Lectures

ON

CERTAIN MUTUAL RELATIONS OF PHYSIOLOGY, PATHOLOGY, AND THE PRACTICE OF MEDICINE.

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LECTURE II. (*Concluded.*)

Pathology in its Relations to the Practice of Medicine. On certain Pathological States as the Result of Impaired Nutrition consequent on the Imperfect Performance of Function. Diseases of Degeneration attacking the Heart, Lungs, etc. Fatty Disease of the Heart. Sudden Death in Relation to Diseases of the Heart. Emphysema of the Lungs, Phthisis, etc.

HAVING referred at greater length than I originally intended to the subject of degeneration as attacking the heart, and the questions which incidentally arose out of it, I shall be obliged to pass over the other fatty diseases, as atheroma of the arteries, and its relations to aneurism, and atheroma of the capillaries of the brain in its relations to apoplexy and cerebral softening, in order that I may refer to that second example of degeneration to which I have alluded, affecting the lungs. There is no pathological condition to which the lungs are subject which is identical with fatty disease; and, although an atheromatous state of the blood-vessels of the lungs is occasionally met with, a deposit of fat in the air-sacs is, as far as my observations go, an exceptional thing. There is, however, a disease of the lungs which, I believe, partakes very much of the nature of fatty degeneration; I mean emphysema. Whether in consequence of the difficulty which attends all investigations into the morbid changes which take place in the ultimate pulmonary tissue, or from the imperfect knowledge which long prevailed of the mere anatomy of the lungs, the pathology of emphysema has been exceedingly obscure, and its therapeutics unsatisfactory. Considered by many as a mere secondary affection, the result of mechanical distension, and consequent on bronchitic inflammation, its real pathology has received but little notice, as a substantive disease it has been almost overlooked, and, under the impression that the structural changes which characterise it admit of little or no relief from the application of therapeutic measures, practitioners have contented themselves with the treatment of the bronchitic and asthmatic symptoms so constantly associated with it, and have neglected the use of those remedies which have been found beneficial in other diseases of degeneration.

It is unnecessary that I should insist on the importance of a correct knowledge of the minute structure of an organ of so mechanical a nature as the lungs, if we would wish to understand the morbid anatomy and pathology of its diseases. With reference to this particular affection, there is perhaps no other which shews more fully the important mutual relations of anatomy, pathology, and therapeutics; for by an examination of the structural changes which occur in the different stages of the disease,

and by watching the steps which mark its progress, we have the strongest possible indications of its pathology, of the causes of the symptoms it produces, and of the therapeutics by which its advances should be met.

The most important question to all who are investigating the nature of the disease, is, whether there is any degeneration of the pulmonary tissue preceding or attending it; for clearly this lies at the base of all measures intended for its relief.

My own observations have led me to conclude that all cases of emphysema cannot be included, either with reference to their pathology or determining cause, under the same head. Where the disease is partial, and situated, as is then usually the case, along the margins and at the apex of the lung, and is associated with, or has followed, some other pulmonary affection,—as, for instance, chronic bronchitis, or, in fact, any disease which has been attended with long-standing or violent cough,—I believe the morbid changes may have been brought about mainly by mechanical violence, without there having been any pre-existing affection of the lung-tissue.

But the case is far otherwise with that more general affection which is denominated lobar, where the whole of one lung, or of both lungs, is involved in the disease. That this form differs very materially in its pathology from the partial emphysema I have alluded to, will, I think, be admitted by all who will give a careful attention to the subject. The insidious manner in which the disease sometimes comes on; the almost entire absence of cough frequently observed, as well as of all other symptoms, except a gradually increasing dyspnoea, and, as the patients often describe it, a “smothering in the chest”; the occasional rapidity with which the affection progresses; the secondary consequences which ensue; and the general cachexia which often supervenes,—all point to the grave character of the malady, and, I believe, to its constitutional origin in some degeneration of the pulmonary tissue.

But the question arises as to the exact nature of this degeneration.

As I have elsewhere entered fully into the consideration of this question (*Researches on the Nature, Pathology, and Treatment of Emphysema of the Lungs*, 1862), I will merely remark here, that with the view of determining the point, I have examined a large number of specimens of emphysematous lungs; and although I have, in a few instances, found globules of fat interspersed over the air-sacs, yet in the large majority of cases I have found no indications of fat whatever; and I consider its presence as an accidental, and not a necessary, element in the disease. I cannot therefore agree with those who consider the disease due to fatty degeneration. I have occasionally found atheroma in the blood-vessels of emphysematous lungs, but then it has always been present in the general arterial system as well; and, from its absence from the pulmonary vessels as a general rule in emphysema, this disease cannot be considered as essentially connected with fatty degeneration of those vessels.

Although, therefore, we must conclude that the disease is not one of fatty degeneration, yet from the mode of its production, and from the morbid changes it gives rise to, I cannot entertain the slightest doubt that it is one of a closely allied nature; that,

in its severe forms, *it is essentially a constitutional disease; and that one of its most important features, and probably the primary step in it, is a malnutrition of the pulmonary tissue—of the walls of the air-sacs, in fact.* This malnutrition affects either the basement membrane or the elastic tissue, or more probably both; this leads to loss of elasticity, subsequent distension, and atrophy. And this view which I have taken of the constitutional nature of the disease receives a strong confirmation from the fact, apparently well established, of its hereditary character.

Thus, then, we may be led, in this and other diseases, from a consideration of the changes which occur in the anatomical arrangement of an organ, to appreciate the nature of those pathological processes by which the changes are produced, and on the conclusions we may thus draw, to found a rational system of therapeutics. For, although we cannot say that the morbid condition of the lung points to any particular perversion of its function as the cause of emphysema, yet it shows the existence of a depraved nutrition, and indicates the principles on which the affection should be treated.

On the other hand, the special points to which I have referred in connection with fatty disease of the heart, show us the importance, not only of a study of morbid anatomy, but of the nature of those perverted functions of individual organs under which morbid deposits occur.

And in reference to the general treatment of these diseases, as with fatty degeneration of the heart, we know that by improving the nutrition of the organ, we can check or retard the progress of the malady, so with emphysema of the lungs. From a careful observation of numerous cases of the disease for several years past, I am convinced that the affection is one that should be treated on the same principles, *mutatis mutandis*, as guide us in the treatment of other diseases of degeneration, such as Bright's disease of the kidneys, fatty disease of the heart, etc.; and that with reference to the administration of remedies in the affection, there are none so valuable as the various tonics, and especially the different preparations of iron.

And is it not the case with regard to another affection of the lungs, that we can trace a close relation between the activity of their function and their healthy condition, and between the interference with their function and the supervention of impaired nutrition and disease? Can we not promote the development of tubercle in a healthy animal, by confining it in a close and ill-ventilated chamber? and is not pulmonary consumption in man essentially a disease connected with conditions of a like character? Is it not the disease of all others which attacks the close confined artisan, the sempstress who rarely brings her lungs into free action, the inhabitants of our crowded and ill-ventilated alleys? In fine, is it not especially the disease of great cities? and may we not sum up its main causes in the short sentence of Dr. Christison: "A conjunction of defective exercise and exclusion from the open air."

The latest statistics we have on this subject are those of the president of the section of Public Health of the Social Science Association. The facts which he has brought forward are not new to the profession; but they are of vast importance to the

public. With only one point I shall trouble you, showing the influence of town life, and country life—or shall I say of activity, or inactivity, of the respiratory process?—in the development of tubercular phthisis. Taking the mainland of Scotland, Dr. Christison found that the mortality from all diseases, in town districts and country districts, was as 4 to 3; but the mortality from consumption was in the proportion of 333 for towns, to 186 for the country—in fact, it was nearly double in the towns.

Now, as I have remarked, facts of this kind have been long recognised by the profession; and to our more intimate acquaintance with the conditions under which tubercle is deposited, must be attributed the improvement in our treatment of pulmonary consumption.

And in reference to the question of climate as influencing the development of phthisis, a remarkable fact was stated by Dr. Christison, viz., that, of all the inhabitants of Scotland, those who are least liable to the disease are the Western Islanders; and that in the Isles of Lewis and Mull the affection is one of very rare occurrence amongst the natives of the place.

I must refer you to Dr. Christison's address for the details of his statistics; but the fact to which I have referred, of the exemption of the inhabitants of the wet, cold, and stormy Western Islands, is of great interest in a pathological point of view, and in relation to the manner in which the defective performance of function is productive of disease.

A TESTIMONY TO OUR CLIMATE. *The Times* of the 20th ult., chronicles the death of eight persons between 70 and 80, of five between 80 and 90, and of four over 90; the united ages of these seventeen persons giving an average of 82 years for each. On the 21st, we read of fifteen dying between 70 and 80, of eight between 80 and 90, and one over 90; the average of these twenty-four being very nearly 76 years a piece. On the 22nd there appeared two over 90, six between 80 and 90, and ten between 70 and 80; the average here being nearly 79. On the 23rd, thirteen between 70 and 80, seven between 80 and 90, and one over 90, making an average of 79½ each. We suppose our American cousins would say, if these 80 individuals, whose longevity we have noticed, had lived anywhere else but in our own land of fogs and changeable weather, they would never have died at all. (*Notes and Queries.*)

NAKED ARMS. A distinguished physician who died some years since in Paris, declared: "I believe that during the twenty-six years that I have practised my profession in this city, *twenty thousand children* have been carried to the cemeteries a sacrifice to the absurd custom of exposing their arms naked." Put the bulb of a thermometer into a baby's mouth, the mercury rises 90°. Now carry the same to its little hand; if the arm be bare and the evening cool, the mercury will sink to 40°. Of course all the blood that flows through those arms must fall from 20 to 40° below the temperature of the heart. Need I say, when these currents of blood flow back into the chest the child's vitality must be more or less compromised? And need I add that we ought not to be surprised at its frequent recurring affection of the tongue, throat, or stomach! I have seen more than one child with habitual cough and hoarseness, choking with mucus, entirely and permanently relieved by simply keeping the hands and arms warm. Every observing and progressive physician has daily opportunities of witnessing the same cure. (*Phil. Med. and Sur. Reporter.*)