A CLINICAL LECTURE ON MEDIASTINAL TUMOURS.

Delivered in the Western Infirmary, Glasgow.

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[REPORTED BY WM. R. JACK, M.B.]

THE case which I am about to bring under your notice is one of exceptional interest from the point of view of diagnosis. The disease from which the patient suffered is very unusual in so young a woman, yet the evidence for its existence in this case appears to be practically conclusive, although it was unfortunately impossible to verify the diagnosis by *post-mortem* examination. The patient, a young woman of 20, has been seen by some of you during life. She was admitted on October 20th, 1893, complaining of swelling of the feet and legs, accompanied by palpitation and breathlessness. These symptoms had developed four weeks before she came to the hospital. Her family history threw no light upon the case, as, with the exception of her mother, who died in childhood, all her relatives are alive and well. With regard to her personal history, but for measles in childhood she was never unwell, until two years ago, when she began to suffer from palpitation. This never became so prominent as to unfit her for work, nor was it accompanied by dyspnoea before the present illness began. She had never had either rheumatism or scarlet fever.

Her present illness began somewhat suddenly—a month, as has been said, before her admission to hospital. The first symptom was a general swelling of the face, arms, body and lower limbs. She was unable to assign any definite cause for it, but remembered having been overheated in the washing-house on the previous day. The swelling was at first very marked, but diminished considerably under the treatment she received at home. At the same time she began to suffer from breathlessness. This was associated with a very irritating cough, which was worst at night, and was accompanied by a slightly bloodstained expectoration. Throughout the illness she passed less urine than usual, and its colour was markedly dark.

Such was, in brief, the history of the patient up to the time of her admission to hospital. When we turned to the physical examination, it was observed that there was great dropsy of the lower extremities, but, at the time of her admission, the swelling had disappeared from the face and arms. The urine was reduced in quantity, only 9 ounces being passed in twenty-four hours; it was muddy, and contained a copious deposit of urates. Albumen was abundant, but no tube casts could be found. The liver was enlarged in a downward direction, and tender to pressure. It measured $5\frac{1}{2}$ inches in the mammary line, and extended $1\frac{1}{2}$ inch below the costal border. There was marked lividity of the lips, cheeks, and finger nails, and, on inspecting the chest, the superficial veins were seen to be dilated in its upper regions, and still more dilated in the neck. This dilatation was especially conspicuous upon the right side.

On examination of the lungs, the breath sounds were found to be equal on both sides, and accompanied by some bronchitic *râles*, especially at the bases. The left base was somewhat hyper-resonant. On October 30th it was noted that the quantity of blood in the sputum had increased, and that it was not unlike a pneumonic sputum, but that the blood was of a brighter red. There was no fever in the course of the case.

On October 28th the right arm became considerably swollen, and on the 29th the right chest wall became somewhat cedematous. On the 30th the feet, ankles, and legs, from which the swelling had, since admission, almost disappeared, again became extremely swollen and cedematous.

The right upper arm measured $10\frac{1}{2}$ inches in circumference, the left only $7\frac{1}{2}$ inches. On November 1st the right radial pulse was noted to be distinctly weaker than the left.

These symptoms pointed clearly to obstruction within the chest. It remained to determine the cause of the obstruction; and, on examination, a cone-shaped dulness was found over the upper part of the sternum, merging below in the cardiac dulness. It extended above from the inner end of the left clavicle, 2 inches to the left of the sternum, to a point just to the right of the right border of that bone, and it broadened slightly as it passed downwards (see diagram). With regard to the nature of this dulness, it was thought by some who examined the case that it might be due to pericardial effusion, but the following points seemed decisively to contradict that view. The apex beat, which was quite distinct, was found 3 inches below and $1\frac{1}{2}$ inch to the left of the mammary line. There was no bulging of the intercostal spaces. There was no cardiac murmur and no pericardial friction sound. The second sound was accentuated in the aortic and pulmonic areas, and reduplicated, but there was a complete absence of indistinctness of the heart sounds.

The diagnosis turned then upon the following points: The feebleness of the pulses, especially on the right side, the marked lividity, the engorgement of the veins on the right side of the chest and neck, the cedema of the right arm and right side of the chest, the downward displacement of the heart, and the compression of the left lung, indicated by the distinct hyper-resonance near its base. Pericardial effusion, due to renal disease, and pericarditis were equally excluded by the condition of the heart, and there seemed to be no lesion that could give rise to such a chain of symptoms with the exception of a mediastinal tumour. The patient died on the morning of November 8th, but, unfortunately, a *post-mortem* examination was refused. The diagnosis, however, appeared, apart from it, to be established with comparative certainty, and if we compare this case with others which have occurred in my wards you will see that similar symptoms are common to them all.

The first is the case of an iron-moulder, aged 44, who had been healthy until a year before his admission on November 11th, 1874. At that time a slight cough set in, accompanied by an increasing amount of expectoration. Six months afterwards he caught a severe cold, the cough became violent, and the sputa streaked with blood; and after that time he frequently brought up small quantities of blood. Three months before admission giddiness and oppression began to follow muscular exertion, stooping, or lifting heavy weights, but passed off on resting. At the same time the neck became slightly puffy, and, as he got worse, he stopped work three weeks before admission. Throughout the illness he felt a dull pain, sometimes of a burning character, shooting from the right breast to the scapula; this was aggravated by exertion. Latterly, on carrying his hand backwards towards the shoulder, a pain set in in front of the upper arm below the shoulder, which prevented him from completing the act. His general health seems to have been above the average. On examination we found restricted movement of the upper part of the right side of the chest in front, and marked dulness, not limited to the area of the lung, but extending across the sternum a little to the left. Over the whole of the dull space the vesicular murmur was absent. These signs, together with the following four symptoms, led to the diagnosis of mediastinal tumour: (1) The pulse at the right wrist was much more feeble than at the left; (2) there was marked dilatation of the superficial veins of the arms, head, neck, and top of the chest, especially on the right side; (3) there was distinct cedema of the neck; (4) the breath sounds at the right base were much feebler than those at the left.

Some years ago there was admitted under my care in the Royal Infirmary a ship carpenter, aged 31, who gave the following account of himself: In the month of February, while at sea, he was a good deal exposed, sometimes having his clothes wet for a whole week. About this time he began to cough a little, and the cough never left him, although he improved a good deal under treatment during the summer months. In April shortness of breath set in, with general pain over the front of the chest, shooting through to between the shoulders. At this time, too, the veins of the right side

of the neck and chest became distended, and the face gradually assumed a swollen and dusky appearance. During the spring he fainted three times at intervals of some weeks, on each occasion after drinking a cupful of cold water. All the above symptoms had been on the increase for three months previous to his admission. He was unable to lie upon his back, but breathed pretty freely sitting up or upon either side, especially the left.

On examination, besides the usual signs of a bronchial catarrh, it was found that there was dullness over the whole of the sternum, especially marked above. This extended to either side of the bone, but more to the left (2 inches) than to the right. The sternum was prominent in its upper part. Vocal fremitus was defective, and the breath sounds were scarcely heard over the dull area. Besides what has been mentioned, the following points were of importance in the diagnosis: (1) the breathing was decidedly louder on the right side than on the left; (2) the left pulse was weaker than the right; (3) there was marked enlargement of the veins of the face, neck, chest, and abdomen (especially the two last), and this was accentuated upon the right side; (4) there was great dyspnoea, especially when the patient lay on his back with his head low; (5) there was hoarseness, espe-

cially marked when he turned his head to the left. When he lay on his back with his head low the voice became extremely husky. There was congestion of the vocal cords, but no paralysis. These symptoms and physical signs pointed to the conclusion that there was a tumour in the anterior mediastinum.

The third case is that of a blacksmith, aged 51, who was admitted on February 9th, 1883, complaining of breathlessness and of swelling of the upper extremities. About four months before admission, after an unusually hard day's work, he got a chill, and suffered from "shivers." He seems to have been feverish during the night, and the next day his cough became very troublesome, and continued so afterwards. From the onset of this last attack shortness of breath was increasingly complained of, until at last he was unable to lie down in bed. Two months before admission his hands and arms became swollen, but no other part of his body; and latterly he rapidly lost flesh, strength, and colour.

On examination of the chest it was found that the lower part of the manubrium sterni was prominent, and dull to percussion, and the dullness extended into the right infra-clavicular region, and 2 inches to the left of the middle line.

Over this area the vesicular murmur was inaudible. For these and the following reasons the case was diagnosed as one of mediastinal tumour: (1) The right radial pulse was weaker than the left; (2) there was marked distension of the veins of the head, neck, arms, chest, and abdomen; (3) there was cedema of the arms and hands, especially on the right side; (4) there were the usual signs of a pleuritic effusion on the right side, with distinct fulness.

As regards the nature of the tumour, we came to the conclusion that in all probability it was malignant (1) because this is the most frequent form of mediastinal tumour; (2) because of the age and sex of the patient, such disease being more frequent in males and in persons who have passed middle life; (3) on account of the rapid development of the symptoms; (4) because of the signs of pleuritic effusion, malignant tumours being very apt to excite inflammation within the chest; and (5) because of the great loss of flesh and strength, and the cachectic appearance of the patient.

This patient died on February 18th, and we were fortunately able to obtain a necropsy, which completely verified the diagnosis. The mediastinum was occupied by a bulky tumour, which extended considerably more to the right than to the left side: taking rough measurements, it may be said that the tumour in its thickest part extended four inches from before backwards, and five inches from side to side. The main mass of the tumour was in the fork formed by the bifurcation of the trachea, and more behind than in front; but the mass which involved the great veins was somewhat separated from the main mass, and was almost equal in size. On opening the pericardium it was seen that all round, at the place of issue of the great vessels, the pericardium was involved in the tumour, whose whitish-grey tissue had replaced it, and projected into the sac in lobulated masses. There was no considerable extension to the heart itself, but at the auricles the tumour tissue approached very near to, and on the left side did involve slightly, the wall of the auricle. The superior vena cava on the one side, and the pulmonary veins on the other, had their walls infiltrated and their calibre somewhat encroached upon by the tumour tissue. The resulting contraction was greater in the case of the superior cava and right pulmonary than in the left pulmonary vein. The wall of the superior cava from its orifice to its division was completely occupied by tumour tissue, and its continuation upwards into the right innominate and internal jugular was similarly involved. The left innominate and right internal jugular were entirely occluded by thrombi. The right subclavian could not be traced to its junction with the innominate, its wall being converted into tumour tissue, and its calibre filled up. Beyond this the vein was occupied for a short distance by a thrombus. The left branch of the pulmonary artery was not involved in the tumour mass, but the right branch passed through a considerable thickness of it, and its calibre was obviously narrowed; but it was not determined whether its wall was actually involved or not. The aorta was not affected. The left phrenic nerve, in passing down in front of the root of the lung, was impinged on by a projecting piece of the tumour, and partly involved in its tissue. The extreme lower part of the trachea and both main bronchi had their walls partly replaced by tumour tissue, which presented itself internally in the form of rounded whitish nodules. The right main bronchus was much more involved than the left, and for a certain distance its wall was indistinguishable from the main tumour, which also extended a short distance into the lung, along the bronchus and its primary branches. On examining the arteries it was found that the right subclavian, carotid, and innominate lay for the most part behind the mass of the tumour. The subclavian was nearer, and would be more pressed on, but it was not embedded in the mass. A microscopic examination showed that the tumour was a lympho-sarcoma.

You see then that these illustrative cases present a striking similarity to that which is the subject of this lecture, and tend to confirm the diagnosis. One or two points remain to be noted, which are worthy of special emphasis. Such tumours are very apt to involve the venous system, as you have seen recorded in the necropsy just quoted. They tend to do so somewhat unequally. One side of the body is usually more affected than the other, so that you

have greater distension of veins and more marked œdema on that side. The same is true of the air passages, which are also very frequently involved, and you may find that the compression of the lung, on the side towards which the tumour is lying, gives rise to diminished intensity of the breath sounds. Over the tumour itself the lung may be absent, having been pushed aside, so that in the dull area there is no respiratory murmur to be heard. In most of these cases cough is a prominent feature. It may or may not be accompanied by expectoration, and when this is present it is very frequently stained with blood. The colour of the blood is usually very bright red. The sputum often resembles that of pneumonia, but it is not rusty, as in the characteristic sputum of that disease. The blood in fact looks very much like red currant jelly, as was well brought out in our patient.

With regard to the origin of these tumours, they may arise from almost any of the structures contained in the mediastinum. You may have them originating in the bronchial glands, in the vestiges of the thymus gland, in the fat or connective tissue of the mediastinum, in the pericardium, or in the periosteum of the sternum. Their nature, as has been said, is usually malignant, and they generally attack middle-aged or elderly people, preferably males. It is extremely uncommon to find a young woman of twenty the subject of such a tumour. The most frequent form is the round celled sarcoma, or they may be true carcinomata. Occasionally they are syphilitic. In our case there was absolutely no suspicion of syphilis, and, having regard to the age, we may probably exclude carcinoma. The tumour then was most probably a lympho-sarcoma.

NOTE ON THE INTERNAL TREATMENT OF VESICULAR ECZEMA.

By LESLIE PHILLIPS, M.D. BRUX.,

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HOWEVER satisfactory the modern topical treatment of eczema may be, there are met with in practice numerous cases of the vesicular form of the disease in adults which have a marked tendency to spread or relapse; and after all the indications for treatment, including gastro-intestinal and diathetic, have been followed, there unfortunately still remain in many cases both a temptation and a reason to seek a remedy which we hope may have some specific or direct action in modifying or restraining the morbid tendency. I have, during the last two years, given some care to observing the effect of remedies and the results may be briefly summarised.

The marked influence of calcium sulphide on the nutrition of the skin in scrofuloderma seemed to justify its persevering employment in eczema, and it was used in a large number of cases, but in every case with a disappointing result.

Ichthyol (in pills) in one or two cases seemed to have a slight modifying influence, and in one case of relapsing vesicular eczema of the arms and hands the patient believed that the drug was of more benefit than any previously-used remedy.

The recent reports on the power of calcium chloride to increase blood coagulability suggested its use in the disorder under consideration, and it was employed in a large number of cases, but with entirely negative results.

Tartarated antimony has appeared to me to be very helpful in not a small proportion of cases, as was long ago pointed out by Mr. Malcolm Morris. I give sensible doses—namely, one-tenth to one-sixth of a grain thrice daily, and am in the habit of continuing it for long periods, it being seldom found needful to discontinue the drug on account of ill-effects.

My experience of thyroid gland feeding in vesicular eczema has been negative.

The hypophosphites appear to be occasionally useful.

DR. HOWARD W. ACHESON, of Farnham Street, Cavan, has been presented with a purse of sovereigns on his retirement from the appointment of medical officer of the Killnagh Dispensary District.

REPORT

ON

ASEPTIC AND SEPTIC SURGICAL CASES, WITH SPECIAL REFERENCE TO THE DISINFECTION OF SKIN, SPONGES, AND TOWELS.¹

By C. B. LOCKWOOD, F.R.C.S.,

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I.—DISINFECTION OF THE SKIN OF THE PATIENT.

THE following is a continuation of the work upon the disinfection of the skin. In the last report, which was published in the BRITISH MEDICAL JOURNAL on May 28th, 1892, the difficulties of the subject were mentioned, and the following instance of them was given. Before removing a chronic mammary tumour from the breast of a young woman, the usual attempt was made to disinfect her skin. After a hot bath it was scrubbed with soap and water until, as the sister said, she almost cried. Next the skin was rubbed with carbolic lotion 1 in 20, and, finally, it was enveloped in an antiseptic dressing for eighteen hours before operation, and at the operation it was rubbed and washed again with perchloride of mercury lotion 1 in 1,000. It will be allowed that strenuous efforts had been made to disinfect this skin, but, nevertheless, I grew from it the bacillus epidermidis, a streptococcus with as many as fifteen elements in a chain, staphylococcus albus, and many diplococci. These cultures were obtained by simply removing a piece of the skin at the operation, and dropping it into the usual sterilised broth, which was afterwards kept for some days at summer temperature in an incubator.

Here it is necessary to meet an obvious objection to the method of investigation which I have pursued. To introduce the skin or materials into the broth, they were cut off with sterilised scissors, and dropped into it wet with perchloride of mercury or carbolic lotion. It might reasonably be said that this lotion was sufficient to account for the absence of growth in some of the experiments. However, this is, I think, negatived by the result of the following simple experiment: Six ordinary broth cultures received from a fine pipette 2, 4, 8, 16, 24, and 32 drops of perchloride of mercury lotion, 1 in 1,000, and were afterwards inoculated with a cultivation of micrococci grown from one of the bits of skin. On the following day, after having been kept at summer temperature for twenty-four hours, each contained an obvious growth, and this afterwards increased until all the broth was turbid. Now I should estimate that never more than two or three drops of lotion were introduced in any of the other experiments with skin or materials.

In passing, it may be remarked that the above is rather a striking instance of the inefficacy of the chemicals which we are accustomed to use. The cocci grew luxuriantly in a mixture of broth and perchloride of mercury, the strength of which I should estimate to have been 1 in 5,000.

A similar experiment done with carbolic acid gave similar results. Six broth tubes were mixed with 10, 20, 30, 40, 50, and 60 drops of carbolic lotion, strength 1 in 20, and then inoculated with the same culture of skin bacteria. In seventy hours the first four were turbid, and contained abundant growth, and before the end of the week the others followed suit, the one with 50 drops becoming turbid before the one with 60.

Thus I think we may safely infer that in none of the experiments was sufficient of the chemical introduced with the skin or other material to mar the result.

At the beginning of this year other experiments similar to the first were done with the same result. A piece of the skin of a girl's neck, from which I was about to remove a cervical exostosis, was prepared in the same way as the woman's breast. The broth into which a portion of it was placed soon contained cocci, diplococci, and strings of from four or five cocci.

¹ Two previous reports on this subject have appeared in the BRITISH MEDICAL JOURNAL (October 21st, 1890, and May 28th, 1892).