viii. The symptoms vary considerably in different cases.

ix. The order in which the symptoms arise is as important as the symptoms themselves.

x. There are no symptoms by which one obstructing cause can be clearly distinguished from another.

xi. The duration of the disease varies much in different cases.

xii. The strength of the patient should be maintained.

xiii. Bleeding should be employed with great caution.

xiv. The seat of obstruction may be very apparent, and yet deceptive.

xv. An operation is only justifiable as a forlorn hope.

xvi. As a rule, when an operation is resorted to, the central incision is to be preferred.

xvii. There is reason to believe that metallic mercury has proved useful; and it is in obstruction from membranous bands chiefly, if not solely, that benefit is to be expected from its use.

Camden Row, Camberwell, April 1851.

OBSERVATIONS ON THE FORM AND MOVEMENT OF THE CHEST IN PHTHISIS.

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AN absence of symmetry both in the form and movement of the thorax is very apt to be considered as a necessary condition to the diagnosis of Consumption; and I have seen many cases of phthisis overlooked, in consequence of a well-formed and, to all appearance, healthy chest, having been deemed incompatible, not only with the existence of pulmonary tubercles, but even with the tuberculous diathesis. It is the object of the following observations to correct this misapprehension; and I shall commence with a few remarks upon the relation of the form of the chest to the *development* of consumption.

The form of the thorax appears to have little or nothing to do, primarily, with this disease, for it is equally common to see phthisis attacking persons of fine and well-proportioned chests, as those who are the subjects of some congenital or acquired thoracic malformation. The life-guardsmen, the pugilist, the blacksmith, etc., notwithstanding the fully-developed chests which their several occupations induce, are, *cæteris paribus*, quite as liable to the inroads of phthisis, as the mechanic or artizan, whose daily task leads to the opposite result; the truth being that, in every instance, the origin of the disease is not attributable to any peculiar conformation of chest, but to the various circumstances under which such conformation has arisen; the impure atmosphere which has been breathed; the excesses which have been indulged in; the violation of sanitary laws; or, the inherited scrofulous taint. It is very questionable whether even the evil practice of wearing stays has been justly accused of bringing on phthisis in the female sex. M. Louis considers the popular belief upon this subject

as nothing more than matter of assertion, wholly unsupported by proof; and the very circumstance of consumption being so much more prevalent in London amongst males than females,¹ might be fairly used as an argument against it. Without doubt, this habit, which fashion has so mistakenly inflicted upon women, has its penalties; but phthisis can scarcely be included in the list.

The varieties of deformed chests, which are sometimes congenital, but oftener, perhaps, acquired during infancy in consequence of imperfect nutrition, are much less frequently seen amongst consumptive patients than might be anticipated. In phthisical children they are very common, but not so in adults; which probably arises from the circumstance, that whenever the deformity proceeds from the early development of scrofula, the little patients' career is very liable to be cut short by some form of tuberculous disease; but when it arises from causes which are only temporary, the health may be restored as these are overcome; and although the form of the chest may ever afterwards retain the evidence of early derangement, it does not expose its possessor, on that account, to any unusual chance of becoming phthisical. Whether or not this may be a satisfactory explanation, the fact remains, that the pigeon-breasted chest is not of very frequent occurrence amongst phthisical adults, whilst it is common enough to observe persons so affected in the enjoyment of perfect health.

The deformity arising from angular curvature of the spine is extremely rare, and has only once fallen under my observation amongst more than two thousand consumptive patients; and this is the more singular, from the affection being, in nearly every case, of scrofulous origin. Lateral curvature, on the contrary, is very common, and the loss of symmetrical form and motion of the thoracic walls which it generally involves, is liable to be mistaken for an indication of pulmonary disease, if the condition of the spine should escape notice; but this deformity has no relation to the development of phthisis, beyond that of exhibiting a defective state in the general health, which may have induced the tuberculous diathesis.

Continued observations upon phthisis in all its multiform characters, have led me to the following conclusion:—that the best formed chests afford no security against the onset of the disease, whilst those which are comparatively ill-developed, or even deformed, do not appear, on that account, more liable to become the seat of tubercle.

I now pass on to some remarks upon the form of the thorax as influenced by phthisis in its commencement and progress; and these will be better understood by a brief reference to the relationship existing between phthisis and tubercle.

There is a period of the disease, sometimes well-marked, but equally often so short and ill-defined that it escapes detection, which may be termed the *preliminary* stage; it might be called with more propriety the *first* stage, but this title has been too long applied to a somewhat later period to admit of being changed. Consumption has now commenced. The tuberculous elements exist in the blood, but are not yet separated from it in the form of tubercle. This period passes into the tubercular or *first* stage; in some cases the tubercle is formed very

¹ First Medical Report of Brompton Hospital for Consumption, p. 8. London: 1849.

rapidly; but in others, it may take months, or even years, for its accumulation to any notable amount.

The tubercular deposit consequently should be considered as the *effect* of phthisis, and as bearing precisely the same relation to this disease as the lithate of soda does to gout; and, just as a patient may be gouty without having the movements of his joints affected by "chalk-stones", so may any one be phthisical without having the functions of the lungs interfered with by tubercle. The really phthisical symptoms, at the commencement of the disease, depend, not upon the state of the lungs, but upon the morbid condition which has produced it. It is true, that in the latter stages, much of the patient's suffering is a direct consequence of the pulmonary disease; but, at an earlier period, the general features of the malady—the weak and quickened pulse—the languid expression—the perspirations, etc.—depend entirely upon the *phthisis*, not upon the tubercle.

From this view of the subject it must follow, that phthisical symptoms may present themselves in connexion with every possible degree of pulmonary disease,—from a few scattered tubercles, which are scarcely appreciable, to their accumulation in considerable masses; and that *incipient* phthisis is not *always* discoverable by a physical examination of the chest. If this had been more fully admitted by writers upon these subjects, the stethoscope would have been often spared unmerited discredit.

We will assume, however, that the disease has fairly reached its *first* stage, and that the tubercular deposit is sufficiently abundant to interfere with the proper functions of the lung. In what manner is this exhibited by physical signs? Are the form and movements of the chest necessarily altered? These are questions which cannot be answered by an appeal to individual cases, on account of the well-known Protean character assumed by the disease, and are only to be met by continued observation upon such a scale as an hospital, like that at Brompton, can alone afford.

As a general rule, the form of the chest is unchanged, and the action of its two sides is symmetrical. In a few instances, there is a slight bulging over the diseased part, but, owing either to its rarity, or the shortness of its duration, it is not very often to be detected. Auscultation and percussion are now the sole guides to the condition of the lungs—points, however, upon which it is not my present object to enter.

I have always been aware that such a statement may be met by the very plausible argument, that directly the apex of a lung becomes tubercular, it must necessarily lose some of its capability of being expanded, and, as a natural consequence, the portion of the thoracic walls corresponding with the seat of the disease, must undergo a change in form, and be less moveable than the opposite side. But I think it can be shown how it happens that, in most cases, neither of these alterations are immediately apparent, and that the chest may retain, for a time at least, its healthy form, as well as its long-accustomed habit of equal and simultaneous motion.

There are two ways by which it does so, viz.: 1. The movement of the healthy side becomes diminished to the same extent as the other, so that the ordinary breathing, instead of being partly costal, as we find it in health, is almost wholly abdominal. 2. The pulmonary cells

in the immediate neighbourhood of the tubercular deposit become enlarged, and by increased capacity for air, compensate for those which are disabled.

The first is less common than the other, but its occurrence may be witnessed in certain cases (of which I have seen many examples), where, although it is evident from other signs that one lung only is affected with tubercle, the thoracic movement upon both sides is small but equal, except on very deep inspiration, when the diseased side is less raised than the other. The second may be seen in the many cases of early phthisis, in which the respiratory sound upon the diseased side is actually louder than on the other, and in the still more numerous instances, in which the murmur at the tuberculous apex is scarcely audible in some points, and morbidly loud in others; both of which conditions must be familiar to every experienced auscultator. It is probable that the first takes place in cases where *miliary* tubercle is scattered throughout the greater part of the lung's apex; and the second, where the tubercular deposit is in somewhat larger masses, and accumulated in particular spots.

The occasional bulging over the diseased part, first observed by Dr. Chambers, is yet additional testimony in favour of the second explanation; for when the portion of the chest so altered is percussed, it is often found to be more resonant than the healthy side, apparently in consequence of an extreme degree of enlargement of the pulmonary cells, amounting to emphysema.

But, after a time, which varies very much in different cases, circumstances are entirely changed; the diseased portion of lung *begins to contract*, and the thorax undergoes an alteration in form, not only in the region of the clavicles, but in its whole contour. M. Fournet referred this contraction to secondary pleurisy; Dr. Stokes has attributed it to atrophy of the lung; and Dr. Walshe has added to these, the contraction of plastic matter exuded into the pulmonary tissues. It is probable that these different causes are sometimes associated; but one or more of them must be present, before the form and action of the chest can be materially interfered with.

In the majority of phthisical cases, their effects begin to appear towards the middle or latter end of the first stage; but examples are sufficiently numerous of their being completely absent until softening has commenced.

I shall describe the several changes which are thus produced, as they are seen when in their extreme; premising, that the greatest variety will be met with, both in the rapidity and extent of their development.

The vertebræ of the neck and back are inclined forwards, and the shoulders are rounded; the front of the chest is consequently contracted, and the stature of the body lessened, giving an awkwardness to the whole appearance, difficult to describe, but which any one accustomed to the external aspect of the disease, would at once refer to the *tubercular chest*. If the patient be looked down upon whilst he is sitting, two curves are distinctly visible; the one affecting the whole line of the cervical and dorsal vertebræ, the other crossing it, and formed by the two shoulders inclining forwards. A depression is visible beneath one or both clavicles, giving to these bones the appearance of

prominence; and, posteriorly, the supra-scapular region over the diseased part is more or less sunken inwards. During ordinary breathing, either there is no costal movement whatever at the upper part of the chest, or there is a difference in its extent upon the two sides; and, on forced respiration, instead of the peculiar *swelling* movement of the infra-clavicular regions which is so characteristic of health, either one side is elevated more than the other, or the entire chest is raised, as it were, in one mass, without being perceptibly increased in the antero-posterior diameter of its upper part. These latter changes are more conspicuous in females than in males, as the healthy respiration in our own sex is principally abdominal, whilst in females—owing to the restriction of stays, or for reasons which the obstetrician is the best able to appreciate, there is greater freedom of movement in the upper ribs, and the breathing is, to a much greater extent, costal.

The loss of symmetry and healthy movement take place simultaneously; so that, unless there is some depression in the clavicular or supra-scapular regions, there will be no diminution in the ordinary movements of these parts. M. Fournet was, I believe, the first who drew attention to this circumstance; and I have certainly never seen an exception to it.

The changes above described may occur at any period of phthisis, from that antecedent to softening, to that of large vomicæ; but they are very capricious guides to the actual stage of the disease; for persons with cavities in the lungs very often are less altered, in these respects, than others who have scarcely entered the second stage. The different amount of pulmonary contraction which must accompany different cases, will at once account for these varieties.

From the preceding observations, I think it must be evident that inspection and mensuration of the chest can seldom afford assistance in the diagnosis of *incipient* phthisis; although, as the disease advances, they may prove useful auxiliaries to other physical signs. But when it is remembered that a departure from strict symmetry is occasionally seen in healthy persons, as a consequence either of a congenital peculiarity, or of certain pursuits which influence the development of the thorax, it is obvious that much caution is always necessary in their employment.

I shall conclude with the following extract from M. Fournet's *Clinical Researches on Phthisis*:

“ Il arrive assez souvent qu'une infiltration tuberculeuse *considérable* a lieu dans un poumon sans qu'aucune diminution dans le volume du thorax, aucune modification dans les mouvements de la paroi thoracique correspondante, se fasse remarquer. C'est le cas ordinaire de la tuberculisation *miliare disséminée*, et de la phthisie aigue. Dans ce cas, les mouvements de la paroi thoracique ne sont pas sensiblement modifiés. . . . On voit, que la palpation des mouvements de locomotion n'est applicable qu'à une époque déjà fort avancée, de la première période de la phthisie, époque à laquelle le diagnostic ne peut plus être douteux, si l'on s'est servi convenablement de l'auscultation et de la percussion.”

4, Bolton Street, Piccadilly, May 30th, 1851.