Clinical Lecture ON BRONCHO-PNEUMONIA.

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BY

THOMAS K. CHAMBERS, M.D., Censor of the
College of Physicians of England; Physician to
St. Mary's Hospital, London.

At the latter end of last week there was a very peculiar state of weather. The barometer was very high. The air was excessively cold, dry, and deficient in electricity. At the same time there was a thick yellow fog of smoke, an unprecedented quantity of solid matter being suspended in the air. Each of these conditions separately, I enumerated to you in the Lectures on Medicine, as causes of pneumonia; and, consequently, when they are all united, it is not wonderful that the disease should prevail. Eight cases came under my care alone in this Hospital in six days, and they all assumed the form of the disease usually observed when it becomes epidemic; viz., broncho-pneumonia. I attribute this to the quantity of ammoniacal, sulphurous, and carbonaceous matter inhaled during these fogs. When you remember the stinging of the eyes and nose, and the nauseous taste and smell experienced when walking through the streets, you can hardly wonder that the bronchial membrane should suffer. The wind resembled the noxious exhalations from Vesuvius, which Virenzi, in a letter to Haller, says, also produce epidemic pneumonias.

I am not going to trouble you with the details of all these cases, but to make cursory notes upon several, as I run through the records.

With regard to the whole, I may remark that none were in complete health before the attack; every one that could speak, acknowledged either to chronic wheeziness, debility, ague, drinking habits, or some other evidence of chronic ailment. As far as I have been able to observe, this is the rule in short epidemics of pneumonia; invalids are the first to suffer, and it is only after a long duration of the epidemic that the healthy are attacked in great numbers. This is noteworthy, because it is the reverse of what happens in cholera, small-pox, and some other zymotics, in epidemics of which the strongest are often the first struck down.

I shall take first James A., because in his case I am unfortunately able to illustrate the morbid anatomy of the disease by ocular demonstration.

James A., aged 34, a coachman, admitted on January 11th, has suffered for seven or eight years every winter from cough, accompanied very often by hæmoptysis, and for the last three years by cold night-sweats. During the spring and summer he is pretty well, and able to continue his avocation, but each winter his attacks get worse and worse.

So far, the history is descriptive of a case of chronic pulmonary consumption; but the record goes on to say:

During the last four days, he has experienced a very great increase of shortness of breath, and has had excessive palpitation of the heart, and pain in the situation of that organ. The sputa have also diminished in quan-

tity, and become more thick and tenacious. He has had also frequent rigors. He was on admission quite unable to lie down in bed; the lips were purple; the tongue was white and furred; the pulse 120, small; the urine thick. The upper lobes of both lungs, but especially of the left, are dull on percussion. There is also comparative dullness beneath the right scapula as compared with the left corresponding region. There are high-toned, whistling, and crepitant râles throughout the chest, and fine crepitation in the right inframammary region.

Here was clear evidence in the history of recent inflammation, added to his chronic disease. The auscultatory "trumpet gave an uncertain sound", may be said by those who are sceptical of their ears; and doubtless it was puzzling, from the mixture of chronic and acute disease. Yet it led us to guess, as you may remember, at pneumonia in the right lower lobe, which proved correct in the sequel. The symptoms were very urgent, and I gave an unfavourable prognosis, grounded principally upon the dyspnoea, the best guide I know to prognosis in this disease. He was treated actively, was bled once to eight ounces, had eight leeches on, and a fourth of a grain of tartar emetic every three hours. The whole chest was also enveloped in a large poultice. I should have liked to take blood by cupping, which gives more local relief than any other form of blood-letting; but the skin was sore from the application of a large blister to the side. I beg you will never put on blisters at the beginning of pneumonia. Not only are they useless, perhaps even hurtful, in themselves; but they certainly are indirectly injurious, by preventing the patient from being cupped.

The treatment gave only temporary relief to the dyspnoea, which soon returned, and made the poor fellow's death, two days afterwards, a very painful one. The lungs, which I show you here, have the upper lobes filled with tubercles of old date, some cheesy, some cartilaginous, some chalky. In the left are several small vomices. You may remember that this left apex was the duller of the two; and it may surprise you to find in it vacant spaces, whereas the other is all solid. Though beside the present question, I will call your attention to this; because, contrary to what is asserted in some books, I have constantly found it to be the case, that small vomices filled with pus cause a duller sound on percussion than complete consolidation. Do not forget this in your examination of patients.

The right lower lobe, as was expected, is inflamed; but you will observe there is a difference between the front and the back parts. The latter does not crepitate when you squeeze it with your fingers, the whole mass is condensed and solid; the front has patches of lobular condensation scattered amongst crepitant parts. The same irregular patches of lobular condensation are scattered over the lower lobe of the left lung. The lobar mass of condensation had given rise to dullness; the lobularly pneumonic parts were resonant. Very important this; it shows you cannot expect to find out lobular pneumonia by percussion.

Observe throughout how deeply stained red the mucous membrane of the bronchi is; and how throughout the lungs, in old tubercular parts, in the generally consolidated parts, in lobularly consolidated parts, in the crepitant parts, the smaller bronchial tubes are oozing out a thick secretion. Very little

aeration could have been going on in this lung. And observe that the extent of the signs of pneumonia could have been no guide to you of the extent of non-aeration, or of the danger. The dyspnœa, which we went by, was a better guide.

It is in broncho-pneumonia, or inflammation which arrives at the lungs through the bronchi, that you find generally this lobular form of condensation; an insidious form, which often evades our stethoscopic investigations, and distracts our prognosis. Broncho-pneumonia is also remarkable as being much less often accompanied by pleurisy than other forms. You may see here the pleura quite free and transparent; a rare phenomenon in pneumonia, which usually causes inflammation of the serous membrane in its neighbourhood.

The absence of pleurisy in broncho-pneumonia is often marked in the pulse, which is much softer, and wanting in that wiry character distinctive of the disease when this is accompanied by inflammation of the serous membranes.

Joseph C., aged 22, a labourer of temperate and regular habits, was admitted January 12th. Last winter he had a bad cold and cough, which laid him up for four months, during which time his sputa were often streaked with blood. He caught a fresh cold at the beginning of December, which got worse as the winter wore on. Two days before admission, he had severe shiverings when in bed, and not exposed to the cold. On admission, his pulse was 96, the tongue white and furred. There were considerable dyspnœa, and lividity of the lips. The breath-sounds were natural and full beneath the scapula, and the breathing puerile on the left side in front. But the right front was dull, especially the upper part; there were coarse râles in the upper lobe, and fine crepitation in the lower. There were specks of blood in the sputa.

The diagnosis was chronic disease of the right upper lobe, inducing acute inflammation of the lower in the front part. Note here, as in the last case, it is not *congestive* pneumonia, not an inflammation of the parts into which blood has gravitated by mere dead weight, but an *active* inflammation with which we have to deal in broncho-pneumonia. Congestive pneumonia occurs in the back part only; this in the front, in scattered parts, lobularly, everywhere.

The patient was bled to ten ounces, had a quarter of a grain of tartar emetic every other hour, and a large poultice wrapped round the chest. The relief from the venesection was immediate, and not transitory. On the 14th, there was great relief to the pain and to the cough. On the 16th, in spite of the antimony, there was an increased appetite for food, the skin being soft and natural. The dulness on the right side continues, but the fine crepitation is exchanged for snoring râles. On the 19th (to-day), there are coarser râles throughout the lower lobe, and the patient is progressing most favourably.

This is an instance of active treatment being pursued in spite of the likelihood that the patient had old chronic disease, and apparently with the happiest results. I believe we are generally too much afraid of active treatment lowering the strength. I do not believe any treatment, however active, lowers the strength so much as the continuance of acute disease; and therefore, if it gives me a means of curing that acute disease, I adopt the active treatment, in spite of the possible debilitating effects of it. Consider this case: four or five days good food, with a

good stomach, will repay the ten ounces of blood took from him; but four or five weeks feeding would not have replaced the loss which would have accrued from the continuance of the pneumonia.

Wm. J., aged 29, a powerful excavator, admitted Jan. 11th. His habits have been often intemperate; he had ague seven years ago, and last autumn was in hospital for rheumatism in the knees for a month. After this, he was pretty well till six days before admission, when he was woke up at night by a severe shivering, followed by perspirations. These rigors returned several times before he came into hospital; and there was severe cough, of a loud ringing character, with frothy sputa. On admission, the tongue was clean; the pulse was 110, irregular, and especially intermittent when he coughed. There was deficient respiration on both sides beneath the scapula, and there was more dulness on percussion on the right side than the left. There was also dulness and fine crepitation in the right inframammary region. In a very circumscribed spot beneath the left mamma, there was pleuritic rubbing, accompanied by no pain.

Here you have a third case of pneumonia, lobular through the greater part of the lung, but lobar in the right lower lobe. Its apparent affection for this one spot is not a rule; it is a mere accident that it should happen in three cases running. The pleuritic rubbing demands notice, because, as I said before, it is less usual in this form of pneumonia than in others. This exception seems a confirmation of the rule; for you see it is *not* adjacent to the most inflamed lung, but on the opposite side.

Remark the note about the pulse: its intermittence during coughing is a sign of debility, and often of that particular form of debility which follows intemperate habits; it led to my inquiring about them, and made me determine not to bleed the man from the arm, in spite of his muscular aspect. He was, however, cupped to eight ounces, and the usual great linseed poultice put round his chest. He had also

℞ Antimonii pot.-tart. gr. ½; syrupi papaveris ʒj; mixture camphoræ ad ʒj. M. Fiat haustus tertius horis sumendus.

The antimony did not produce nausea, nor did it prevent his appetite from returning; so that, on the 16th (five days after its commencement), he was begging for more to eat than the milk, bread, and beef-tea, which he had been ordered. On examination of the chest, the fine crepitation beneath the right mamma was replaced by coarse crepitant râles; the pleuritic rubbing was not continuous, resembling creaking leather; and on the 18th it had disappeared, the two surfaces having become adherent. He will soon be convalescent.

Remark here how antimony and blood-letting, when required by disease, and spending their force upon it, do not lower the vital powers. The appetite may be taken as an excellent index of those vital powers; and when it steadily and gradually returns to its normal condition, depend upon it they are on the increase.

I said that his chest was enveloped with the "usual" poultice. I think this a very important part of the treatment of pneumonia, especially of the inflammatory, non-congestive, lobular kind. In the first place, it acts as poultices and hot fomentations do to inflamed parts in surgical practice, soothing the irritable over-sensitive nerves, encouraging the capillaries to relieve themselves by exosmosis, etc. Secondly, it defends the part against changes of

temperature, which, however slight, are highly injurious. Thirdly, it mixes a warm steam with the inspired air, by diffusing it for at least a foot or two from the patient. A damp warm atmosphere is of great importance in pneumonia; and you may have observed that I have endeavoured to secure it by having basins of warm water placed about the wards, in addition to the poultices.

John D., aged 39, a dustman, was admitted Jan. 16th. He stated that he had been subject to what he called a little chiselling cough for five years, but never so as to be prevented from working. He was in the habit of taking as much gin as he could get. A week before admission, he went to his labour as usual at 6 A.M.; but at about 9 o'clock he was seized with such a severe shivering fit that he was unable to stand, and was carried home to bed. The dyspnoea was very great, but still he had no medical advice till he came here. The pulse was very weak, irregular, about 100. The face was very livid, and the dyspnoea very urgent. There was high toned sibilant breathing over all the chest, mixed behind with fine rales or fine crepitation; and dullness on percussion beneath both scapulae. He was ordered—

℞ Antimonii pot.-tart. gr. 1-6; potassæ nitratis gr. x; aetheris chlorici ℥x; aquæ ʒj. M. Fiat haustus quartis horis sumendus.

The chest was enveloped in poultices. The next day the breath was easier; but still, considering the weakness and irregularity of pulse and his alcoholised constitution, he was ordered three ounces of gin daily. On the following day (the 18th), the pulse was stronger and less frequent, being 76. He perspired much, but was not nauseated by the antimony. To-day (the 19th), he is going on well, and will probably struggle through.

In all sorts of pneumonia, but especially in this broncho-pneumonia, the rigors are very strong, and mark distinctly the commencement of the disease. You can date its beginning more easily than other inflammations. I recited this last history to call your attention to the fact. Whenever you hear that a man has had such a severe rigor that he is knocked down suddenly when at work, like John D., or is woke up by it in bed, like Joseph C., you should always suspect pneumonia is coming.

About the other cases of broncho-pneumonia, I have no fresh remarks to make. One has a dilated heart; one albuminuria; and two, who came in moribund, seem to have been starved. Ailments of this severity in remote parts complicate the symptoms more than anatomical changes in the lung itself.

To recapitulate :

1. Certain atmospheric conditions cause inflammation of the lungs.
2. This is apt to be epidemic.
3. The inflammation appears to spread from the bronchial membrane to the pulmonary tissue; it is broncho pneumonia.
4. Those with chronic ailments are first attacked.
5. The inflammatory consolidation appears in scattered lobules, not in masses; and is therefore difficult to detect by percussion.
6. Broncho-pneumonia is not apt to be accompanied by pleurisy: hence the pulse is softer than in other forms.
7. The commencement of the disease may be dated from the first rigor.
8. The treatment of the disease may be active; blood-letting, antimony, and poultices, not being

contraindicated by even the existence of old chronic ill-health.

9. An exception must, however, be made in the cases of those of irregular drinking habits.

Original Communications.

THE STRUCTURE AND GROWTH OF THE TISSUES:

A SHORT ACCOUNT OF THE CONCLUSIONS DERIVED FROM SOME NEW OBSERVATIONS WITH THE HIGHEST MAGNIFYING POWERS.

By LIONEL S. BEALE, M.B., F.R.S.,

PROFESSOR OF PHYSIOLOGY AND OF GENERAL AND MORBID ANATOMY IN KING'S COLLEGE, LONDON; PHYSICIAN TO KING'S COLLEGE HOSPITAL; HONORARY FELLOW OF KING'S COLLEGE; ETC.

UNDER this head, I propose from time to time to give a short account of the general results derived from observations upon the structure and growth of tissues, and of some of the changes which take place in disease. Some of the researches on which the conclusions are based will be found in several papers in the *Archives of Medicine*, in a paper "On the Anatomy of the Liver", and one "On the Distribution of Nerves to Muscular Fibre", in the *Philosophical Transactions*, and in my work *On the Liver*. The subject will be discussed more in detail in a paper which will be published in No. VII of the *Archives of Medicine*.

I.—ON THE STRUCTURE OF THE ELEMENTARY PARTS OF TISSUES.

It seems to me that the elementary parts (usually termed *cells*) of the tissues of every organism consist of matter in two essentially different states. In the first condition (*nucleus* in some cases, *cell-contents* in others) each separate particle is actually undergoing, or is capable of undergoing, active and incessant changes determined by its own inherent powers, and moves in a definite direction from *within outwards*, or from *centre to circumference*. In the second state (*cell-wall*, *fibre*, etc.), distinct particles cannot be demonstrated. They appear to have coalesced, and are in a state of comparative rest. They have already passed through the active stages of their existence. They have acquired the properties for which they were formed: and, after fulfilling certain ends for a longer or shorter period of time, they will be removed to give place to their successors, which, in their turn, will pass through exactly similar phases of existence.

In the so-called cells of cuticle or of mucous membrane, for instance, the central part, which is ordinarily termed the *nucleus*, is granular, and is composed of the soft material above alluded to, in a state of active vitality. The outer hard portion, consisting of the so-called *cell-wall* and *cell contents*, which in many cases pass by almost insensible gradations one into the other, is composed of matter which has already gone through the above state of active change, but is now quiescent. There are many other points with reference to the nature of *cell-contents*, which will be discussed subsequently.

Matter in the first or active state possesses the same general characters, to our imperfect powers of observation, in every living being, and in every part of each living being, in which it exists. It appears *granular* under moderately high powers of the microscope; but under the