contra-indicated, in consequence of the exhaustion they are calculated to induce in the peculiar condition of the digestive and assimilative organs which exists during fever.

ON THE DIAGNOSIS OF INCIPIENT TUBERCULIZATION OF THE LUNGS.

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The annals of medicine supply us with a few cases in which phthisis pulmonalis, in its advanced stages, has yielded to remedial measures, and morbid anatomy still more frequently reveals appearances which are attributed to the presence and subsequent cure of tubercular deposit; few, nevertheless, will be disposed to question the assertion that these instances of the fortunate termination of the disease are so rare, as in no wise to affect the ancient and general conviction of its incurability when once fairly established. How imperative, therefore, does it become upon all who are anxious to aid in the endeavour to arrest the progress of a malady which forms so important an element in the mortality of this country, to study with increasing earnestness that period of its existence in which its germs are first deposited. For the detection of this phasis of the disease, it is useless to place any dependence upon the evidence afforded by the outward symptoms; we must even throw aside those grosser notions of auscultation which familiarity with the ordinary, and more evident physical signs of disease, is apt to engender. We must not be content to be stethoscopists, but must become *auscultators* in the true sense of the word; we must *listen with the mind* if we would appreciate the delicate and sometimes evanescent characters of the sounds by which we may hope to certify the commencement of pulmonary tuberculization. It is not to be disguised that a competent perception of the minute shades of difference in the respiratory sounds, upon which the physical diagnosis of incipient phthisis is founded, is a matter of difficulty, even under the most favourable circumstances. Many will fail altogether in acquiring the necessary auscultatory tact, for that which is called in music a *fine ear*, or, in other words, the faculty of discriminating between delicate gradations of *intonation*, is not conferred on all alike. Much of the difficulty, however, may be removed by a closer attention to the phenomena of healthy respiration than is usually accorded to them, more especially in reference to the existence of a *duplex murmur*, since the earliest evidences of the presence of tubercular deposit are derived from certain minute alterations in one or both parts of the respiratory act.

Tubercular disease of the lungs first appears under the form of small rounded masses, dispersed through the upper lobes, the circumjacent tissue in general remaining perfectly healthy. This deposit may consist solely of the miliary granulations described by Laennec, or, as is more commonly the case, a few crude tubercles, as they are called, are intermingled. The progress of the disease induces a more abundant deposit; the previously existing granulations, at the same time, becoming of a yellow colour, until the

upper portion of one or both lungs is crowded with tubercular masses of a cheesy consistence, and which exhibit a tendency to undergo the process of softening. This series of change constitutes the incipient stage of the disease, the diagnosis of which is the subject of the present paper. It may be mentioned that, towards the close of this stage, the bronchial tubes put on the appearances of irritation, and the surface of the lung is frequently occupied at intervals by emphysematous air-cells.

The symptom which, in the majority of instances, is first produced by this condition of the organ, is cough; at first, occasional and dry, afterwards, more frequent, and accompanied by expectoration. With the cough, and sometimes preceding it, the breathing is noticed to be slightly accelerated, especially on exertion. Pains are also occasionally felt at the summit of the sternum, or between the scapulæ. The first stage of phthisis is also occasionally ushered in under the mask of acute bronchitis, or is first announced by the occurrence of hæmoptysis. In the former case, the symptoms succeed each other with great rapidity, whence the disease has been termed acute phthisis; in the latter, hæmoptysis, either slight or copious, precedes both the cough and dyspnoea.

Such are the symptoms of the first period of a disease which, if not at this time recognised, almost inevitably tends to a fatal termination. We will now enquire into the diagnostic value of each, and first of cough.

Cough is a symptom depending upon irritation of the mucous membrane of the bronchial tubes, and air cells, and may be caused by many different deranged conditions both of function and organism. As a symptom, therefore, of phthisis, its diagnostic value is very little. The points which are to be noticed as appertaining to the tubercular cough are these:—It comes on frequently without evident cause; one or more months may elapse without expectoration; and it is usually at first troublesome only in the morning. The coughs which are likely to be confounded with it are that produced by simple bronchitis, and those which depend upon sympathetic disturbance. The catarrhal cough is thus distinguished, it can usually be traced to some evident cause, as exposure to damp and cold, and it is more quickly accompanied by expectoration, which in a few days becomes mucopurulent.

Among the sympathetic coughs which may be confounded with the phthisical, may be mentioned that which depends upon gastric irritation, reflected upon the pulmonary plexus of nerves. This species of cough is, however, louder, and more harsh than that of consumption; it comes on in paroxysms, and frequently causes vomiting by its violence. There is in general no expectoration, or the sputa, if there be any, consist of the secretions of the fauces.

The nervous cough of hysteria, prior to the introduction of auscultation, was a fruitful source of alarm; in the present day it can scarcely be confounded with that depending upon disease of the lungs.

Expectoration.—The expectoration of the earliest period of phthisis affords no information. Prior to the softening of the tubercles, when the tubercular materies may be seen in the sputa, the expectoration consists solely of the mucous secretion of the tubes and air-cells, and therefore in no way differs from that

produced by other irritations of the same structures. The principal difference between the two, is to be found in the fact that, in incipient phthisis the expectoration retains its transparency for a longer time than in bronchitis, in which disease a few days suffice to induce the change from simple mucus, to muco-pus.

Dyspnoea, Hæmoptysis.—Dyspnoea and pain in the chest are even less characteristic than the cough of phthisis, and therefore need not detain us. Not so, however, hæmoptysis; this symptom is one of the greatest diagnostic value in the commencement of tubercular disease, as is most forcibly pointed out in M. Louis' admirable treatise.* According to him it was present in two thirds of the cases of phthisis which he examined, while, on the other hand, out of 1200 cases of different diseases, exclusive of amenorrhoea, or injury from violence, not one experienced hæmoptysis which did not in the end prove to be phthisical. Are we then, in any given case of hæmoptysis, to suspect tubercles? I believe that by so doing we may sometimes be wrong, but generally right. Personal experience at least has so far convinced me of the fatality of the symptom, and the correctness of Louis' deductions, that without knowing the circumstances, the fact of hæmoptysis would lead me in all cases to pronounce unfavourably. But there are, doubtless, cases (by far the minority) in which the symptom is not one of such fearful import. The extenuating circumstances upon which I am in the habit of confiding are these:—1. The appearance of the ejected blood. If this is very abundant, a pint or more, or consists of rounded clots, dark and not spumous, the suspicion of tubercles diminishes. 2. The finding of other evident cause for the hæmoptysis, in the physical state of the lung, as, for instance, the existence of apoplectic engorgement in the lower tube: and, 3d. The presence of sufficient cause in the state of the heart, as contraction of the mitral valve, with or without hypertrophy of the right ventricle. A probability of the spitting of blood not being caused by tubercles, is also afforded by its recurrence at stated periods corresponding to the suspension of menstrual or hæmorrhoidal discharges. Setting aside these instances, and the rare and obvious case of mechanical injury, I know of none in which I should not hesitate to pronounce the prospect of phthisis distinct.

Pulse.—Under this head may be considered that condition of the system which is called hectic fever. This fever is not generally developed until the period of softening, but in about one-fifth of M. Louis' cases it appeared with the earliest symptoms. The most minute researches on the pulse in phthisis pulmonalis are those by Professor Guy.† He has elicited the curious fact that in this disease posture has little or no effect on the frequency of the pulse. His conclusions are as follows:—

"1st. In cases of phthisis pulmonalis, the frequency of the pulse varies within wide limits, the difference between the extremes amounting to 90 beats.

"2d. In the same individual the frequency of the pulse undergoes remarkable fluctuations, passing in a few days through a range of 60 beats.

"3d. In five out of six cases the frequency of the

pulse in phthisis exceeds the highest frequency observed in health.

"4th. *The maximum difference between standing and sitting in all cases of phthisis falls short of the mean difference in health.*

"5th. *The mean difference in health is six times as great as the mean in phthisis.*"

I have thus endeavoured to give a brief view of the degree to which we may be assisted in the diagnosis of incipient phthisis by a comparison of the symptoms alone. Of the pulse I am not able to speak from personal experience; if further observations confirm those of Dr. Guy, he will have established a valuable auxiliary in the diagnosis of tubercle. Hæmoptysis, it would seem, is of fearful augury, whether it occur first or subsequently in the order of symptoms. The probability of the presence of tubercles is much strengthened if the spitting of blood be moderate in quantity, if it be florid and spumous, if it occur more than once, or between the ages of 15 and 30; excepting in females, in whom it may be supplementary of menstruation. If the hæmoptysis be followed by cough, which at first occurs at intervals, but afterwards becomes permanent and accompanied by expectoration, the hazard is still further increased, and if such a series of symptoms occur in a person of scrofulous habit, with hereditary tendency to phthisis, the diagnosis of the incipient stage of the disease is rendered as distinct as it can be without the aid of physical investigation.

It will, however, be readily conceded that a diagnosis founded upon the rational symptoms alone will, in many cases, prove erroneous. The same train of symptoms, with the exception of hæmoptysis, may be caused by bronchitis; and the similarity to phthisis increases as the disease becomes chronic. Cough, expectoration, night sweats, and emaciation, may be produced by long-continued dyspepsia, by invagination, by sexual abuse, and in females, by prolonged lactation, and uterine disease, accompanied by weakening discharges. Such cases have over and over again been mistaken for incipient phthisis, and, doubtless, form many of the vaunted cures which ignorance on the one hand, and knavery on the other, force on our notice in the present day.

In auscultation, however, and its auxiliaries, percussion and inspection, we have the means, when fully understood, of arriving at an accuracy of diagnosis which, even a few years back, would have been deemed impossible. Many have been the fellow labourers to whom this desirable advance in our knowledge is to be attributed; but to M. Fournet, more than any other, is due the merit of having, in the clearest manner, placed before us the character of the changes induced in the respiratory phenomena, by the early commencement of tubercular deposit. Before, however, I proceed to notice at length the valuable observations of this author, I shall mention the other aids to physical diagnosis, and first—

Inspection.—This method, although inferior both to auscultation and percussion, in the information which it affords in the earliest period of phthisis pulmonalis, is, nevertheless, capable of supplying some valuable results. It can scarcely be necessary to state that none of the signs, either of the incipient or advanced stages of the disease, are infallible; their value essentially

* Sur la Phthisie: Paris.

† Guy's Hospital Reports, 1839.

depends on the locality and the succession of their appearance, taken in connection with well ascertained facts, relative to the origin and progress of pulmonary tubercle. To exemplify my meaning, the dull sound on percussion, produced by consolidation of the lung, is of the same character in whatever part of the lung it is observed; but the diagnosis, derived from its occurrence in the upper lobes, would be widely different from that indicated by its presence in the lower. But to return to inspection, as a means of the diagnosis of incipient phthisis:—In a healthy and well-formed subject, the upper part of the chest should be smooth and rounded, and, excepting in very thin persons, no hollow should exist beneath the clavicles. The expansion on both sides, during respiration, should be regular and equal. In phthisis pulmonalis, certain changes are induced in all these respects. The first thing to be observed, according to the experience of Dr. Stokes, is a want of equality in the expansion of the two subclavicular regions. Dr. Hughes* has likewise noticed the same fact, and believes that it precedes, for a considerable time, any flattening in the same regions, or any change in the resonance on percussion. The falling in of these spaces, however, soon follows, unless there should be a great amount of emphysema conjoined with the tubercular deposit, in which case the tendency to contraction is counteracted by the dilated air-cells. To form a correct judgment of the extent to which flattening has taken place, a piece of tape, as recommended by Woillez,† should be stretched from the nipple to the clavicle. In a healthily formed chest, the tape should be in contact with the skin throughout.

Auscultation.—The next branch of physical investigation—auscultation—is of far greater importance than the former; and will, therefore, require to be noticed more at length. The stethoscopic signs of incipient tubercularization of the lungs, have always been considered of so delicate a character, as scarcely to be distinguished from those produced in the healthy lung, except by a nicely educated ear. There is, beyond all doubt, much foundation for such an opinion; but, as has before been said, the difficulty has arisen from ignorance of, or want of attention to, the double nature of the respiratory act. That this act, instead of giving rise to a single sound, as taught by Laennec, is in reality a compound phenomenon, consisting of two sounds of unequal intensity, is now generally admitted. The normal character of each of these murmurs is a soft breezy sound, leaving on the ear the sensation of gradual and equable expansion. Fournet‡ has given us a scale by which we may measure the relative intensities and duration of the two sounds. The due appreciation of this relation is of great consequence in the diagnosis of incipient tubercular deposit, as the minute shades of the disease are only in the first instance to be detected by correspondingly minute disturbances in such relation.

The same softness characterises the expiratory sound, but its intensity is so slight, that it is inaudible in a healthy lung without considerable attention. The reality of the existence of this murmur was first

observed by Dr. Jackson,* an American physician, and soon after by Louis and Audral. In this country Dr. Cowan was the author of a separate treatise upon the subject, as far back as the year 1835. Fournet has represented the intensity and duration of the inspiratory murmur at ten, that of the expiratory sound at two, or one-fifth of the former.

The natural respiration gives rise to sounds of different qualities, according to the portion of the pulmonary apparatus in which they originate. Auscultators generally divide the respiration into the vesicular, the bronchial, the tracheal, and laryngeal.

The vesicular form is that which is produced in the vesicular tissue of the lungs, and is heard wherever this tissue exists, but in its greatest purity in the antero-superior portions of the chest.

The bronchial respiration, as its name indicates, originates in the bronchial tubes, and as it becomes, when a morbid phenomenon, a most important element in the diagnosis of tubercular deposit, it is of great consequence to be acquainted with its normal character and situation. Its character is that of greater intensity than exists in the vesicular sound, and there is less disproportion between the murmurs of expiration and inspiration; it holds, in fact, in this respect, the mean between the vesicular and tracheal respiration, in which latter the two murmurs are of nearly equal duration. It is heard in its normal state wherever the larger bronchial tubes are situated near the surface, and uncovered by vesicular tissue, and is, therefore, most perceptible at the root of the lungs. Fournet limits it to this spot. Dr. Williams, on the contrary, affirms, that over the space of two or three inches on each side of the summit of the sternum, and sometimes in the axillæ, the respiration is naturally bronchial. I am inclined, after careful consideration of the point, to agree with Fournet, for if that opinion be not correct, what becomes of the value of bronchial respiration as indicative of solidification of the lung, for the “two inches” mentioned include a portion of the apex of the organ, and the part most early affected by tubercle?

The tracheal and laryngeal forms of respiration need not detain us, since they, as morbid phenomena, are heard only in the latter stages of phthisis, and are, therefore, unconnected with the immediate object of this paper.

* Vide Review of M. Fournet's Work.—*British and Foreign Medical Review*, No. 18.

(To be concluded in our next.)

INFLAMMATION OF THE UTERUS DURING THE PREVALENCE OF PUERPERAL FEVER.

TO THE EDITOR OF THE PROVINCIAL MEDICAL AND SURGICAL JOURNAL.

SIR,

The two following cases occurred during the prevalence of puerperal fever in this neighbourhood. They may have had an origin which was quite independent of contagion, but if they were the result of it, as I am disposed to believe, they may possess some degree of interest. I will relate the circumstances attending

* Guy's Hospital Reports.

† *British and Foreign Medical Review*, No. 18.

‡ *Clinical Researches*; translated by Brady.