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Editor's Note—This is the second of four papers of a Symposium on Pellagra. The remaining two, with all discussions, will appear in a future issue, probably in May.

IS THE AVERAGE PHYSICIAN MAKING SATISFACTORY PROGRESS IN THE EARLIER DIAGNOSIS OF PULMONARY TUBERCULOSIS?*

BY J. HOWELL WAY, M.D.,
Waynesville, N. C.

The interrogation in the title of this paper may suggest an added inquiry: Is it a confession or a criticism? At the outset the writer prefers to state frankly that it is both. The rank and file of the medical profession have simply followed their leaders,—some at fairly close range; others have lagged more or less rearward, pursuing at times a policy of "watchful waiting."

With the discovery of the bacillus tuberculosis added impetus was given the study of the disease, and in the altered concepts of the pathology of tuberculosis we are forging rapidly ahead in the direction of its better treatment and control. Old theories have been cast aside, new ones taking their places, and yet no man among us is sufficiently wise to foretell the future range of medical science and its possible relations to the enlarged practice of medicine, and the growing practices of promoting by governmental methods the public health.

In private practice, institution work, public health or state medicine, the many-sided phases of the tuberculosis problem ever loom large and ominously. All realize its awful portentousness and its powerful influence upon the future of civilized man! Agreement is general on certain

propositions, notably on its prevalence, causes, infectivity, symptoms, signs, and course, its prevention when possible, as well as on the supreme importance of an earlier recognition of the disease in the private practice of the average physician. Until society arrives at the Utopian era when all human beings will be daily inspected and supervised by competent medical authority relative to their physical and other activities, the practical fact remains that the average general practitioner of medicine is, and will continue to be, the authority on the question of early diagnosing tuberculosis, and the consequent institution of hygienic, therapeutic and prophylactic measures adjusted to the necessities of the individual patient and his environment. Accepting this as the axiomatic principle obtaining, every effort should be made by the leaders of our profession, the medical teaching faculties of the various schools throughout the land, the sundry organizations of our guild, and the sanitary and hygienic machinery of the Federal and state governments, to improve the facilities and to extend the knowledge of the average physician to the vital end that he may excel in his efficiency in the earlier diagnosis of this most dreaded destroyer of civilized man.

Too often, I fear, there is manifested a tendency in many of the contributions to current medical literature, as well as in the numerous excellent monographs from time to time appearing (products of the fertile brains and facile pens of our eminent and other specialists), to assume that it is not expected of the average practicing physician that he shall be able readily to make an early diagnosis of pulmonary tuberculosis. Hence the majority of us possibly have grown to entertain the same mental attitude as regards this important problem, that we have in the past with reference to the early diagnosis of cancer. The so-called "classical symptoms" as commonly taught (and the signs also) of both cancer and tuberculosis have been those not of the earliest periods of the diseases, but rather the secondary symptoms with associated signs, which, translated in the light of modern pathology, indicate rapidly-hastening vital decay of the affected individual and ordina-

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rily presage the announcing of his impending doom.

The surgeons with characteristic vigor have instituted a campaign of education that is rapidly reaching all classes both of physicians and laity, and they are already beginning to reap their material rewards in earlier and increased operative procedures for cancer and cancerous diseases, thereby helping humanity and themselves also. With equal earnestness of purpose, I am satisfied the leaders of internal medicine desire intelligent advances in knowledge which will secure earlier diagnosis in pulmonary tuberculosis, and are willing to urge upon the average practitioner the seriousness of his responsibility and to aid in every possible way a realization of the needed earlier recognition of tuberculosis.

Correlating most critically the case history, symptomatology, and whatever physical signs may be existent in the individual patient, we should be enabled to pronounce at least a presumptive diagnosis with the minimum of developed physical signs and without definitely finding the tubercle bacillus in the sputum. Symptoms in connection with known exposure in early life should enable the average practitioner to make his diagnosis fairly complete, remembering that "Absence of proof is not proof of absence." We dare not wait for the proven presence of the bacillus. Open tuberculosis is rarely or never early tuberculosis, and early tuberculosis all recognize as the type of the disease alike presenting most reasonable hope of arrest and of preventing infection of others. Certainly if public health propositions as related to tuberculosis are really ever to be of much practical utility, case history, symptom diagnosis, with earlier diagnosis, must be popularized with the average physician. Public health propaganda may also afford valued aid in this movement in popularizing the idea that the family physician, if a capable medical man, should be most able to make an early diagnosis of the disease.

In this connection, it may not be amiss to suggest that the continued use (rather *misuse*) of the term "incipient tuberculosis," as applied to pulmonary tuberculosis in adults, should rapidly become obsolete, it having scant, if any, justification. On casual view, doubtless, this state-

ment may to some appear revolutionary. Yet without doubt, when the profession at large generally appreciates that tuberculosis obtains its initial footing in the immense majority of all cases in infancy or in very early childhood, and when its pathology and the methods by which it is spread are more thoroughly understood, the term "incipient" will be denied the prominent place it has occupied in medical literature. We shall then as a profession generally recognize that true incipency in pulmonary tuberculosis as demonstrable by manifest lung lesions is not clinically demonstrable by discernible changes in lung tissue.

In infancy or early childhood tubercle bacilli, gaining entrance prior to the building up of the body tissues of specific resistances, may and do find location in almost any and every tissue of the body for the simple reason that at this time there is apparently no selective affinity of tissue for the tubercle bacillus. With this condition we have the incidence of tuberculous lodgment in the brain coverings, in bones, joints, in peritoneum and intestinal nodes as well as in other body tissues. In early life the lymphatic nodes, on account of the antibacillary action of the contained lymph, it is supposed, are prone to restrain the development of the pronounced symptoms of tuberculous disease we see exhibited so often in the familiar forms of chronic tuberculous infections of the superficial cervical nodes in children. Yet even at a very early age such infections of tuberculosis have taken place in possibly the majority of children, cell sensitization occurs, and the partial immunity enjoyed by mankind in general, is produced. Such cell sensitization was proven by Koch's inoculation experiment and accounts for the tuberculous skin reaction, in large degree obtained as a rule in older children and adults.

The time and manner of tuberculous infections becoming clinically demonstrable is one of much interest. In early life bacilli escaping from the lymph nodes undoubtedly do find lodgment in any tissue of the body. It is well known that in maturer years there exists in pulmonary tissue a selective affinity. Whether the lymph stream or the blood current is the source of the metastases does not specifically concern us. The early metastases

may escape observation on account of the bacilli's being few, their virulence's being inhibited by the anti-bacterial elements already formed in the blood, plus the specific resistance set up by sensitized cells. In this way many such infections are healed without clinical recognition, as is evidenced by the known frequency of healed post-mortem tuberculous lesions.

When on account of temporarily lowered tissue resistance from any cause, or in the introduction of excessive numbers of bacilli from without, as happens in prolonged and continuous ingestion in house contact with infective sources, bacilli which have been closed in these primary metastases begin to multiply, secondary metastases and new foci form, toxins are developed and given off with resultant changes in the adjacent body tissues, a degree of collateral inflammation is set up with its consequent necrosis and the clinical features of tuberculosis are in evidence. Thus it is seen that clinically demonstrable tuberculosis has for its pathology far advanced changes in the body tissues. But even here it is well to remember that physical signs of the disease may not be pronounced, or may be so slight as to be overlooked.

Without presuming for one moment to decry or minimize the true value of careful study of the chest sounds in the early recognition of tuberculosis, it is manifest that we shall not make the desired advance in the early recognition of pulmonary tuberculosis until the (at this stage) relatively greater important consideration of the symptoms is more generally appreciated. Careful chest examinations are absolutely indispensable in the diagnosis of general disease states as well as in pulmonary tuberculosis, and their making in the examination of all patients should be desired as a routine procedure on the part of every physician. But I insist that there can be no intelligent hope of the earlier diagnosis of the disease until relatively greater diagnostic value is accorded symptoms. The emphasis properly placed upon chest examinations in all chronic disease, while not to be discounted or revised, for medical men are constantly growing more critically careful, and properly so, has been in large part responsible for this disposition to neglect proper valuations' being placed upon the symptoms.

Unquestionably, given an early history with prolonged contact and definite symptoms of constitutional and focal character, a provisional diagnosis of tuberculosis is justifiable in the writer's opinion in the absence of definite local chest signs. This does not mean that the patient should be frightened with grave suggestions of imminent danger to life, but it does mean that he should be fully advised of his disease probabilities, and his methods of living, occupation, etc., adjusted to conform to hygienic living under intelligent medical supervision.

Frequent and protracted catarrhs of any portion of the respiratory tract, cough persistent from childhood, no matter how trivial the degree, have, as a rule, for their pathological basis a tuberculous origin, and in the absence of known causes existent in the upper air passages, the diagnosis of tuberculosis must in all such cases be given serious consideration. Of late years the prevalence to an unwarranted degree of the phthisiophobic craze has seriously militated against the securing of correct clinical data with regard to early house exposures and the frequency with which patients, sometimes ignorantly, sometimes wilfully, deceive us in the early years of life, and equally so with reference to cough, affords an interesting phase of the psychology of such patients.

Much evasion is observed in securing case histories as regards the illnesses of deceased members of their families who were manifestly tuberculous. Ofttimes chronic bronchitis or asthma, especially in the aged, are but coverings of tuberculous foci. Not infrequently patients advise you an X-ray examination has proven an absence of tuberculous lung disease. There are no short cuts to diagnosis in tuberculous disease, especially in securing early diagnosis. One of our chief regrets is that an X-ray picture will not afford a marked degree of diagnostic information in early tuberculosis of the lungs. As an aid to diagnosis, tending to confirm what symptoms and signs have demonstrated already in fairly developed cases of the disease, the Roentgenogram unqualifiedly has a place of value, but I fear there exists a tendency at times to overestimate (especially to the laity) the true value of the X-ray in the early diagnosis of tuberculosis of the lungs. As with the develop-

ment of the modern laboratory, it became quite the fashion too often to accept the laboratory findings as the basis for a diagnosis, with a minimizing of the history and symptoms, so there just now appears to be a disposition in some quarters to pay too great respect to the radiographer to the neglect of the case history and symptoms. As a consequential effect it is feared the diagnostic skill of medical men will suffer if too great dependence is placed upon radiographic or other findings to the avoidance of that intimate degree of personal investigation of the patient himself, so impressive a feature of the equipment of the great clinicians of the past. The X-ray picture is spectacular, appeals strongly to the patient and his friends in presenting something tangible to the eye in the place of information derived largely from analysis and deductions, and unquestionably is a valuable psychic adjunct in the management of patients under observation, particularly for long periods. Again the X-ray avoids (to some extent with some practitioners) the time-consuming and repeated examinations so often a tax upon a busy physician. But I believe it may be insisted that while the X-ray findings are of value in revealing abnormal shadings about the root of the lungs (if normal shadowing here be carefully eliminated) it can be of but very limited assistance in the detection of the early pulmonary lesions in the parenchyma. Unquestionably when dense tuberculous infiltrations have occurred, of course plates will reveal them, but case history, symptoms, signs, readily available for the use of every practitioner, will render the diagnosis positive, anyway, at this period of the disease. But I insist, if possible, the diagnosis should be made prior to the stage of the existence of sufficient tuberculous deposit to show X-ray pictures of diagnostic import, and I also insist it is the duty of the average practitioner to subject every possibly tuberculously infected patient to a routine of critical study with a view to learning to make the earlier diagnosis.

Tuberculin reactions indicate tuberculous infection, not necessarily tuberculous activity. While prompt tuberculin reaction with weak dilutions of tuberculin are of invaluable aid in the diagnosis of tuberculosis, and it is more than likely their

recognized value will become greater as more general knowledge is obtained and disseminated, and improvements in preparations and methods are shown, it is to be remembered that serious mistakes have been made in the use of such preparations in relying too fully upon their results and in the interpretation of such results. Resulting disastrously at the start years ago, and deterring many from their use, tuberculin preparations and allied products have a distinct field of usefulness in both the diagnosis and treatment of tuberculosis, and the future will unquestionably afford us even more helpful resource along this line of endeavor. In this connection I may not fail to mention the exhaustive studies of the Drs. Von Ruck, of Asheville, N. C., relating to the use of vaccines in the early recognition of tuberculosis and its therapy as well. A careful survey of their work should become a part of the equipment of every practitioner who wishes to do all possible to earlier diagnose and treat tuberculosis.

A most frequent error is perpetrated in assuming a cause for suggestive symptoms without scrutinizing examinations. The symptoms produced by the toxemia of tuberculosis are to an extent common to other toxic influences. Of course there must be symptoms of a focal character to make the clinical picture suggestive. Even in the presence of a run-down condition, whatever this really be, anemia, dyspepsia and similar diagnoses (or better, shifts for diagnoses) are too often applied to explain the symptoms at a time when more extended study of the patient's symptoms would result in finding possibly corroborative signs and in making a diagnosis of tuberculosis.

Tuberculous activity, it is to be remembered, frequently subsides without treatment, often under treatment, and also despite treatment. With a full consciousness of its universal prevalence the average doctor does well who keeps ever in mind the possibility of his patient's having the disease if his symptoms do not readily place the bar sinister on such diagnosis. There is possibly no disease in the category of medicine where success in treatment demands earlier and more accurate recognition of the disease. And yet today pulmonary tuberculosis is diagnosed, in the main, and its existence ad-

mitted, only when the tissue destructive processes have advanced so far that bacilli are in evidence in the sputum. The modern surgeon would indeed be reprehensible did he wait for incontestable proof of the existence of an acute abdominal inflammatory condition demanding surgical treatment before operating upon his patient. We carry our responsibilities too lightly when we await the signs of advanced disease, meanwhile overlooking the ominous symptomatology which if only carefully considered by being sought for would be found to precede the physical signs in large part. If we are to choose a policy of "watchful waiting," let it be truly watchful waiting and correlating the evidence, thus affording the patient the full benefits of a recognition of existing disease conditions in time to be of most service to him.

CONCLUSIONS

We should keep constantly in mind that tuberculosis is the most frequent of diseases, and when we have persons coming to consult us with indications of debilitated systemic states and slight cough we should not consider our duty performed to them until a most painstaking case history and study of their symptoms have been made, making several examinations and a complete temperature record for several days.

Of vital importance always is a carefully-taken history.

Tuberculosis is the most frequent cause of cough.

Physical signs found on one side of the chest differing from those on the opposite side should almost necessarily, unless positively indicative of some other known condition, indicate tuberculosis.

The tuberculosis problem in its most vital part rests upon the average doctor who, if he only realize it, is quite capable with brain, eyes and ears of making the diagnosis of early tuberculosis, and this duty should not be assumed to be the peculiar function of specialists.

CARDIAC EFFICIENCY IN RELATION TO CARDIO-VASCULAR-RENAL DISEASE*

BY JAMES S. MCLESTER, A.B., M.D.,
Professor of Medicine, The Graduate
School of Medicine, University
of Alabama,
Birmingham, Ala.

The question of cardiac efficiency is in reality one of myocardial integrity. Valvular injuries are of secondary importance and are entitled to consideration merely as a source of embarrassment to the myocardium or as pointing to its involvement in some pathological process.

For a proper appreciation of the mutual dependence of heart and arteries one must keep before him the embryology of the vascular system. The embryonic human heart develops from the primitive cardiac tube, which in certain of the lower vertebrates appears as a sort of pulsating artery, the posterior end of this tube being continuous with the great veins and the anterior end becoming the aorta. The heart thus viewed is nothing more nor less than a highly differentiated blood vessel, and it can readily be understood that disease processes which involve the arteries are sure also to attack the walls of the heart. We find always myocardial disease and atherosclerosis progressing hand in hand. It should be remembered in arterial hypertension that it is not alone the increased work demanded of the heart which leads to hypertrophy, since the same influences which cause arterial disease produce also degenerative changes in the myocardium.

The relation of cardiac efficiency to kidney disease is apparent, for in last analysis what we call cardio-vascular-renal disease could, according to our present conception of its pathology, be more simply termed arteriolar disease, and, as has just been said, arterial disease and heart disease are inseparable. And, too, the cardiopath eventually becomes a nephritic, while the fate of the patient with chronic nephritis depends at last upon the efficiency of his myocardium.

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