle was of a yellow colour, and presented numerous irregularities of surface. Its muscular fibres were almost completely destroyed, and replaced by irregular yellowish masses, firm, and projecting from the surface. On scraping these masses, they yielded a yellowish cancerous juice. They extended into the posterior wall of the right ventricle, and into the right auricle, as well as into the inter-ventricular septum. In the interior of the left ventricle there were numerous smooth and round vegetations. The right ovary presented the appearance of a white mass of considerable weight and consistence. The microscope showed the cancerous nature of the masses, and a fatty state of that portion of the muscular structure of the heart which was not replaced by cancer. The other organs were healthy.

Dr. Sutton has favoured me with the details of a very rare case, in which the heart was the primary seat of intrathoracic cancer, but had become affected by the extension of disease through the parietes of the chest, from scirrhus of the mamma. A lady, fifty-three years of age, was suffering from a tumour in the left breast, which was considered by an eminent surgeon to be scirrhus. This tumour apparently ceased to grow; but the patient's health continued impaired, and by degrees her breathing became affected, and she complained of much breathlessness on exertion. On examining the chest, the lungs were found to be somewhat emphysematous; but there was no evidence of bronchitis, and the small amount of emphysema seemed quite inadequate to account for the breathlessness. The heart's action was regular, and there was no increase of the cardiac dulness. The first sound of the heart was very feeble, but unattended by any murmur. The lady gradually lost flesh, particularly of the extremities; she complained of pain about her chest; and the cardiac region became very tender on percussion. The shortness of breath increased, and frequent nausea and occasional vomiting supervened. The feeling of sickness increased, and became most distressing night and day. The respiration became much accelerated. Nothing relieved the nausea, except very temporarily; and the patient sank. After death, the tumour of the mamma proved to be scirrhus. It had penetrated through the intercostal muscle by a narrow pedicle, and involved the pericardium, forming at the root of the heart a tumour of the size of a small orange. This tumour surrounded the pulmonary artery and aorta, the innominate and left carotid and subclavian arteries, running along the outer coats, but not, apparently, diminishing the channel of those vessels. The growth also extended down towards the apex and into the anterior wall of the right ventricle. The heart weighed about five ounces; it was apparently much atrophied. The lungs were emphysematous, but otherwise healthy. With the exception of a fibrous tumour in the uterus, the other organs were healthy.

Neither of these cases, I think, helps us much in determining the symptoms and diagnosis of cancer of the heart. Increase of dyspnoea, pain, palpitation, faintness, and vomiting appear, from a comparison of other cases with those which I have given, to have been the most prominent symptoms; and of those symptoms, faintness and vomiting or nausea have been most frequently noticed. When the valvular apparatus has been the seat of cancerous deposits, deranged rhythm and morbid *bruits* have been not infrequently noted.

Materials for a more accurate diagnosis of the various forms of intrathoracic cancer are daily accumulating; and I would fain hope that the clinical experience which these lectures have afforded me the opportunity of recording will be accepted as a contribution of some value to those who may be able to pursue still further the investigation of a subject full of practical interest and importance.

BLOOD-LETTING AS A REMEDY IN ACUTE SCARLATINA DROPSY.

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MANY years ago, I had formed a high opinion of the value of blood-letting in acute scarlatina dropsy, and more ample experience has confirmed me in my former views. A severe and protracted epidemic of scarlatina in Perth has enabled me to see much of this malady. Dropsy, as a sequela, has been unusually common, and very deadly; nine cases dying from this cause alone out of forty-four fatal scarlatina cases. During this epidemic seventeen cases of dropsy have come under my care, and on a previous occasion two, making a total of nineteen cases. Depletion has been my chief remedy, and the results have been eighteen recoveries to one death. To show that these cases have, as a whole, been far from mild, it may be stated that five of them had uræmic convulsions, more or less severe; others showed symptoms of uræmia in a less degree, and some of them were highly anasarcaous. It was observed that three-fourths of the dropsical cases were preceded by a mild attack of scarlatina. Certainly cold was not the exciting cause, as the majority of them were most carefully watched and never exposed at all. It seems more probable that, when the scarlatina rash is copious, the skin does the bulk of the poison-elimination work; when the contrary, it is the kidneys which suffer from the poison, become congested, and hence the anasarca. The disease was generally ushered in by febrile symptoms, but this was not always the case; the urine was sometimes reduced to an ounce or two in the twenty-four hours; at other times it might be as much as thirty ounces; but then, its specific gravity was always low, and it showed decided proofs of a want of excretion of urea. I need not mention that it was always albuminous, sometimes bloody, and containing disintegrated epithelia and tube-casts.

Uræmic symptoms were common enough—pain in the head, drowsiness, slowing of the pulse, which was often also unrrhythmic, dilatation of the pupils, impaired vision, amounting sometimes to all but complete blindness; rarely, vomiting of grumous blood was superadded. A curious circumstance, first noticed, I think, by Professor Christison, was also observed; that the danger of uræmia was not always in the ratio of the quantity of urine passed, or of urea excreted, some patients becoming convulsed while secreting fifteen or twenty ounces in the twenty-four hours, and others showing no uræmic symptoms while the urine was all but suppressed.

Treatment.—I have found nothing to be compared to blood-letting in the dropsy which follows scarlet fever; it is incomparably the best diuretic, and often turns the tide when all other means have failed. It is not intended, however, to assert that all cases of this kind require depletion, as not a few of the milder sort will do well if sharply purged and freely sweated; but there are many cases that altogether refuse to respond to such treatment, and diuretics even of a mild unirritating character, such as digitalis with bitartrate or acetate of potash, do not better the patient's condition in the slightest degree. In my own hands they have signally failed when used before depletion, and such is also the general experience of my professional friends in this quarter.

As a general rule, local depletion, from two to six leeches over the loins, according to age, will answer every purpose; but, should uræmic convulsions ensue, general bleeding will be found invaluable, both in arresting the fits and in restoring the secretion of urine. When the patient is over eight years of age, eight or ten ounces should be drawn, *or a decided effect will not be produced*. Chloroform may here also be used with much benefit after depletion, but I should not consider it good treatment to trust to it alone.

It has been argued against bleeding in this malady that the convulsions are, in a large measure, owing to a watery condition of blood and an exhausted state of system. This, however, is a mere assumption; the blood drawn is not found deficient in solids, and those who thus suffer, as has been already remarked, have gone easily through the primary malady, and are not much shaken. The truth is, the convulsions are caused by a blood-poison; and general depletion removes this by restoring the kidneys to working order again.

The following cases will best show the value of this remedy.

CASE I.—A boy, aged 8 years, was recovering from a mild attack of scarlatina, when, about the fourteenth day after the fever had disappeared, dropsical symptoms showed themselves. For this he was ordered calomel in very small doses, one-sixth of a grain every six hours, along with three drops of digitalis tincture, and his bowels were purged by compound jalap powder. His breathing soon became seriously impeded, and it was found that he was suffering from œdema of the glottis; this, however, was subdued by free swabbing with a