EARLY DIAGNOSIS OF TUBERCULOSIS

BY

ROBINSON BOSWORTH

Municipal Sanitorium, Rockford.

(Introduced by B. K. Richardson)

At the annual conference of Illinois Health Officers, which was held in Springfield on October 18, 1929, J. Howard Beard, M. D., University Health Officer, of Urbana, presented a paper on "Health in College Students," containing much of interest and of great significance to those who are engaged in the special field of medicine pertaining to the tuberculous and which we feel should probably be stressed before an audience largely made up of educators of the youth of our state and of neighboring states. Dr. Beard stated that tuberculosis is the most common disease found in the family history of college students: that one in fourteen had either a tuberculous father or mother; that where parental tuberculosis was reported one male student among each twenty-five had shown symptoms of tuberculosis, while among female students the incidence was four or five times greater than among the male students. We wish to employ these interesting facts as our introduction to this paper on early diagnosis because it will necessitate a discussion relative to the symptomatology of tuberculosis in the several age groups.

In any consideration regarding the early diagnosis of tuberculosis, the age of the individual must be given due consideration lest we be led astray in our deductions. In this connection it is well to review the several age groups presenting different inherent problems regarding diagnosis. The groups are as follows:

(1) Infants from birth to 1 or 2 years.
(2) Children from 2 to 12 years.
(3) Adolescents from 12 to 25 years.
(4) Adults from 25 to 50 or 55 years.
(5) Aged from 55 or 60 and beyond.

Infection during the first and second years of life is usually a serious matter; it is commonly from a tuberculous parent to the infant, and the exposure is frequent and over a prolonged interval, weeks or months. The new-born, of course, lack opportunity for acquiring immunity against tuberculosis; and when exposed to tuberculous infection often, and probably massive, the resulting reaction is apt to be

generalized instead of localized as in later years. For this reason meningitis is common in tuberculous infants. The symptoms therefore are dependent upon the organs involved and the mode of onset. In those preceded by measles, etc., the symptoms of bronchial pneumonia or meningitis are uppermost. Where the development is slower, in spite of normal appetite, etc., the child does not thrive but loses weight, the disease progresses rapidly, finally temperature rises, and septic or meningial symptoms antedate death.

During childhood, from 2 to 12 years, the lymphatic system is overdeveloped, and infection which is acquired in quite a large percentage is usually filtered out by the lymph glands and thus localized. Statistics are quoted showing various percentages of total infected children at the age of 12 to 15 years, depending on whether children are rural or urban. One thing is sure—the number of infected children is vast compared to the number developing tuberculous morbidity.

While it is true that tuberculous lesions at this age may be accompanied by pronounced symptoms, it is also true that severe progressive lesions occur without symptoms. It may be said that pronounced symptoms indicate advanced and severe tuberculosis during this age of the individual.

Permit me to defer the discussion of tuberculosis in adolescents until after we have finished with the adult group and tuberculosis of the aged.

The great majority of those suffering from active pulmonary tuberculosis are adults from 25 to 45 years of age. Tuberculous lesions, acquired in earlier years and held in check by immunity stimulated by good health and lack of stress which accompanies the productive years of adult life, are now, for the first time perhaps, developed to such a point as to produce symptoms. The immunity in adult life produced by a more or less favorable experience with tuberculosis in early years, is partial only; and as the stress of life increases and debilitating experiences multiply, the break takes place and symptoms are produced. As stated by Lawrason Brown, "Pulmonary tuberculosis probably can always be diagnosed before the age of twenty." The teaching for years has emphasized the importance of fatigue, indigestion, loss of weight, afternoon rise in temperature, rapid pulse, frequent colds and cough as pointing to early pulmonary tuberculosis, and that is correct in the adult group.

Among the aged, from 60 years upward, tuberculosis is very apt to be mild in its characteristics. All the symptoms incident to the adult group may be present only in a milder form. The disease is more

chronic and the symptoms are mainly those of a chronic bronchitis, under which diagnosis many are carried for years.

The adolescent group, from 12 to 20 or a little over, is the one to which we may give special attention. As we have pointed out, the period from 2 to 12 years is the age of first infection and this is followed by localization of the infection, usually in the glandular system. The adolescent age, from 12 to 20, is the period of re-infection, or second infection, whether that be from within or from without. During this age period, nature apparently does not possess great power of healing tuberculous lesions. Fibrous tissue with calcification rarely is found at postmortems of individuals under 15 years of age, and there the lesions are progressive with very slight effort at healing.

The symptoms of early tuberculosis during adolescence are very likely to be entirely lacking. The weight is normal or even above normal in many. Strength is good or, at least, not poor, considering the absence of other collateral symptoms. Cough may be entirely absent. This is the age period referred to by Opie of the Phipps Institute, Philadelphia, where latent lesions among tuberculous contacts are common. Widespread progressive lesions may be discovered before symptoms appear during adolescence, if thorough examinations of the chest are made for check-up purposes or if routine chest examinations are made of tuberculosis contacts.

There are inherent difficulties to be overcome in making a diagnosis of early tuberculosis during adolescence, since physical signs noticeable upon examination of the chest by ordinary means are slight, difficult of interpretation, or even lacking. A positive tuberculin test tells us that a tuberculous lesion is present somewhere. An X-ray picture of the chest may disclose the lesion and indicate its gravity.

My purpose in this discussion has been to call attention to the following points:

1. The presence of progressive tuberculous lesions in adolescent boys and girls—more among girls.
2. The absence of symptoms pointing to the diagnosis until the lesions are advanced.
3. The difficulty of diagnosis without tuberculin test and X-ray.
4. The need for routine study of all adolescents with tuberculous parentage to prove absence or presence of tuberculosis, no matter how normal appearances may be, having in mind the possibility of the diagnosis of tuberculosis before the age of 20 is reached.
5. The responsibilities of those whose calling in life place them in position to serve so fruitfully a multitude of the youth of our state.