

A CLASSIFICATION OF THE SYMPTOMS OF EARLY
PULMONARY TUBERCULOSIS BASED ON THEIR
ETIOLOGY.

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CLINICAL HISTORY.

In order to make a diagnosis of clinical tuberculosis early it is necessary for the examiner to disabuse his mind of the long supposed fact that a tuberculous patient must necessarily be of the phthisical habitus with flat chest, be run down and be suffering from a low state of vitality. Such a history will be obtained in many instances but not in all. There are quite a number of patients suffering from early clinical tuberculosis who are of robust build, who have been working hard and doing their work easily, and who show none of the usual stigmata that are assigned to those suffering from this disease. The old teaching that any man may have syphilis has its counterpart in clinical tuberculosis. Any man may have clinical tuberculosis; and, when it is present in its early stage at the time when it is most curable, the patient does not necessarily differ in his appearance from other members of society.

Most patients who present for examination are suffering from renewed activity in an old focus or from an extension of the disease to new areas. Therefore, it is important to inquire carefully whether the patient at any time during his previous years suffered from similar symptoms. It is not uncommon for patients, after a little reflection, to recall previous attacks which were similar, or to recall other symptoms or attacks which were most probably associated with previous periods of activity in the same or other tuberculous foci.

These attacks are usually characterized by other names, sometimes through ignorance and in other instances with intention to deceive. "La grippe," "bronchitis," "neurasthenia," "anemia," "malaria," "a run down condition," "intercostal neuralgia," "bleeding from the throat," are terms which are frequently employed in comforting and lulling the patient who is suffering from early clinical tuberculosis into a false

security. We can hardly conceive of anyone having constantly repeated attacks of la grippe; bronchitis which hangs on and comes frequently is always suspicious; neurasthenia demands a diagnosis, and has tuberculosis for its etiological factor oftener than is generally believed; malaria should not be so quickly assigned as the cause of the general lack of ambition which is so often found in malarial districts, for these patients also are subject to tuberculosis and other diseases which cause the same symptoms; a run down condition is suggestive of many things but demands that the physician search until the true cause is found, and if repeated or at all persistent should call for careful search for tuberculosis; intercostal neuralgia is frequently diagnosed when pleurisy of tuberculous origin is the real condition present; and bleeding from the throat is the sedative which throws many people off their guard and allows an early tuberculosis to creep on to an advanced hopeless condition. The history of any of these conditions during the past life of a patient is extremely suggestive of previous attacks of active tuberculosis.

Slow recovery from other diseases should always excite suspicion. Some of the common symptoms of tuberculosis will usually appear if this disease is present, and careful physical examination of the chest should be made. The tuberculin test cannot always be relied on under the circumstances. If positive it is valuable, but if negative it should be accepted with great reservation.

Sometimes a definite history of a tuberculous lesion elsewhere in the body, either at the present time or some time in the past can be obtained. If so, it should not bias the examiner but should cause him to be careful in weighing it along with other evidences.

Hawes (*Early Pulmonary Tuberculosis*, William Wood & Company, New York, 1913), rightly emphasizes the importance of asking the patient how long since he was perfectly well. The writer has found this of great importance. The patient does not know when he became ill of tuberculosis because the symptoms are so slight that he does not recognize them as making him ill until the early stage has passed. In answer to this question, however, he will often go back for weeks and sometimes even months before he finds the time when he really felt well. Some patients will be unable to give any history of

previous disease, the active symptoms coming on without warning. This sudden explosive type of tuberculosis is usually overlooked. Coming on as it does without the usual history of being run down, with stomach and nervous manifestations tuberculosis is not thought of. If temperature is present it is often called typhoid, or, if the lung is examined, it is diagnosed as pneumonia or la grippe.

CLASSIFICATION OF EARLY SYMPTOMS.

In order to make the diagnosis of early clinical tuberculosis more simple, the writer has suggested that the symptoms be classified according to their etiology. They naturally fall in three groups; those caused by the toxins; those of reflex origin; and those due to the tuberculous process per se. Some have a double etiology and will be found in more than one group as will be seen by referring to the following table:

SYMPTOMS DUE TO.

Tubercle Toxins.	Reflex Action.	Tuberculous Involvement per se.
Malaise Feeling of being run down Lack of endurance Nervous instability Indigestion or loss of weight Night sweats Temperature	Hoarseness Indigestion or loss of weight Chest pains, particularly aching of the shoulders and over apices and upper portion of lung Tickling in the larynx Cough Increased pulse rate Flushing of face	Frequent and protracted colds Spitting of blood Pleurisy Sputum Temperature

Symptoms Due to Tubercle Toxins. Malaise, nervous instability, a feeling of being run down, and lack of endurance are common symptoms of active tuberculosis. The two former are particularly associated with and a result of the specific toxins. The two latter while partly the result of toxemia are also caused by a combination of all the forces which tend to lower the patient's vitality. When an old tuberculous process becomes active, or a new infection occurs, patients are very apt to note that they tire more easily than formerly. They suffer from a languor which seems unexplainable. This, at times, almost amounts to an aching. Patients sometimes feel that they do not want to move or be disturbed, and yet they cannot see any reason for it. Sleep and rest do not refresh them. They seem to have an indefinite feeling due to what is to them

an indefinable cause. It is nothing they can explain, nothing that they can fully grasp, yet there is a consciousness that something is the matter. Sometimes they are taken to be lazy by their friends and even believe it themselves. They note that their disposition is changing. They are irritable and more easily disturbed than usual. They often lose their ambition and assume a "don't care" attitude. It is such an effort to do things that they find themselves neglecting duties which they have always assumed cheerfully.

Tasks which were formerly easy are now accomplished with difficulty. A little effort is followed by exhaustion from which recovery is slow. The patient then finds himself in a run-down condition, a state of low vitality from which he seems unable to pull himself together. At first the patient does not feel like doing; later, he cannot do. His endurance is gone. This state is often diagnosed as neurasthenia. To be sure neurasthenia is present. But that is not a diagnosis. Neurasthenia has a cause. It is a condition, not a disease. Tuberculosis is very often the cause and should always be thought of, especially if any other signs, such as rise of temperature, and loss of weight, are present.

The signs on the part of the stomach in early clinical tuberculosis are not distinctive. Neither are they regular. The patient may note a capricious appetite, he may have a loss of appetite, and sometimes there is little or no noticeable disturbance. Loss of weight usually follows the digestive disturbances, although it is often difficult to find accurate data on this point, for people do not weigh regularly, often not for years. The loss usually amounts to only a few pounds in early tuberculosis. There is much misunderstanding about the normal weight of people. Many people, in my experience, particularly girls, attain a maximum weight for their early years when about eighteen or twenty. Then they will fall back five, ten, fifteen or more pounds from this, and hold that as their normal weight until after the thirties are reached. This should be borne in mind in taking histories, for it would be manifestly erroneous to consider this maximum as the normal. Other causes for loss of weight must always be considered. This symptom is of no value unless accompanied by others; and at the age of about twenty it may be the natural loss which I have mentioned.

Night sweats are probably the result of the action of the toxins on the vaso motor system, causing a lack of tone and an undue relaxation.

A temperature curve is of great value in the diagnosis of early clinical tuberculosis. This cannot be emphasized too strongly. If other suspicious symptoms are present and a carefully taken temperature chart is characteristic and a tuberculin test should prove positive, the reaction reaching its maximum early (within the first thirty-six hours), a diagnosis of probable clinical tuberculosis should be made even in the absence of physical signs on percussion and auscultation.

The proper construction of a chart requires care and exactness. A graphic chart will greatly facilitate the study of the temperature. It should be made by taking four records a day, being sure to catch the maximum for the given patient. The first temperature should be taken on awakening and with that at 12:00 M., 4:00 P. M. and 8:00 P. M. should make a proper record for most patients. If it is found that a patient's maximum is reached at 2:00 or 6:00, these periods should be substituted for that at 4:00 or 8:00.

There are many sources of error in taking temperature. Unless they are borne in mind they will defeat our purpose. If the temperature is to be taken by the patient he must be carefully instructed.

There is a general belief that a patient suffering from active tuberculosis has a daily maximum above normal; but this is not necessarily true. The curve of early tuberculosis, which is characteristic of activity, goes in waves. The crests of these waves are separated by intervals of normal temperature. This shows the futility of taking a curve for only a few days. If the low part of the wave was chosen as the time for the record, the patient would be declared free from temperature; while if the crest were chosen it would show a rise.

The premenstrual rise in the female is also important and must always be borne in mind.

A very annoying temperature curve is often shown by those of nervous temperament. It is characterized by irregularity, being up one day and down the next. While this character of curve is often met with in the nervous tuberculous patient, the irregularities are not due primarily to the tuberculous process. Such rises of temperature may continue for

months after the disease is arrested in nervous patients. It is often difficult to convince them that they are not serious and that they are not caused by active processes.

There is a tendency on the part of some observers to go too far and to try to account for nearly all persistent slight rises of temperature as being of tuberculous origin. Tuberculosis must be thought of in connection with these temperatures but when other suspicious symptoms are absent we must remember that infections of the tonsils, teeth, appendix, and genital organs particularly the prostate and fallopian tubes, or infection of any other part of the body, can cause an elevation of the temperature curve.

Acceleration of the pulse. This may be due to both the tuberculous toxemia and stimulation of the sympathetics. The pulse may not be disturbed to any marked degree as long as the patient is at rest, but on exertion it becomes rapid and out of proportion to the amount of extra work that it is called upon to perform; and, as the process becomes more marked, it assumes a characteristic which is also noted in the temperature curve; that is, it returns to the normal very slowly after it has been disturbed. It is disturbed more in young people than in those who are older.

There is no regularity to the severity of the symptoms based on toxæmia because the amount of toxins differ so markedly in different patients. While this can be more readily seen in the advanced cases where we have the two extremes of acute easeous tuberculosis and the slow chronic fibroid form, it is also evident in the early cases. One patient will suffer greatly and show most of the symptoms mentioned above and another will hardly realize that he is not well and may hardly complain at all. The latter patient should have the better chances of recovery for his disease is less severe and it makes less demand on his vitality; but this advantage is too often sacrificed by a delayed diagnosis and an unwarranted certainty on the part of the patient either that he is not ill or that his illness is so slight that he will recover without following a careful routine.

Symptoms of reflex origin. The symptoms noted in early active tuberculosis which are of reflex origin include some which are quite common and others which are only rarely present.

Hoarseness is often found as one of the early symptoms. It is extremely common in advanced tuberculosis when necrosis is

present and cavity formation is taking place. Sometimes we have a complete aphonia although a marked degree of hoarseness is more common. In the early cases, hoarseness, as a rule, is slight compared with that in advanced cases. The afferent impulse comes through the pulmonary branches of the vagus, the efferent through the recurrent laryngeal, also a branch of the vagus, which supplies motor power to the vocal cords. Stimulation of the pulmonary end of the vagus by the inflammation in the lung causes a disturbance in the recurrent laryngeal fibres and this emphasizes itself as an interference with the movement of the cord. At times this amounts to an apparent partial paralysis, although it more frequently appears only as a relaxation of the cord and an inability to approximate its fellow normally. The disturbance is confined largely, if not wholly, to the side of the involvement.

Tickling in the larynx and dry hacking cough are also early reflex symptoms, the path of the reflex being the same as in hoarseness. Unfortunately, these symptoms usually direct attention to the throat and away from the lungs. This unfortunate reflex has cost many lives by misdirecting both the patient and the physician; the true source of the cough not being found until the disease had advanced to an incurable stage. Uvulas, tonsils and adenoids have been removed, septums straightened, pharyngeal catarrh treated for this symptom, when a chest examination would have shown that the trouble was below the larynx instead of above it. The irritation here is in the pulmonary ends of the vagus (afferent impulse), the resultant action in the recurrent laryngeal (efferent impulse).

Indigestion, while partially due to toxemia, has also a reflex cause. It can be seen that an irritation of the pulmonary ends of the vagus could easily cause disturbance on the part of the other ends of the vagus; consequently, the symptoms on the part of the gastro-intestinal tract could easily be at least partially accounted for in this way.

Increased pulse rate is partly toxic and partly due to reflex stimulation through the sympathetics.

A symptom which should receive more attention than is now given it is reflex chest pains which are common in this disease. These chest pains may be partly sensory, but, as a rule, do not occur until a certain change has taken place in the nerves

involved, consequently they are more common in old lesions than in early lesions; but when we recall that many of the lesions we are diagnosing, are due to renewed activity in old foci we can see that this symptom becomes important, as suggesting the presence of some lesion in the lung. In advanced tuberculosis, as shown by pathologists, there is a degeneration which takes place in the nerves, particularly in those which take their origin from those segments of the cord which receive the impulse from the lung. The nerves then, which are particularly effected, are those, both sensory and motor, which come from the cervical portion of the cord; taking in those which supply the chest, neck, arms and shoulders. The pains which we have in tuberculosis are, for the most part, confined to these areas. The most common seat of reflex pain is in the nerve supplying the shoulder girdle and running down into the interscapular and upper intercostal areas. Sometimes these patients speak of them as rheumatism. They vary from a slight ache to a pain of severe degree. They are usually, however, only moderately severe. It is well to ask the patient whether he has had any rheumatism in the shoulders or chest; and, he will often reply that he has and quite frequently it will be confined to the side on which there is an old involvement.

Flushing of the face. While this symptom is more apt to be present in advanced tuberculosis, yet a feeling of heat in the cheek is complained of at times by patients with early tuberculosis. This symptom can also be caused reflexly by certain digestive disturbances and it is well to bear this in mind when it is present.

While these reflex symptoms are not as distinctive as those of the next group, which I shall describe as being due to the tuberculous process *per se* yet they are suggestive; and if accompanied by other symptoms should arouse suspicion regarding the lung.

Symptoms due to the tuberculous process itself. There are a few symptoms which are due to the tuberculous process itself; and these are the most important symptoms that we have in early clinical tuberculosis. They are most distinctive and yet they may mislead us. Unfortunately, as a rule, they are probably a little later in appearing than some of those of the other groups. They presuppose either an involvement of some duration or one of an area of considerable extent. In fact, when we

make a diagnosis of clinical tuberculosis it has really existed for some time and there is always a considerable area involved. These symptoms should rarely be mistaken for any other disease or condition. One of the important symptoms of this group is frequent and protracted colds. The patient complains of taking cold easily; of colds hanging on; that he does not get over one until he has another. Inquiry will usually show that these colds are not the ordinary attacks of coryza. They often start as a bronchitis, at other times they start as head colds but end as bronchitis. Such should always be viewed with suspicion and if accompanied by temperature should call for a careful examination for tuberculosis. Sometimes when these attacks are more severe, the patient calls them la grippe and complains of having one attack after another.

Spitting of blood indicates tuberculosis in every instance unless it can be definitely proven otherwise. While there are other causes for this symptom yet the fact that the patient raises blood is presumptive evidence that tuberculosis is present; and the evidence is conclusive in most cases when the blood is bright and mixed with sputum. Pinkish colored saliva sometimes comes when the gums are bleeding, sometimes from sinus disease: bloody expectoration may come from heart lesions; but the clinician must know that these causes are rare in comparison with the one great cause of blood spitting,—tuberculosis. If the examiner will look for a pulmonary tuberculosis in all such cases he will not go far wrong. If he cannot find the evidence himself, it is his duty to make a probable diagnosis and call the assistance of some expert diagnostician. Look out for vicarious menstruation; it is a misnomer. Women who are tuberculous often spit blood at their menstrual time. I have not found this so in the healthy. If there is one symptom of early tuberculosis that should always be interpreted in the interest of the patient, it is spitting of blood. Blood spitting is not always preceded by other symptoms. The patient does not have to be run down. It may be the first clinical evidence of a tuberculous infection.

Pleurisy is another symptom which should not be mistaken. It is now fairly well recognized that pleurisy with effusion is nearly always of tuberculous origin. In my experience dry pleurisy is also suggestive. Not infrequently do I find an old quiescent lesion at one apex and a dry pleurisy at the base.

These pleurisies are too often diagnosed as intercostal neuralgia. Any sharp pain, increased by breathing or coughing, if accompanied by diminished motion of the same base, should require the elimination of tuberculosis before a diagnosis is made.

Sputum. In early tuberculosis we find no sputum as a rule, yet there are certain cases which will show this early. Every now and then a patient in whom ulceration has occurred in an old focus of infection, produces bacillus bearing sputum. While, as a rule, we do not consider finding bacilli as belonging to the diagnosis of early tuberculosis; yet, at times, in such cases as these, bacillus bearing sputum will be present in small quantities, although other symptoms that are present may be so slight as scarcely to call attention to the lungs; and a physical examination may fail to reveal a suspicious area. A proportionately large number of lymphocytes found in the sputum is suggestive of tuberculosis as pointed out by Wolff-Eisner.

The elevation of the temperature curve has been described in the symptoms due to tubercle toxemia. It also has as a causative factor, the inflammatory process *per se*. Inflammation is accompanied by chemical change and elevation of the temperature. This occurs aside from the tubercle toxins which are given out.

When either of the first three symptoms found in this group is present, particularly if accompanied by one or more of the symptoms of this or of the other groups, especially if there is an elevation of the temperature curve, we have strong evidence of clinical tuberculosis whether any further evidence can be found or not. If, aside from these symptoms, there should be a reaction to the cutaneous tuberculin test (100 per cent tuberculin being used), reaching its maximum within the first twenty-four or thirty-six hours, according to our experience, we are justified in making a diagnosis of active tuberculosis.
