STUDIES IN BRONCHIAL GLANDS *

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The impetus for this study of bronchial glands came from what seems to be the growing opinion that chronic adenitis of the bronchial glands is always tuberculous. This opinion may have arisen from the specialist in tuberculosis or from those examining sick children for possible tuberculosis, for by such is an examination of these glands usually made.

In order to determine the frequency of chronic adenitis of the bronchial glands in infancy and childhood, the reliability of the signs, and the possible pathology of the gland, I have examined, during the past year, all cases coming under my care, no matter for what reason. This series of cases came from three sources: from the Infants' Hospital, from a large school and from private practice. At the Infants' Hospital the patients were infants under 2 years, admitted for non-contagious medical diseases including nutritional disturbances. This gave over three hundred cases. The school is located in a healthy suburb of Boston and draws children from families of moderate circumstances and is not a tenement district. There are 700 in the school, but only 500 between 6 and 13 years of age are included in this series. The cases seen in private were in and about Boston, and were those usually seen in general practice confined to infants and children.

The means used to demonstrate enlarged glands were auscultation and percussion, the Roentgen ray being employed to confirm physical signs. By auscultation I mean determination of the sign described by D'Espine as the point on the vertebral column at which whispered voice changes from a vesicular to a bronchial character, and was given by him as taking place at the seventh cervical. In infancy it is impossible to get whispered voice, but the character of the expiration is as satisfactory, and is best heard after crying. In very few cases have I found the change as high as the seventh cervical, but commonly at the first or second dorsal, and frequently as low as the third without cause. The average height increases with age. I found no case at the seventh cervical in infancy, the average being between the second and third dorsal; at 6 years 40 per cent. had changed at the second dorsal; at 12 years 85 per cent. had changed at the second dorsal,

* Submitted for publication May 10, 1915.

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and several cases at the seventh cervical. The sign differs in degree or rather in intensity of the bronchial character, depending on the amount of gland involvement, their size and position. Just as in lung examination it is not the harshness of the breathing but its character that counts, so in the D'Espine sign it is the point where the breathing changes from vesicular to bronchial and may be loud or distant. Hence from the foregoing I have accepted as a positive D'Espine a change in character of whispered voice or expiration at or below the third dorsal.

Percussion for glands has been very difficult, and to map out with any degree of certainty the area of dulness into cone shaped and circular areas, as described by some writers, I have found difficult. Dulness to the left of the sternum and spine is masked by the heart and great vessels. Dulness in the second interspace to the right of the sternum, and dulness to the right of the vertebral column at the level of the spine of the scapula is definite and significant and seems to agree pretty well with the intensity of the D'Espine.

The Roentgen ray was used as routine only in the hospital cases. The physical examination was made and recorded, then a roentgenogram was taken to check up the physical findings. In no case with positive signs did the roentgenogram fail to show a shadow. Enough of the cases have come to postmortem to prove the reliability of the signs and the Roentgen ray.

The bronchial glands, speaking of the various groups as if of one group, may be inflamed just as any other glands may be, and may be acute or chronic or apparently chronic from constantly draining a diseased area. There seems to be a choice of glands involved depending on the source of the infection; the glands along the trachea drain the upper regions, the hilus or tracheobronchial glands drain the lung, both sets giving positive D'Espine, the hilus glands more commonly giving dulness.

Acute adenitis of the bronchial group need give little concern, for the signs disappear rapidly after the parent disease subsides. The importance of adenitis of this group seems to me to lie with the chronic ones, or those which appear to be chronic. As I said before, there is an impression that chronic adenitis of the bronchial glands means tuberculosis. If we bear in mind that tuberculosis of infancy and childhood is primarily a chronic inflammation of the glands adjacent to the portal of entry, and that the portal of entry is most often in the lungs, then the importance of chronic hypertrophy of the bronchial glands becomes apparent. The cases entering the Infants' Hospital since July, 1914, for conditions other than acute infectious diseases, and without history of recent acute infectious disease of the air pas-

sages, showing positive D'Espine and interscapular dulness with or without lung signs, have proved to be tuberculous. I shall mention a few cases in illustration.

CASE 1.—Girl baby, 15 months old, admitted for anemia following improper diet. Examination showed dulness at the right apex, distant bronchial breathing and fine râles; right interscapular dulness, positive D'Espine, Pirquet positive.

CASE 2.—One month premature girl admitted Feb. 25, 1915, for regulation of feeding and observation to find the cause for febrile attacks recurring at intervals of three weeks. Examination showed signs at right apex, interscapular dulness and positive D'Espine. Pirquet negative February 28, positive March 25.

CASE 3.—A seven months baby seen in private with the story that it could not take the bottle; had done well for four months on the breast when breast milk gave out. It seemed willing to try the bottle, but after sucking a few times gagged and spit out the milk. Adenoids had been removed without relief. Physical examination showed dulness, bronchial breathing, fine râles at the right apex, right interscapular dulness, positive D'Espine. Stomach tube passed with difficulty. Father tuberculous.

With what certainty chronic bronchial adenitis may mean tuberculosis in infancy some cases I had seen in private practice led me to believe that it might be otherwise with older children. I have watched children for months with positive D'Espine, troublesome, dry, brassy cough to have all signs disappear after removal of adenoids. Hence, to determine the frequency of positive signs and the possibility of other sources of infection I made the second part of my series of examinations, that is, in presumably well schoolchildren. This was unsatisfactory in some respects for I was not permitted to make Pirquet tests or roentgenograms and so the cases must go without these checks. All the cases were examined in the fall of 1914, and all positive cases were reexamined during the past three weeks, or at least three months after. Out of a total of 505 children examined in the school there were 112 with positive D'Espine at or below the third dorsal. Of the positive cases 96 were at the ages of 6, 7 and 8 years from a total of 297 cases at these ages. The remaining 16 positive cases were at the ages of 9, 10, 11 and 12 years. For some reason positive D'Espine was very much more frequent in the younger half, 36 per cent. as against 8 per cent. The most common defects at the younger age were carious teeth, adenoids and tonsils and if such cases had chains of enlarged glands down the neck, showed positive D'Espine.

Most of the younger children were in good condition, might have a cough but showed no malnutrition or anemia. Some of them were undernourished and anemic, and beside a positive D'Espine showed interscapular dulness or a slightly dull apex.

The older groups, sixteen in all, gave a different picture. Ten undernourished, anemic children with interscapular dulness and dul-

ness at one apex; three no dulness but anemic and undernourished; three in good condition having carious teeth and glands in the neck; no case in either group with so-called active tuberculosis meaning active pulmonary signs.

After completing the examinations I went into the histories. The same family name often appeared, and after they were grouped according to the name frequently all the children of a family in the school appeared in my series. Among the younger half there were 27 with a history of definite exposure to tuberculosis and among these were found the cases with positive D'Espine, dulness and malnutrition. In the older half, in the 13 cases with D'Espine, dulness and malnutrition there was a history of exposure in every case. The other three showed merely a positive D'Espine without dulness or malnutrition, and gave no history of exposure.

In all these cases I did not separate the glands into groups but took the signs as they came, hoping to be able to draw some working conclusions from the results. For purposes of diagnosis I think it would be well to think of these glands as of those up and down the trachea, and of those at the root of the lungs. Inflammation of both of the sets will give positive D'Espine, dulness accompanying those at the root of the lungs, and not with glands down the trachea unless there is also consolidation at the apex of the lungs. The upper set becomes enlarged from draining the upper regions and gives a narrow chain which is sufficient to transmit the bronchial character of the sounds but does not give dulness. Hence I believe a positive D'Espine with interscapular dulness means thickening at the roots of the lungs, secondary to a process in the lungs which in infancy means tuberculosis, and, in older children, if accompanied by malnutrition and anemia, is probably tuberculosis.

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