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CLINICAL LECTURES.

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LECTURE III.

DISEASE OF THE LUNGS AND HEART.

The case which I select as the subject for consideration this evening, possesses several features of much interest, and deserves your very patient attention.

Hannah Flinn, aged 36, of a pale yellowish complexion and leucophlegmatic habit, was admitted into the Infirmary on the 11th of October, 1845. She was the seventh of a family of ten children, of whom only three are now living. Four died during infancy, two when they were 17 years of age, of cholera, and one at the age of 23, of fever. She states that both her parents were very healthy. She married at the age of 21, and has had ten children and two miscarriages. She enjoyed very good health till the commencement of her present illness, and had considered herself to be a strong and healthy person. She has not suffered from privation, but on the contrary has always had plenty of support. Her husband is a fishmonger, and she has been a good deal exposed to cold in attending to the stall. Two years ago she was confined of her ninth child, after which she did not regain her strength so quickly as she had been accustomed to do on previous occasions, but remained very weakly and low for a considerable period. Within a year afterwards she had two miscarriages, and each time lost a large quantity of blood, which reduced her to a state of great debility. Shortly after recovering from the second abortion she became pregnant again, and was delivered of a child at the eighth month of utero-gestation, about thirteen weeks before her admission into the Infirmary. During her pregnancy she began to suffer from cough and dyspnoea, and during the last four months was unable to lie down. The cough was not accompanied by expectoration, and she is not aware that she ever spit blood. She has never suffered from rheumatism.

The following was her state at the time of her admission:—She complained chiefly of cough, dyspnoea, and palpitation. The expectoration was small in quantity, and consisted chiefly of thin limpid fluid, mixed with a portion of light-coloured curdy matter; no pain; decubitus chiefly on the back; pulse 90, small and feeble; tongue clean and moist; appetite bad; bowels regular; urine passed in moderate quantity, natural in colour, of specific gravity 1.015, and not affected by heat, nitric acid, or solution of the bichloride of potash; the legs very anasarcaous; indistinct sense of fluctua-

tion in the abdomen. Such were the *general symptoms*, to which must be added the *physical signs*. The chest is of ordinary conformation, but there is slight sinking in the infra-clavicular region on each side. The upper portion of the right side of the chest moves through a smaller space during respiration than the corresponding part on the opposite side, and there is a slight increase of vibration felt when the hand is placed in that situation whilst the patient is speaking. The sound on percussion is less clear along the right clavicle and immediately below it than it is on the left side. The respiratory murmur at the upper portion of the left side is loud and coarse; on the right side the inspiratory murmur is feeble, whilst the murmur of expiration is louder and more prolonged than natural. Bronchophony exists in the same situation. Above the clavicle on the right side the respiration is nearly inaudible. There is nothing more which is worthy of observation connected with the state of the respiratory organs at the anterior portion of the chest. Posteriorly the respiration is louder and rougher over the scapular region of the left side than on the right. In the inferior lobes there is a coarse mucous rhonchus heard on both sides. Percussion over the region of the heart yields a more extensively dull sound than natural. Impulse rather weak; the apex beats about an inch and a half below the nipple and in a line with it. No fremitus. A rough murmur, heard loudest at the apex, accompanies the first sound of the heart; it is also heard very plainly about an inch above the ensiform cartilage, and along the course of the sternum, but it diminishes as you proceed upward; it is likewise heard along the course of the aorta, but not in the carotids, and is distinctly audible along the dorsal vertebræ. The second sound of the heart is normal. The jugular vein on each side pulsates strongly.

Such are the particulars of this complicated case. Let me endeavour as briefly as I can to unravel and expound them.

There are three things which will require observation—the state of the respiratory organs, the condition of the heart, and the dropsical effusion:—

1. *The Respiratory Organs.*—The first account which we have of any disturbance of the organs of respiration, is referred to the period of her last pregnancy, when we are told *that her cough was very troublesome, and her breathing so difficult that for four months she was unable to lie down*. Now, here I may remark, that it is by no means unusual for women, during the latter months of utero-gestation, to suffer from cough and difficulty of breathing. The obstruction which is afforded by the gravid uterus to the free

descent of the diaphragm, correspondingly diminishes the capacity of the chest, and necessarily prevents the free expansion of the lungs. Some degree of pulmonary congestion must be the inevitable result. Now it is obvious that the capacity of the lungs for air must diminish as the amount of pulmonary congestion increases, whilst the necessity for the normal quantity of air remains the same; dyspnoea, therefore, must necessarily occur. The cough is an effort of nature to relieve the congested state of the pulmonary vessels. Sometimes, during the existence of this congestion, the capillaries throw out an abnormal quantity of serum on the lining membrane of the bronchi, and then the patient expectorates with the cough a quantity of clear colourless watery phlegm; at other times, as in the present case, the cough is unattended with expectoration. But further, this poor woman states that she was unable to lie down for a period of four months. Perhaps the time specified is somewhat exaggerated. There is, generally speaking, a strange disposition to magnify ailments by all classes of society, and especially by the poor. In most cases, however, they do not wish to impose upon you, but are really deceived themselves. But be this as it may, we should naturally expect both the cough and dyspnoea to be aggravated by the recumbent posture, inasmuch as under such circumstances the obstacles to the expansion of the chest would be increased, the uterus would occupy a higher place in the abdominal cavity, and the intercostal muscles would act at a great disadvantage.

But once more, long-continued congestion of the pulmonary vessels may not only impede the freedom of the process of respiration, and give rise to bronchorrhoea, but it may also lay the foundation of structural changes of a most formidable character. I shall not at present dwell on vesicular emphysema and dilatation of the bronchi, or permanent thickening of the lining membrane of the air-vessels, which are occasionally to be traced to the cause under consideration; but I remark particularly that the pulmonary tissue, not unfrequently, under these circumstances, becomes the seat of deposits possessing only a small amount of vitality, cacoplastic or aplastic, which ultimately lead to degeneration of the substance of the lungs.

We may well conceive, however, that these deposits would not take place unless the system were in a state of particular predisposition. But what, let me ask, would give rise to this predisposition, and in what does it consist? There need be but little hesitation in replying that it consists in an impaired state of the general health—a lesion of the function of nutrition—and that this may result from any cause which is capable of impoverishing the condition of the blood.

Now let us, for a moment, notice the condition of our patient in reference to this subject. We find then that two years ago she lay-in, but instead of recovering as she had done from her previous accouchements, she remained for a considerable period in a low feeble state of health; and we find, moreover, that within a year afterwards, she had two miscarriages, and lost on each occasion a large quantity of blood. I need scarcely remark, that the vital energies of the system would thus become very materially impaired, and the qualities of the blood greatly impoverished. But we must remark again, that it was not long ere she once more became

pregnant, and was delivered of her tenth child at the eighth month of utero-gestation.

Thus we perceive that there was a great demand continuing for a length of time upon the powers of her constitution; an abundant and generous diet was therefore necessary, for in this way only could the requisite supply of strength be afforded. From the statement of the patient, as it is recorded in the report of her case, we might infer that in this respect there had been no failure, inasmuch as it is expressly said that she had always enjoyed *plenty of good support*. But on further interrogating her on this subject, she confessed that she had not been accustomed to take much meat, in consequence of a dislike which she has always had to animal food, and that her diet has chiefly consisted of vegetables, puddings, and tea.

Now it is obvious that the class of alimentary substances I have mentioned possesses only a comparatively small amount of those proximate elements which are best calculated to restore the vigour of the body after the strength has been more than ordinarily reduced by any special causes of exhaustion. In other words, it is ill qualified to restore the vital properties of the blood.

For a moment let us briefly recapitulate the facts we have ascertained.

1st. The general health of our patient had been impaired for a period of two years before her admission.

2nd. The strength was still further reduced by the loss of a large quantity of blood during two subsequent abortions.

3rd. During her last pregnancy she suffered greatly from cough and dyspnoea.

4th. The diet, although plentiful, was not nutritious.

The only deductions we draw in the present stage of our enquiry from the preceding facts are,—*that during her last pregnancy there was a much greater amount of hyperæmia of the pulmonary vessels than usual, and that this circumstance, connected with the impoverished condition of the blood, was sufficient to give rise to effusion into the pulmonary tissue.*

Now, then, we may proceed to enquire whether the general symptoms and physical signs, at present existing, are such as to warrant the latter of these deductions—the former requires no special proof.

The only general symptoms which need be mentioned are cough and dyspnoea. I have already accounted for the existence of these during the period of gestation; but we have had them now continuing for some months after the termination of that period, and when, consequently, the explanation already given is no longer admissible. There is manifestly some cause of irritation existing in the respiratory apparatus, the nature of which will be best determined by an examination of the physical signs. These signs have already been pointed out to you, but it will be well to have them again individually enumerated, in order that you may more clearly see what they severally indicate.

1st. There is slight sinking in the infra-clavicular region on each side. This peculiar conformation may possibly be congenital, and we have no means of knowing whether, in the case of our patient, it is so or not. It is always, however, a circumstance which deserves attention, especially if it be connected with symptoms which indicate disturbance of the organs of

respiration. It is sometimes occasioned by the existence of very firm adhesions between the pleuræ, at other times it is owing to condensation of the superior lobes of the lungs. The concurrence of other signs, as in the present case, will alone enable us to assign to it a right diagnostic value.

2nd. The upper portion of the right side of the chest moves through a smaller space during respiration than the other side. This circumstance would lead us to infer that the corresponding portions of the lungs on the two sides are unequally inflated.

3rd. The sound on percussion is duller along the right clavicle, and immediately below it, than on the opposite side: we therefore conclude that the quantity of air existing in the apices of the two lungs is unequal—that there is more on the left side than on the right,—in other words we believe that some amount of condensation exists in the summit of the right lung. This conclusion is strengthened by the circumstance of a stronger vocal resonance being communicated to the hand placed on the right side of the chest than on the left, and it is still further strengthened by the indications afforded by the stethoscope. These indications are, briefly, feebleness of the inspiratory murmur whilst the expiration is abnormally loud and prolonged, and broncophony.

Now this pulmonary condensation may be occasioned by a variety of causes—for example, it may depend on the existence of pneumonia, on the presence of tubercles, or on effusion into the pulmonary tissue, caused by a preceding state of hyperæmia. From the observations which have previously been advanced, you will perceive that I incline to the latter opinion. I do not believe that there has ever been in the case of this poor woman anything like active pneumonia; there have been no symptoms of it since she came under our care, and the account which she gives of herself previous to her admission affords no features of this disease. I am further unwilling to believe in the existence of tubercles, because I think, that had they been present, more rapid morbid changes in the impaired state of her health would, in all probability, have taken place in the lungs; there does not appear, moreover, to be any constitutional predisposition to tubercular deposit, and the expectoration has never presented the appearances which are most frequently observed in cases of phthisis.

But assuming that we are right in the conjecture we have formed respecting the pathological condition of the lungs, what, let me ask, will be its probable issue? You will perhaps be ready to answer, pulmonary degeneration, and, ultimately, death. For my own part, however, I am not satisfied that this will be the result. It does often happen, to be sure, that the presence of deposits in the lungs occasions so much irritation in the surrounding pulmonary tissue, as to induce very extensive structural changes, which become incompatible with the discharge of the functions of the respiratory organs, and therefore with the continuance of life. But, on the other hand, we sometimes find that these deposits become absorbed, and the functions of the lungs gradually return to their normal state. I have seen cases in which the general and physical symptoms indicated condensation of the pulmonary tissue, and the history left no doubt on my mind as to the existence of deposits, get well, the cough has disappeared,

all abnormal murmurs have ceased, and the healthy resonance of the chest has returned. And so, in the present case, since we have no evidence of a tubercular diathesis, the condition of the lungs may doubtless undergo considerable improvement. But yet the prognosis, respecting her ultimate recovery, is extremely unfavourable; I have, in fact, no hope of seeing her materially better than she is at present. There is too much structural mischief existing in the heart to warrant us holding out any hopes of restoration.

I have already pointed out to you, in the enumeration of symptoms, the several indications of cardiac disease. We have yet, however, to inquire into its nature, and to explain the various signs which have been enumerated, but our time this evening is too far spent to allow of us advantageously entering upon this branch of the subject, I shall therefore reserve it for when we next meet. In the meantime I may remark, that the affection of the heart is very intimately connected with the symptoms of pulmonary disturbance. The healthy function of the respiratory organs depends essentially upon the relative quantity of air and blood existing in the lungs. Whatever alters this proportion, disturbs the process of respiration, and cough and dyspnoea generally result.

Now, in diseases of the heart, we may either have too much blood sent to the lungs, or the quantity which is sent propelled with too much impetus, or the existence of some impediment to the free return of the blood by the pulmonary veins. Any of these causes will be sufficient to produce a hyperæmatus condition of the pulmonary vessels, which will occasion the symptoms under consideration. It will be our duty subsequently to enquire into the precise manner in which the pulmonary circulation is most likely to be affected in the present case, as well as into the general principles on which the treatment is to be conducted.

A CRITICAL ANALYSIS OF THE PRINCIPAL FACTS OF DISEASE.

(Continued from page 638 of last volume.)

POSTSCRIPT TO INFLAMMATION.

The experiments on which the foregoing series of papers is based were undertaken with a view to establish pathology on a more sure foundation. Admitted, as it has been on all hands, that every physiological as well as pathological state owes its origin directly or indirectly to the co-operation of the capillaries and their nerves, it is not a little remarkable that the relations of these have not hitherto formed a subject of enquiry; nor have the characters of the nerves in question been investigated in a complete manner.

Sooner or later this subject must find a permanent place in medical science. The independent existence of sensitive and motor nerves, as discovered by Bell, that of an excito-motor system by Hall, though long in finding their way into practical science, have now been long considered as of the utmost importance to medicine. Can a knowledge of the nervous structure which presides over capillary circulation, and modifies all its phenomena, be deemed of less consequence than either of the above discoveries to the science of medicine?