

**SHATTUCK LECTURE.
TUBERCULOUS
PLEURISY**

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Shattuck lecture. Tuberculous Pleurisy by William Osler

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WILLIAM OSLER

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1893.

TUBERCULOUS PLEURISY.

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III. GENERAL PATHOLOGY.
IV. DIAGNOSIS.
V. TREATMENT.

BY

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TUBERCULOUS PLEURISY.

MR. PRESIDENT AND FELLOWS:—

Many members of your ancient and honorable body (Bowditch, Wyman, Ellis, Garland, Sears and others) have dealt with many problems in connection with pleurisy; and without making invidious comparisons it may be said that their contributions, more particularly those of the late Henry I. Bowditch, are the most important which have been made on the subject in this country. While modesty made me hesitate to select any question relating to pleurisy as the topic for the Shattuck Lecture of this Society, I felt that differences of opinion on many points—not the least on those concerning the frequency, varieties, and sequences of the form known as tuberculous—would justify the narration of an experience gleaned during the first four years of service in the medical wards of the Johns Hopkins Hospital.

I. INCIDENCE OF TUBERCULOUS PLEURISY IN THE POST-MORTEM ROOM AND IN THE WARDS.

(a) *In the post-mortem room.*—A trustworthy estimate of the incidence of tuberculous pleurisy can be had only by anatomical investigation. Uncertainty is inherent to clinical records of an affection such as pleurisy, the diverse etiological factors of which cannot be always discriminated at the bedside, even with the help of bacteriology.

Accordingly, with the kind assistance of Dr. Rupert Norton and with the consent of my colleague Prof. Welch, I have carefully analyzed the post-mortem records of the 101 successive cases from my wards in which pleurisy—fibrinous, sero-fibrinous, hæmorrhagic, or purulent—was found; and

the record is of interest as showing the incidence of tuberculous pleurisy in a medical service varying from 70 to 90 beds. Of the 101 cases, there were 32 in which the pleurisy was definitely tuberculous. I have estimated as such only those in which tubercles were present on the pleural layers, either as fresh miliary granulations, caseous masses, or diffuse fibro-tuberculous membranes. Of these cases there were eight with purulent exudate, all associated with pneumothorax, and two with hæmorrhagic fluid. Seven were cases of acute miliary tuberculosis with fibrinous and sero-fibrinous exudate; four were instances of acute miliary tuberculosis with a purely fibrinous effusion; and thirteen were cases of chronic sero-fibrinous exudate with more or less thickening of the pleural layers. In four instances the sero-fibrinous exudate was encapsulated.

There were thirteen cases of pulmonary tuberculosis in which pleurisy was present without our being able to say definitely that it was of a tuberculous nature. In ten of these cases the exudate was fibrinous, and three sero-fibrinous. It will thus be seen that the incidence of tuberculous pleurisy among these 101 cases was a little less than 32%. By far the most common forms of pleurisy are the sero-fibrinous and fibrinous secondary to acute disease of the lungs, or occurring as a terminal process in chronic affections of the heart, arteries, or kidneys.

(b) *In the wards.*—Passing now from the certain and definite data of the post-mortem room let us turn to the wards and inquire into the etiology of the cases of acute pleurisy which have been under observation. I have thought it better to review only those cases in which there has been a pleurisy with effusion coming on acutely or sub-acutely, and in which the effusion was sero-fibrinous, not simply fibrinous and not purulent. I have excluded the former from analysis because of the very great frequency, as the post-mortem reports show, of a simple fibrinous pleurisy in

so many varied conditions, often overlooked clinically, of which, of course, tuberculosis is one, indeed one of the most common. I have not included the purulent cases, partly because there is here much less dispute, as they have a more definite and well-recognized etiology, and partly from the fact that abscess of the pleura—empyema—is regarded with us as a strictly surgical affection, and the cases are either admitted directly to the surgical wards or turned over at once. This may account for the somewhat remarkable absence of purulent pleurisies in the post-mortem records of cases from my wards, apart from the instances of pneumothorax. Still it must be noted that of 14 cases of empyema operated upon, 12 recovered, exclusive of the cases of empyema with pneumothorax. The cases in the following analysis, then, have been admitted to the wards with well marked signs of pleurisy with effusion. Of the 58 cases 45 were males; 13 females; 10 were in the colored race; 48 in the white.

In attempting to estimate from the clinical side the tuberculous character of a pleurisy the following points are to be considered:

First: mode of onset. In reality this is not a criterion of any moment, since it must be acknowledged that an acute tuberculosis of the pleura may come on abruptly with a stitch in the side, or even with a chill. A slow insidious onset is more common, but by no means characteristic.

It is so difficult to obtain from hospital patients accurate information as to the mode of onset, often indeed as to the duration of their illness before admission, that we cannot place very much reliance upon the facts so obtained; but the errors, I suppose, are equally common throughout the entire class. As a general rule, too, the patients do not seek relief until the symptoms have become aggravated. Thus it is interesting to note that in the 58 cases of sero-fibrinous pleurisy the duration of illness prior to admission

was given as one week and under in 8 cases; between one and two weeks, 16 cases; between two and three weeks, 7 cases; one month and over, 25 cases.

Of the symptoms for which they sought relief the following were the most striking: In two cases no history could be obtained. Of the remaining 56 cases the symptoms for which they sought relief were as a rule cough, dyspnoea and pain in the side; more rarely fever or chills and fever. Thus in 45 cases the patient complained of cough; in 44 of dyspnoea; in 41 of pain in the side; and in 14 there was a history of chills and fever. Cough and dyspnoea are by far the most frequent causes for which the patient seeks relief in hospital. In two only of the cases did the patient give any definite account of an exposure to cold or of a wetting. As stated, the onset is no etiological criterion, and the claim at present is that a great majority of the cases of pleurisy *a frigore* are in reality tuberculous. In the history obtained from the patient, however, there may be very suggestive features; for instance, cough and loss of weight for some months previous, or hæmoptysis, or a previous attack of pleurisy. Thus, one patient, Case 1 of the series, had had a cough at intervals for three years, and when admitted the right side of the chest was full of greenish, sero-purulent fluid. After many tappings he improved very much, and, though the cough had persisted for so long, there was no sign of pulmonary disease, but subsequently bacilli were found in the expectoration. Another interesting case, No. 4, had hæmoptysis nine months before, and though he was an extremely robust, vigorous man, the insidious onset of the pleurisy led us to suspect tuberculosis. Bacilli were demonstrated in the exudate. The patient subsequently developed pulmonary tuberculosis. In two instances only the patients had pleurisy with effusion previously; in one five months before; in the other eight years before. Both did well, and both were discharged at the end of three weeks.

A second point, on which more stress has been laid than the facts justify, is the family history; but inheritance is now generally acknowledged to be of a susceptible soil, rarely of the germ itself. Local conditions are probably of most importance in influencing the susceptibility to an infectious agent so widely diffused as that of tuberculosis. Still it is interesting to note the presence or absence of tuberculosis in the ascendants or near relatives; thus in two of the fifty-eight cases the father died of tuberculosis; in four, the mother; in one, the father and mother; in six, a brother or sister; in one, a brother and sister; in four, an aunt or uncle; and in two the wife died of tuberculosis, in one the husband. In 37 of the cases positive questions as to tuberculosis in the family were answered in the negative, and in three it could not be obtained.

Third: the character and contents of the exudate. There is nothing specific in the physical characters of the effusion in tuberculous pleurisy, nothing from which on aspiration a definite opinion can be formed. The exudate may be sero-fibrinous, simply serous, hæmorrhagic, sero-purulent or purulent. Of these the hæmorrhagic and the thin sero-purulent may be called suggestive. Of the cases of acute pleurisy with effusion at the clinic seven were blood tinged. Of the cases from the wards in which pleurisy was found post-mortem, in four the effusion was hæmorrhagic; of these two were tuberculous and two were simple. The thin sero-purulent exudate, a little opalescent, often with a greenish tint, and which microscopically contains a granular, fatty matter and only a few leucocytes, is very suggestive of a tuberculous lesion. The cover-slip and culture tests, so much practised of late, yield variable results. In the first place it is conceded that the great majority of tuberculous sero-fibrinous effusions are sterile; organisms are neither found on cover slip preparations nor does anything grow in cultures. Our own experience is in accord with

this, except that in one case the tubercle bacilli were definitely determined in the exudate. This was after repeated tapplings. A sterile effusion is regarded as a point in favor of the tuberculous nature. In the purulent tuberculous exudates the bacteriological results are also variable. In some of the acute cases, as in one which I shall describe shortly, the bacilli of Koch were abundant. In other instances only pus organisms or the diplococci are present, or there may be no micro-organisms. A more important and more satisfactory test is the inoculation of the exudate into the peritoneal cavity of guinea pigs, experiments which in the hands of some of the French observers have yielded positive results in the sero-fibrinous and purulent pleurisy of individuals apparently not tuberculous.

When Koch's tuberculin was in vogue it was hoped that it might at any rate give us a means of positive diagnosis. The report of the German hospitals shows that in the subjects positively tuberculous the great proportion of them present reaction, whereas in suspected individuals about 60 per cent., and in non-tuberculous subjects only about 25 per cent. Subsequently, in speaking of diagnosis I will narrate an instance in which the acute reaction to tuberculin led us into a serious error in diagnosis.

And lastly, the nature of the pleurisy may not be apparent for months or years, when the onset of a tuberculosis in other parts may indicate clearly the character of the whole process. You are all familiar with the striking statistics published of late years, none more interesting than those by Dr. Vincent Bowditch from his father's records. Such statistics from private practice are of infinitely more value, as a rule, than those from hospitals. The time has been altogether too limited at the Johns Hopkins Hospital to determine, even if we could, the subsequent history of the great proportion of the cases of sero-fibrinous pleurisy which have been under treatment. It is interesting to note, however,