THE EARLY DIAGNOSIS AND THE AGGRESSIVE TREATMENT OF PULMONARY TUBERCULOSIS IN A LARGE OUT-PATIENT CLINIC.

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THE HARM DONE TO CASES OF PHTHISIS BY THE TREATMENT ORDINARILY GIVEN IN OUT-PATIENT CLINICS.

To every out-patient clinic many cases of pulmonary tuberculosis — a great majority, indeed — come in an advanced stage when the diagnosis is far too evident, and when a single glance at the sputum suffices to confirm it. Others, however, are first seen in the early period, the closed stage of pulmonary tuberculosis, seeking relief and treatment for a troublesome dry cough or for vague general disturbances, — debility, anemia, stomach trouble, loss of weight, etc. Often there is no sputum; sometimes there can be obtained a small amount of mucoid material mixed with saliva, in which, on repeated examinations, no tubercle bacilli can be found. The signs in the lungs are slight or even apparently absent altogether. Of this class of cases some are of tuberculous stock and their general appearance suggests that they themselves have the disease. In the past, and to a large extent now, the routine treatment of these cases has been more or less as follows:

A woman comes in suspected of having phthisis but with no positive signs. She is carefully examined by the physician in charge, given potassium iodide if the sputum is scanty, and told to collect her sputum and return in three days. This is generally done. If the sputum is positive she is at once started on whatever line of treatment is thought best; if not, as is often the case, the patient is given careful directions by the house-officer about the need of fresh air, general hygiene, etc.; she is supplied with iron if anemic, malt or cod-liver oil, and told to return again in a short time. This is sometimes done. Too often, however, she goes home, improves temporarily under treatment, but, making no radical changes in her method of living and gradually forgetting the warning given by the doctor at the hospital that she must return and be examined again, she soon goes back to her old ways, and when she returns to the hospital, months later, if she ever does, is in an advanced stage of consumption.

It is the diagnosis of this class of cases that is difficult. In this country physicians are far too prone to delay treatment for tuberculosis until the bacilli are found in the sputum. Patients are seen and examined and then told to return again with their sputum without having the reason for this procedure explained, or the difficulty of the diagnosis made clear. This is continued until the patient wearies of what is to them a useless task and does not return. Admitting that an absolute diagnosis of pulmonary tuberculosis is not possible until bacilli are found, yet a diagnosis so very probable as to justify immediate energetic treatment is possible while the disease is still in the closed stage. The unfortunate re-

sults of waiting for localizing signs and for bacilli to appear in the sputum is shown by the following case:

Grace T., a young woman of thirty, first came to the hospital in April, 1898, complaining of a slight cough and a pain in her chest. She felt weak and tired. One sister had died of consumption in 1895, but until recently she herself had been well. Her hemoglobin was 65%, her temperature 99°. The heart and lungs are recorded as negative. She was given Bland's pills. She did not return until five years later in September, 1904. In the meantime, one brother had died of tuberculosis in 1903, as well as the sister in 1895. The patient said that for nine months she had been troubled with a pain in her chest and a bad cough which she had had off and on since her last visit. She was weak and tired. As before, her hemoglobin was 65%, and her temperature 99°. Over the left upper lobe there was prolonged expiration and an occasional fine rle. She was given potassium iodide and told to come back with her sputum. She did this, and on four separate examinations over a period of four months no tubercle bacilli were found. The same dry troublesome cough continued. In January, 1905, she was treated for a slight erosion of the cervix. July 7, 1905, she came again complaining of the same cough that she had had for the two years before. Bacilli were at last found in her sputum and signs of a small consolidation at her left apex.

In this case no active measures to combat the tuberculous process were taken until July, 1905, when the sputum was positive for the first time, although in view of the family history and the physical signs the diagnosis must have been more than probable nearly one year previous and suspected at her first visit five years before.

This case is a similar instance:

John W., thirty, single, came to the Out-patient Department Dec. 14, 1903, with a simple sprain of his back. He said he had been treated there for a cough five years before. He weighed 143 pounds. The lungs showed an occasional rle in the posterior portion. The sprain was soon relieved by strapping. Ten months later, in September, 1904, he returned, complaining of a pain in his chest and a cough with bloody sputum which he had had for four days. Except for this he felt perfectly well. His weight was 137 pounds, six pounds under that of a year before. His temperature was 99.2°. The lungs are recorded as negative. He was given a tonic and told to return with his sputum. He did not come again until five months later in February, 1905. His cough and the pain in his chest were worse and he had lost seven pounds in the last five months. There were a few rles at both apices. He was given advice, a cough mixture and told to return with his sputum. This he did not do. Five months later, July, 1905, he returned with a very bad cough, having had repeated hemorrhages, very weak and emaciated. His entire chest was dull except in both axille and there were moist rles all over. No tubercle bacilli were found in his sputum but elastic fibers were present in large numbers. He was sent to the Free Home for Consumptives, where a month later he died.

In this case the unwillingness to make a positive diagnosis of phthisis and to treat the patient as a consumptive until tubercle bacilli appeared in the sputum undoubtedly cost the man his life. In addition to this, the mistake was made,

which the writer considers a grave one, of giving medicine, a cough mixture or a tonic, when the patient was told to bring back his sputum. He got the medicine for which he came and was unwilling to bother about his sputum.

THE NECESSITY OF EDUCATING THE PATIENT.

The grave difficulty of handling this problem is not that there is any lack of willingness on the part of the physicians — they are glad and eager to do all in their power — but that the patients will not co-operate with the doctor in his efforts to get at the trouble. They come for medicine which will cure them; when they get it they go away satisfied.

During the past summer in the service of Dr. J. H. Pratt in the Medical Out-Patient Department of the Massachusetts General Hospital, the writer was placed in charge of all the tuberculous or suspected tuberculous patients who entered the clinic. There was a large corps of assistants, intelligent and conscientious fourth year students, to each of whom every morning was assigned one or more new cases. The student made a careful physical examination of his case, taking pulse, temperature and respiration, examining urine and, when necessary, blood and sputum. Complete notes were written and the case demonstrated to the physician in charge or to his graduate assistant; after this, if the patient were suspected of having phthisis, he was handed over to the writer placed in charge of this department. Here, by means of a most detailed examination, by the use of tuberculin, x-ray, and chest measurements, and, most important of all, by trying to educate and to interest the patients so that they might realize the true state of affairs, work with the doctor and appreciate what he was trying to do, more encouraging results have been obtained; more early diagnoses have been made, and patients have returned for repeated examinations more often than before. Of the many cases in which tubercle bacilli were found in the sputum at once or after a few examinations no mention will be made. These were immediately started on whatever line of treatment that was best suited to them, — sent to Rutland, Tewksbury, or Long Island, or given hygienic open air home treatment as carried on by the Emmanuel Church Tuberculosis Class. The diagnosis once decided upon, no prolonged attempt was made to treat these cases of consumption in the Out-Patient Department itself. The methods used in other cases where there was no sputum, or, if present, no bacilli to be found in it, will be given more in detail.

Fever. — The temperature of most of these early cases is normal when it is taken at the hospital in the morning. In order to find out whether there was any fever, however little, at night, each patient was told to provide himself with a thermometer and was shown how to use it. He was then told to take his temperature night and morning for a few days and to return for further examination. In this way much valuable information was obtained and the way made

easy for giving tuberculin if this was deemed advisable. Some cases were not willing to get thermometers and others were not able to read them; they were in the minority, however.

Tuberculin. — As it was impossible to get beds in the hospital for this purpose, the test had to be carried on in the Out-Patient Department and the very obvious difficulties combated as best they could. The preparation used was Koch's old tuberculin made under the supervision of the German government and recently imported to this country. This was made into the proper dilution at the hospital, before each injection, by Dr. Pratt and the writer. Each patient had previously bought a thermometer or had been provided with one and he was shown how to use it; he was instructed to put it in his mouth for five minutes every two hours, not to shake it or disturb it in any way, and, after remaining quietly at home for twenty-four hours, to return to the hospital. A few patients, especially among the women, could read and record their temperatures; these brought in carefully written reports. The temperature in all cases had been normal previous to injection. In only a few cases was the result a positive one, but these few justified its use. In no case could it be seen that the slightest harm was done.

The following rather striking case in which the diagnosis was made after the use of tuberculin is of interest:

John H., twenty-two, single, came to the hospital July 5, 1905, with his mother who said that he had coughed for three months and at times had raised bloody sputum. The young man himself said that he was perfectly well and he certainly looked so. His temperature was 98° and his pulse 75. There was an occasional dry squeak in his right upper chest. The sputum was very scanty; no tubercle bacilli could be found in it after repeated examinations on different days. He was given 1 mg. of tuberculin and instructed how to take his temperature. The next morning he returned having a temperature of 99.5° six hours after the injection. On listening to the suspected right apex, instead of a rare, dry squeak, numerous fine, moist râles were heard, in other words a definite *local reaction* had taken place. While breathing deeply he raised a single homogeneous mass of muco-purulent sputum, one preparation of which showed eighteen tubercle bacilli. He joined the Tuberculosis Class, sleeps in a tent on his roof, has gained twenty-five pounds and is now ready to work.

Out of the 17 cases in which tuberculin was used, a definite positive result was obtained in four.

X-ray. — The x-ray was used whenever possible. In a few cases distinct help was obtained from it, especially as regards the movements of the diaphragm; it was found in practically all cases, however, that the limits of diaphragmatic excursion could be as accurately localized by careful percussion at the end of deep inspiration and expiration as by the use of the fluoroscope. The writer is therefore convinced that, except in the hands of experts, the x-ray is of very little value as an aid to the early diagnosis of tuberculosis.

Mensuration.—The chest of each patient was measured according to the methods used by Lawrason Brown and others. The circumference at the fourth rib on expiration and inspiration and also of each half separately was taken; the excursion of the diaphragm at the base of each Litten's sign was noted. One series of measurements of the chest contour was of special interest. The apparatus used for this purpose was the pectorimeter invented by Zander of Sweden, a complex but extremely beautiful and accurate piece of mechanism, by means of which the exact shape and size of the chest on both inspiration and expiration can be graphically shown on charts. One of these machines is now in the Department of Mechano-therapy at the hospital and with it the measurements were taken under the supervision of the director, Dr. Max Boehm.

Spirometry.—Late in the season by means of the spirometer, the vital capacity of each patient was measured. The small lung capacity of these early cases as recorded by this machine agreed with the other measurements which were taken, showing a restriction of the respiratory movements, in contrast to cases of cough not due to tuberculosis in which the lung capacity was very much greater in proportion. As with tuberculin and x-ray, while it was not often that mensuration, in the writer's hands at least, was a very large factor in making a diagnosis, yet in almost every case it formed one link in a chain of evidence, the sum total of which was enough either to make a negative diagnosis or a positive one of phthisis sufficiently probable to warrant immediate energetic treatment.

THE PERSONAL ELEMENT IN EFFECTIVE TREATMENT.

The object of this paper is not to throw any new light on the early diagnosis of tuberculosis as a whole, but to show the way that last summer's work has convinced the writer that these cases in the closed stages should be handled in a large clinic. In addition to the use of detailed methods of examination, and in his opinion of far more importance under the circumstances, is the fact that all of these cases were in the hands of one man who did nothing else at the clinic and who had plenty of time to go into every detail of the patient's past life and present surroundings. He was able to examine their chests and vital functions in every way; he could take the patients aside and carefully explain the difficulties of telling by one or two visits exactly whether he or she had or had not tuberculosis and he could show the importance of an early diagnosis. After the first visit the patient, knew to whom they were to report and had a personal interest in their doctor. They did not have the long hours of waiting nor were they examined each time by a different man with new methods and ideas. The objection may be raised that this is taking the most important group of lung cases out of the clinic and forming a separate department. This is not so. Every new patient was first examined by a student assistant who

then, if necessary, handed the suspected case over to the doctor in charge of that group and he in turn, as he followed it along, demonstrated it to all the workers in the clinic.

The early diagnosis of pulmonary tuberculosis requires a careful and painstaking examination with the weighing of one detail against another. A correct diagnosis can only be made from the accumulative evidence of slight and apparently insignificant variations from the normal. Mensuration, spirometry and the use of tuberculin are all of value toward this end. Early diagnosis, however, in a large out-patient clinic where forty to seventy patients are seen every morning requires more than this. In addition to detailed methods of examination the *personal element* must be brought in. The physician must get acquainted with his patients, tell them what tuberculosis is and explain what he is trying to do; in other words, he must educate them. This is the real secret of a successful solution of the problem.

SUMMARY AND CONCLUSION.

1. By waiting until the diagnosis of tuberculosis is proved by the demonstration of tubercle bacilli, those in charge of out-patient clinics are sometimes responsible for the death of the patient.
2. Careful temperature records by the patients themselves, the use of tuberculin, mensuration and spirometry assist us to recognize the disease in the closed stage, *i. e.*, before bacilli appear in the sputum.
3. Of supreme importance both for the early diagnosis and efficient treatment of these cases is an aggressive personal interest on the part of the physician in charge; he must himself take the initiative, educate and encourage the patient and hustle for his future good even when the patient himself is listless and indifferent.

New Instrument.

A NEW NEEDLE HOLDER.

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THE chief objections to the needle holders in common use are two: (1) They do not hold curved needles firmly enough to prevent their turning when the tissue to be punctured is tough or thick. (2) If sufficient pressure is applied to prevent the needle from turning they usually break the needle.

It is with the idea of overcoming these objections that I have devised a new needle holder. Its principles are quite different from those of the ordinary ones and after being given a thorough test by several different surgeons, the claims made for it seem to have been fulfilled.

Its advantages are: (1) Curved needles are gripped too securely to turn over. (2) Needles are not broken. Combined with this, is simplicity of construction and durability.