Original Communications.

THE PROGNOSIS OF ASTHMA.

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In a disease whose tendency is so little generally understood, and which is so alarming and distressing in its manifestations, the ultimate issue of the case is often a subject of the most painful anxiety to the sufferer and his friends; it is therefore a matter of some importance that the physician should be able to detect the tendency of the disease in any given case, and to form something like a definite prognosis.

Now this prognosis must be based partly on the actual condition of the patient, and partly on the previous history of his case. As far as relates to the actual condition of the patient, the circumstances by which our prognosis will be influenced are his age, and the presence or absence of organic mischief in the heart or lungs. As far as relates to the previous history of his case, the circumstances influencing the prognosis are the duration of the attacks, (rather than their severity) their frequency, the completeness of the recovery between them, their apparent tendency—that is, whether they appear to be getting more frequent and more severe, or less frequent and lighter—and lastly, the length of time the asthma has existed.

I. CIRCUMSTANCES CONNECTED WITH ACTUAL CONDITIONS. The influence of *age* in determining the tendency of asthma constitutes a very constant and characteristic feature in its clinical history. In young asthmatics the tendency is almost invariably *towards recovery*; whereas, in a person who is attacked with it after forty-five the tendency is generally towards a progressive severity of the disease, and the production and aggravation of those complications by which asthma kills. In no disease, in my opinion, does the question of age affect prognosis more, and in none is better shown the power of youthful organisms, to repair, in the intervals of health, the injuries of disease, and to resist the tendency of functional to the production of organic mischief; or, on the other hand, the loss of this power in the advance of life, and the proportionally greater tendency of occasional and recurrent derangements to produce permanent and irreparable injury.

In the young asthmatic under fifteen, one may almost safely predict, barring organic disease, a favourable issue, and tell him he will most likely gradually “grow out of” his complaint. I can call to mind, at the present time, four or five cases of individuals who have thus grown out of their malady, and are now perfectly well; but whose childhood was rendered one of great suffering by asthma. In asthma commencing from twenty to forty, age tells much less in favour of the patient, and the prognosis is doubtful; but if the lungs are entirely free from any organic complication; if there is no emphysema, and no tendency to bronchitis; the patient has, under proper management, a very fair chance of recovery. Above forty-five, the recoveries are, I believe, few indeed; the tendency is, as I said just now, generally towards a progressive severity of the disease, and the prognosis should always be guarded, if not absolutely unfavourable.

Now, why is this? why, *ceteris paribus*, should age have such a determining influence on the tendency of asthma? Partly for the reasons that I have mentioned; that in the young the powers of repair are great, in those advanced in life, feeble; that in the young the pulmonary congestion, that always accompanies asthma, completely vanishes in the intervals of the attacks; the capillaries recover their tone, and the nutritional balance of the lungs is regained; whereas in the old the engorged capillaries are slower in recovering themselves, and the pulmonary congestion hangs about the patient some time after the asthmatic spasm has disappeared, manifesting itself by a profuse mucous exudation, and a certain thickness of breathing and incapacity for exertion; if the attacks are frequent, this pulmonary congestion never entirely vanishes, and thus is produced a kind of spurious chronic bronchitis, with a tendency to aggravation by each attack; which is one of the worst and commonest complications of the asthma of the old. Another complication of asthma—dilated right heart—is much more apt to occur in the old than in the young, and for the very reason

that the dyspnoea in the old is so apt, by the generation of this spurious bronchitis of which I have been speaking, to pass from the occasional and intermittent form characteristic of pure asthma, and become continuous and permanent. As far as I have seen, the right side of the heart never becomes dilated by asthma, however severe the dyspnoea may be during the attacks, if the intervals between them are considerable, and the recovery in those intervals complete. It is a continued and not an occasional and transient arrest of the pulmonary circulation that dilates the right side of the heart. It is from this fact that we see dilatation of the right side of the heart, venous stasis, and general dropsy, so much more common a result of chronic bronchitis than of asthma.

But this greater disposition in asthma to produce organic change in the old than in the young is not the only circumstance which imparts to age its determining influence on the tendency of the disease. In asthma, as in all other constitutional disorders, we have in the young much more room for hope from those changes in the type and build of the constitution which in them are so marked and striking; whereas in the old the constitution is set and fixed, and we have but little to hope on this score. Indeed the existence of a constitutional peculiarity in a child is of itself almost a presumption that he will one day lose it; while in an old person it furnishes a presumption equally strong that it is fixed and indelible.

Again, in an old person the probability is that the asthma has existed longer than in a young one, and, as I shall show presently, the chances of recovery from asthma (as is the case in almost all diseases) are in inverse proportion to the length of time that the disease has existed.

But there is a special reason, depending on the nervous nature of asthma, that makes us sanguine of recovery in the case of the young; and which explains at the same time the greater frequency of pure nervous examples of the disease in the young than in the old. What, for want of a better name, we must call “nervous irritability,” is much more marked in the young than in the old. It appears continuously to diminish from birth forwards. Sources of irritation that in the young are adequate to the production of the most violent nervous phenomena, in mature life are powerless to produce such effects. The cutting of a tooth, for example, will send an infant into epileptic convulsions; one never hears of a fit from the second dentition. A young child will grind its teeth, or even be violently convulsed, from the presence of ascarides in its rectum; but one never sees such results from worms in the adult. And thus the diminution of nervous irritability, as childhood passes to youth and manhood, may make an attack of asthma less and less prone to occur on the superposition of its exciting causes, and less intensely spasmodic when it does occur. I believe indeed, that this diminution of nervous irritability is the true explanation of that gradual recovery of young asthmatics which is so common, so almost universal.

Lastly, age influences unfavourably the tendency of asthma, not only because it is more apt in advanced life to engender organic disease, but because it is also more apt to have organic disease as its cause. The causation of asthma in youth and age is indeed very different. In age there is commonly some appreciable organic basis for it; in youth much more rarely.

The other circumstance in the actual condition of an asthmatic determining the tendency of the disease in his case, is *the presence or absence of organic disease in the respiratory and circulatory organs*. This is the most important of all the points affecting the prognosis, and is, of itself, sufficient to turn the scale. Its exact value is this: if the heart and lungs are perfectly free from organic disease, recovery is possible; if they are the seat of such organic disease as tends to engender bronchial spasm, and as is in the given case the actual cause of the asthma, recovery is *impossible*. The cause is incurable, and therefore its consequence.

II. CIRCUMSTANCES IN PAST HISTORY. A very important one of these is the *length of the attacks*. I have just now stated that one of the ways in which repeated attacks of asthma damage the lungs is by the production of permanent pulmonary congestion. At each attack, the shutting off of air by the narrowed bronchules, suspends the normal respiratory changes of the blood in the capillaries; this produces capillary arrest, and this, engorgement of the whole pulmonary circulation, capillary and venous. Now this pulmonary congestion, as is the case in all derangements of vascular balance, congestive or inflammatory, becomes formidable and chronic in proportion to the length of time that it has existed. If the attack is short, and the speedy relaxation of the bronchial tubes quickly readmits a free supply of air, the vessels are at once relieved, the blood

passes on, and the transient congestion leaves no trace behind it. But it is very different if the attacks last several days, or even weeks, as is sometimes the case. Then the capillaries and venales, long distended, never completely recover themselves, their tone is lost, and the pulmonary congestion, manifested by chronic dyspnoea and expectoration, is permanent. This pulmonary congestion, involving as it does the bronchial tubes, and occluding them with mucus, becomes, in its turn, a source of bronchial irritation, and thus tends to excite and keep up the asthma which has caused it. The length of the attacks, therefore, has an important bearing on the prognosis, because it has an important influence in determining the production of that particular damage of the lung which is the commonest way in which asthma becomes hopeless.

The frequency of the attacks is another point bearing directly on the prognosis, and for the same reason and in the same manner as their duration. The more frequent they are the worse the omen. If the intervals are so short that the lungs have not time completely to recover from one attack before the occurrence of another, the omen is very bad, because the mischief of each attack being engrafted on some portion of that of its predecessor, the organic derangement is accumulative, and the case one of progressive disorganisation.

Another point that should be carefully ascertained is the completeness of the recovery between the attacks. I always ask a patient, "Is your breathing in the intervals of the attacks perfectly free from any shortness or difficulty whatever? If he says "Yes," then I know that his attacks leave no permanent vestige on his pulmonary circulation, that it recovers itself absolutely, and that the disorganising tendency of asthma does not, in this case, furnish any ground for alarm. But if he says "No," I am sure that the mischief which the attacks inflict persists, I confidently expect to find other evidence of organic disease, and I form an unfavourable prognosis.

Especially do I draw an unfavourable inference from the persistence of expectoration. Spitting is one of the worst signs in asthma. In fact, what is called "humid asthma," is neither more nor less than asthma complicated with bronchial inflammation or congestion.* Wherever there is chronic expectoration, we may be sure that the lining membrane of the air passages is the seat of organic change. Indeed, the mucous exudation is a positive evidence of, and in its quantity a measure of, that loaded condition of the bronchial vessels which it is its object to relieve. A certain amount of expectoration after each attack, of a thick gelatinous mucus, like pellets of very thick arrowroot, is common, almost universal; especially in the morning succeeding the attack (indeed, the most transient fits of asthma, lasting only a few minutes, are generally followed by the expectoration of a pellet or two of this mucus, with whose discharge the little attack appears to terminate); and from such an expectoration, if it lasts only a few hours, or even days, no harm is to be inferred; it is when it never completely ceases that it becomes ominous. Wherever there is mucous exudation there is cough; *chronic cough*, therefore, is a very bad sign in asthma, and tells just the same tale as the expectoration.

There is one prognostic sign, common to all disease, and which should not be disregarded in asthma; it is, the direction that the disease appears to be taking. Is it becoming more or less intense? Are the attacks becoming more severe and more frequent, or milder and more distant? One often derives from this source a most valuable indication of what the upshot of the case will be. The loss and the acquisition of the asthmatic tendency is generally a gradual process, and the future of a case of asthma often but a reflection of its past history. If a patient can tell you that his attacks have mitigated in severity and are getting less frequent, you have, especially if he is young, one of the most hopeful auguries of his ultimate recovery. Such a case would probably get well of itself without any medical interference. If, on the other hand, the disease is *gaining* on him, you have what must be considered a very bad sign, and one which, unless some speedy and great change is induced by some of those means which control asthma, will leave but very little hope.

There is yet one more circumstance, to which I have not yet referred, that will very materially affect our prognosis; it is, our ability or not to detect the exciting cause of the attacks, and the controllability of that exciting cause. If the exciting cause is clear, single, and such as may be prevented, nothing is simpler than the treatment of the disease, or more certain than

a favourable prognosis. We hold in our hands, as it were, the key of the disease, and by shutting off the exciting cause we may indefinitely postpone a repetition of the attacks. If the attacks never occur but as the consequence of this exciting cause, and its recurrence is permanently prevented, this preventive treatment amounts to an absolute and final cure. If, for instance, what is not uncommon, there is some particular locality where the asthma is sure to come on, and in no other, you have simply to say, "Avoid that place and you are cured." Or if, which is much commoner, there is one place and only one, where the patient never has any attacks, you may say, with almost equal certainty, "Stick to that place and you have seen the last of your asthma." Or if, again, the asthma never comes on but as the result of some error of diet—eating something known to disagree, or eating largely and late in the day—the patient's cure is certain if he will only keep himself within strict dietetic rules, and he may safely and positively be told so. If, on the other hand, the exciting cause is not to be detected, or, being detected, not to be prevented, the omen is bad: for, in the one case we are debarred from adopting any preventive treatment, or in any that we may try we are hitting in the dark; and, in the other, the prevention of the attacks is manifestly impossible.

If, then, an asthmatic were to present himself to me and seek my opinion as to his prospects, I should, having ascertained his age, and carefully scrutinized the condition of his chest, put to him the following questions:—How long do your attacks last? How often do they occur? Do you lose all traces of shortness or difficulty of breathing between the attacks; or is the breathing always a little difficult? Do you habitually cough and spit? Does the disease appear gaining on you, or the reverse? Is the exciting cause of the attacks clear; and can you undertake that it shall not recur?

If the patient is young, the chest sound, the attacks short, the intervals long; if there is no permanent shortness of breath, no cough or expectoration; if the attacks are getting milder or rarer, and if the exciting cause is clear and such as may be obviated, then a favourable prognosis may be given.

If the patient is old, the lungs damaged, the attacks frequent and severe, the breathing never quite free, coughing and spitting constant, the disease apparently gaining ground, and the exciting cause occult or irremediable, then, *quoad* all or any of these circumstances, there is no alternative but to give an unfavourable prognosis.

ON A PECULIAR AUSCULTATORY PHENOMENON.

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HAVING several times met with a rather peculiar auscultatory phenomenon which I do not find described or explained in works on the subject, I wish to record it, in the hope that such other members of the profession who may have encountered it in practice may be enabled to compare notes with me, and thus perhaps elicit something which may be of use to other auscultators. The first time I heard the sound in question, I was somewhat puzzled as to its meaning; and even now, though I am quite assured of its existence, I am not positive as to its real pathological bearing.

The best mode of describing the phenomenon will be to detail one of the cases in which I first encountered it.

This patient was a young man suffering from a digestive disorder, and with no symptoms of chest-disease. I examined the thorax merely as a precautionary matter, and found percussion perfectly normal everywhere; no unusual dullness at either apex, nor in the cardiac nor sternal regions. On auscultation, the cardiac sounds were quite healthy, as was also the respiratory murmur over the greater part of the chest. Over the most of the left apex, however, and at the inner third of the right, there was audible what I took to be a loud blowing murmur with the first sound. It was distinctly of a blowing character, without much harshness, perfectly synchronous with the cardiac systole and with the pulse, and very loud. There was no *bruit* in the cervical vessels. To examine the sound more carefully, I made the patient hold his breath; when, to my surprise, I found that the murmur completely ceased. This I repeated several times, that there might be no mistake. It was perfectly plain that, though completely identified with the vascular systole, the sound was present only during the expiratory and the end of the inspiratory process.

* By an unfortunate looseness of nomenclature, the term "humid asthma" was formerly, and is even now, applied to cases of simple chronic bronchitis that have nothing specially asthmatic about them.