

A STUDY OF THE INCIDENCE OF PULMONARY TUBERCULOSIS IN SOLDIERS WITH IRRITABLE HEART *

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There is a superficial resemblance between the symptoms of "irritable heart of soldiers" and those of active pulmonary tuberculosis. Ready fatigue, breathlessness, tendency to excessive sweating, tachycardia, and symptoms of asthenia are common to the two conditions. Pain in the left chest, however, which is one of the commonest symptoms of irritable heart, is not characteristic of pulmonary tuberculosis. In the careful study of the history of men with irritable heart, a background of neurotic symptoms, neurologic disease, mental inferiority, emotional instability or psychic maladjustments is almost invariably discovered. Such conditions are, of course, not characteristic of pulmonary tuberculosis.

In a recent report, Warfield and Smith¹ found evidences of pulmonary tuberculosis in a large number of men with the diagnosis of irritable heart or some other synonym of "soldiers' heart." In 235 cases of irritable heart, pulmonary tuberculosis was found in eighty-eight. In forty-one cases, exercise brought out positive chest findings and rise of temperature, and the authors felt that, had intensive study of the whole group been possible, the incidence of pulmonary tuberculosis would have been larger.

This report calls attention to the important fact that before the diagnosis of irritable heart can be made, a careful general examination must be done in order to determine whether the symptoms can be explained by any existing organic disease. The diagnosis of irritable heart must be made largely by excluding certain other conditions; the two conditions that are probably most important are hyperthyroidism and pulmonary tuberculosis. It should be possible, especially with the diagnostic accessories of a hospital, to sort out cases of active tuberculosis of the lungs with a fair degree of accuracy.

After this preliminary sorting out of organic disease, however, there remains the group of men with the symptom complex of irritable heart and no demonstrable organic disease. This group is represented

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1. J. A. M. A. **71**:1815 (Nov. 30), 1918.

in Warfield and Smith's report by 147 men in whom tuberculosis was not found; no evidence is brought to show that tuberculosis plays any rôle in producing the symptoms of which these men complain.

On hypothetical grounds one might explain some of the symptoms of irritable heart by inferring or assuming the presence of healed or latent pulmonary tuberculosis. Extensive fibroid changes in the lungs might produce breathlessness and fatigue; the other symptoms would be more difficult to explain on this basis. It seems unlikely that pulmonary lesions of extent sufficient to cause the symptoms of irritable heart would elude careful physical examination, but it is conceivable, and this report is made with the purpose of contributing some observations on this subject.

At General Hospital No. 9, 246 cases of irritable heart have been studied. A careful history and physical examination was made in each case, directed, not only toward the cardiac condition, but toward the general condition of the patient as well. Each of these men was under observation for a period of weeks. During this time, they were given graded physical exercises, and temperature readings were made regularly. As the result of such observations, no man was found to have active pulmonary tuberculosis on admission. Two men with active lesions were admitted to the cardiac service of this hospital, but both happened to have organic heart disease.

Effect of Influenza.—Among the group of soldiers believed to have irritable heart, two developed active pulmonary tuberculosis following influenza. Both these men had been under observation for tuberculosis, as one of them had tuberculous glands of the neck and the other had had a recent pleurisy. Neither of these men showed symptoms, physical signs, or fever suggesting pulmonary tuberculosis until after influenza, when they developed typical symptoms and signs. The assumption in connection with these two cases is that the influenza caused activation of a tuberculous focus that had escaped detection before the acute infection. It is not, however, safe to infer that pulmonary tuberculosis was the cause of these men's complaints before the influenza. Influenza is a severe pulmonary infection, and one that is likely to attack the integrity of the lungs in a very searching manner, and the tuberculosis that follows it might arise in a small and previously healed focus. Influenza attacked thirty-seven other men with irritable heart, all of whom made an uneventful recovery.

It has been said that pulmonary tuberculosis in the active stage was found in no patient sent into the cardiac wards of this hospital with irritable heart. Healed tuberculosis of the lungs was found in one case. In this case, the diagnosis was made by both physical examination and

FINDINGS OF HISTORY, PHYSICAL AND ROENTGEN-RAY EXAMINATION

Name	Family and Past History	Physical Examination	Roentgenogram of Lungs
C. E.	One sister died of pleurisy	Negative for tuberculosis	Few calcifications at hilums, otherwise negative
C. C.	Negative	Negative for tuberculosis	Some calcified glands at hilums; slight infiltration; negative for tuberculosis
F. J.	Negative	Negative for tuberculosis	Negative
F. J.	Negative	Negative for tuberculosis	Hilus thickening; apices clear
G. G.	Grandfather, maternal grandmother and 1 aunt died of tuberculosis	Negative for tuberculosis	Few calcified glands at right hilus; otherwise negative
H. E.	Negative	Negative for tuberculosis	Negative
L. W.	One brother had tuberculosis (doubtful); never ill, except acute bronchitis 1 yr. prior; now has chronic cough, mucus expectoration, at times bloodstreaked	No abnormal findings	Calcified glands at hilums; considerable peribronchial thickening, extending to periphery in right lower lobe, up to clavicle on right; probably not tuberculosis
L. W.	Negative	Negative	Normal peribronchial thickening; no tuberculosis
L. S.	Negative	Negative for tuberculosis	Negative
M. J.	Negative	Negative for tuberculosis	Peribronchial shadows right lower lobe; negative for tuberculosis
M. R.	Negative	Negative for tuberculosis	Calcified glands right hilus; pleural thickening right base; negative for tuberculosis
M. A.	Negative	Negative for tuberculosis	Negative for tuberculosis
M. H.	Negative	Negative for tuberculosis	Peribronchial shadows right lower lobe; negative for tuberculosis
M. W.	Negative	Negative for tuberculosis	Some peribronchial thickening; negative for tuberculosis
M.	Negative	Negative for tuberculosis	Peribronchial thickening right lower lobe; not reaching to diaphragm; negative for tuberculosis
T. P.	Negative	Negative for tuberculosis	Bronchial shadows right lower lobe, not tuberculous
T. W.	Negative	Negative for tuberculosis	Slight thickening of both hilums; negative for tuberculosis
H. H.	Negative	Negative for tuberculosis	Some peribronchial thickening, especially in bases, following influenza; negative for tuberculosis
W. E.	Negative	Negative for tuberculosis	Slight hilus thickening; no tuberculosis
G. M.	Negative	Negative for tuberculosis	Hilus thickening; negative for tuberculosis
S. S.	Father died tuberculosis; 1 brother has tuberculosis; past history negative.	Negative for tuberculosis	Slight bronchial thickening, extending to clavicle on right; negative for tuberculosis
C.	Negative	Negative for tuberculosis	Considerable peribronchial thickening, extending to periphery. No spotty infiltration; negative for tuberculosis
H.	Negative	Negative for tuberculosis	Not done
M.	Not obtained	Negative for tuberculosis	Hilums thickened; negative for tuberculosis
W.	Negative	Negative for tuberculosis	Slight infiltration, especially of right base; negative for tuberculosis
W.	Negative for tuberculosis	Signs of tuberculosis, pulmonary, chronic, inactive, right upper lobe	Marked thickening about roots of both lungs, and extension from hilus to middle of left lung. Apices clear; spotty infiltration up to clavicle on right; probably old tuberculosis
Mc.	Negative	Negative	Flat plate: slight thickening of hilums; negative for tuberculosis; stereoscopic plates: slight spotty infiltration of both apices, possibly tuberculosis
Z.	Family history negative; doubtful hemoptysis 6 mos. prior; dry cough for past 4 mos., following gassing	Negative	Some bronchial infiltration of both lungs, not tuberculous
R.	Negative for tuberculosis	Negative	Some bronchial thickening, extending up to clavicles, probably not tuberculous
C.	Incomplete	Negative	Negative
LeC.	Negative	Negative	Negative
M.	Father died of pulmonary tuberculosis; history otherwise negative for tuberculosis	Negative	Negative

roentgenogram. This case happens to be included in the group described in the table, of men who were studied more carefully than was customary.

An unselected group of men with irritable heart was studied especially for indication of pulmonary tuberculosis. The results are shown in the table. The history consisted in inquiry for tuberculosis in the family, and for hemoptysis, chronic cough, loss of weight, pleurisy and so forth in past life. The physical examination consisted of careful examination of the lungs, including auscultation after cough.

Major J. Woods Price of Saranac made fourteen of the physical examinations tabulated above while on a visit to this hospital, and he has kindly consented to allow his findings to be incorporated. Stereoscopic roentgenograms were made in twenty-nine cases, flat plates in three. Lieuts. M. H. Glover and W. A. Newell have generously given their time for careful examination of these plates for tuberculosis. Five plates were also examined by Major Price.

Only one man showed evidence of pulmonary tuberculosis by physical examination; this consisted of a healed lesion at the right upper lobe. The roentgenogram in this case also showed tuberculous changes. Even counting this case, it is doubtful whether a group of healthy individuals would show any less evidence of tuberculosis than did these men with "irritable heart."

Summary.—1. In a group of 246 men with "irritable heart of soldiers" studied at this hospital, one was found with definite signs of arrested pulmonary tuberculosis. Two men of this group developed active pulmonary tuberculosis after influenza. No other diagnosis of pulmonary tuberculosis was made.

2. Intensive study of thirty-two cases of irritable heart showed arrested pulmonary tuberculosis in only one case, with no instance of active tuberculosis.

CONCLUSION

No evidence has been found, from the study of irritable heart at this hospital, that there exists more than an accidental relationship between this condition and pulmonary tuberculosis.