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THE RHINOLOGIST AN IMPORTANT FACTOR IN
THE PREVENTION OF TUBERCULOSIS.*

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The rhinologist, while at first looked upon with disfavor by the general practitioner, has made a worthy and enviable place for himself in the field of medicine. He has called the attention of the laity and the profession to the importance of normal physiologic respiration, and to the pathologic conditions produced where it is interfered with.

The importance of his work in the field of otology is shown by the fact that 70 per cent. of ear cases are due to causes situated in the nose and naso-pharynx. An eminent aurist has said that if the rhinologists would do their duty and attend to the nose and naso-pharynx of the children of this generation, there would be little use for aurists in the next generation.

His mission is of more importance and just as positive in the treatment of tuberculosis as it is in the prevention of deafness.

The nose, alone, was intended to conduct the air to the lungs, and for this purpose it was admirably fitted. The lungs should, if possible, receive none but pure air, and air of a tolerably constant degree of temperature and moisture; but wherever man dwells, he is subjected to dust and variation in the thermometric measurements. The nose, placed at the beginning of the respiratory tract, has as its important function, the preparation of the air for its entrance into the lungs.

The vibrissae stand at the vestibule and act as a strainer

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separating the particles of dust and bacteria from the air in its passage. Those which succeed in passing these sentinels, meet the moisture of the nasal cavity, are precipitated, and removed, partly by sneezing, partly by blowing the nose, and partly by the cilia waving them toward the throat, whence they are expectorated.

Next in importance is the change in temperature which takes place in the air. The mucous membrane of the nose is abundantly supplied with blood vessels, which, under the control of the vaso-dilators and constrictors, send more or less blood to the part as necessity demands. Thus the air from the frozen north or the hot tropical desert can be tempered by the same mucous membrane in the short space of time necessary to pass from the tip of the nose to the pharynx.

This same mucous membrane moistens the air and renders it free from irritation.

Where nasal respiration is interfered with certain changes take place in the economy which are well known. Those suffering from nasal stenosis have a dull heavy look; the outlines of the face are changed; and in many instances the bony framework of the chest is deformed; but, what is of most importance to the individual, is the general lowering of vitality and chronic catarrhal condition which such breathing induces.

Remembering that the currents of air in the nose take an upward course and pass backward along the superior meatus, striking the oro-pharynx at its uppermost portion, we see that a hypertrophied middle turbinal is of far more importance pathologically than a similar condition of the inferior turbinal, and that spurs and septal deviations which run up toward the roof of the nose are the ones to correct for nasal stenosis. We can also understand how a little mass of adenoid tissue filling the upper portion of the naso-pharynx will cause serious mouth-breathing.

Aside from the induction of mouth-breathing, the enlargement of the lymphoid tissue forming the tonsillar ring, affords a pathologic condition which offers an easy entrance to the germs of disease. It has been shown that the specific germ of several diseases gains entrance to the body through the tonsils, notably acute rheumatism, scarlet fever, chorea and tuberculosis.

Tubercle bacilli are often found in the tonsils when there is no tuberculosis present in other parts of the body. Dieulafoy inoculated sixty guineapigs with tonsillar tissue; eight, thirteen per cent. of them, succumbed to tuberculosis. He also inoculated thirty-five guineapigs with adenoid tissue; of these seven, twenty per cent., suc-

cumbed to tuberculosis. In none of these was tuberculosis present in the subject from which the tissue was taken.

While these experiments have been disputed by some observers, they have been confirmed by the carefully conducted experiments of Lermoyez, Brindle and Gottstein.

Though tubercle bacilli are not always found in tonsillar and adenoid tissue in sufficient numbers to infect guineapigs, nevertheless they are found in these tissues in individuals who are apparently free from tuberculosis, which fact leads to the inference that the tonsils and adenoids may be ports of entry for the tubercle bacillus, whence it passes on into the lymph stream.

The long accepted theory, which accounted for infection of the lungs by direct inhalation of bacilli, has much to account for. If respiration be normal, germs, to so enter, must withstand the action of the vibrissae, the nasal mucus, the attempts to throw them out by sneezing and blowing the nose as well as the ever active cilia of the epithelium. If mouth-breathing be present, they encounter the moisture of the oral cavity, which precipitates them upon the mucous membrane, there to gain entrance to the tissues or to be cast off with the expectoration. Whether respiration be normal or whether mouth-breathing be present the residual air in the lung will be a force sufficient to render the possibility of direct infection of the finer air passages and air cells almost nil.

In place of the direct inhalation theory then we are forced to the conclusion that the common channel of infection is through the lymphatics. Baumgarten has thrown much light on this subject by recent experiments in which he succeeded in producing apical tuberculosis by injecting small quantities of tubercle bacilli into the urethra, bladder, under the skin and into the eye. From all of these points of inoculation the bacilli were carried, through the lymphatics, into the apex of the lung, where they formed tubercular nodules. With such evidence before us, the role of the rhinologist assumes increased importance. Tubercle bacilli are breathed in daily, but under normal conditions the organism is able to throw them off; but, when nasal respiration is interfered with, there is great danger, for then the organism has lost the protection which nature has provided against such invaders, and the only chance of ejecting the bacilli is through expectoration. The catarrhal condition which naturally exists where nasal respiration is interfered with, offers greater opportunity for germs to gain entrance. Osler says: "A special predisposing factor in lymphatic tuberculosis is the catarrhal inflammation of the mucous membrane, which, in itself, excites slight adenitis of the neighboring glands." It is not necessary to have a catarrhal condition of the

mucous membrane present, for the bacilli are able to enter either by inter- or intra-cellular channels through the healthy mucous membrane, as has been shown by Orth, Klebs, Baumgarten and others; nevertheless, such a condition, when present, greatly facilitates their passage. Wright says: "We must assume at present that the tubercle bacillus passes into the lymphatics through the mucous membrane of the naso- and oro-pharynx in a very large proportion of cases of pulmonary infection."

The rhinologist must assume the responsibility of protecting the organism against the tubercle bacillus. While catarrh does not run into consumption, nevertheless mucous membranes affected by it possess a lowered resistance and are the seat of small abrasions, which offer an easy entrance to the tubercle bacillus.

It is not only the part of the rhinologist to prevent infection by keeping the mucous membranes in a healthy condition, but he also has the opportunity to diagnose the disease in its incipency; for it is to him that those in the early stages of tuberculosis are apt to come for relief from a slight though persistent cough, especially after talking or laughing or a protracted cold, which refuses to yield to ordinary measures. Coughs and colds, not yielding to treatment in a reasonable time, should be branded suspicious. A two-hourly temperature chart of such cases often gives valuable information. In all such cases a careful examination of the chest should be made and the clinical history should be carefully elicited.

It is of much importance to the individual to know at the earliest date possible if tuberculosis be present, so no measures should be omitted which will throw light on the diagnosis. With a thoroughly trained ear, the tuberculin test, the Roentgen rays and the microscope, we are able to detect tuberculosis in the incipient stage in nearly every instance that comes to our notice, before the stage of consolidation. With the first two, most cases can be detected before bacilli appear in the sputum.

The chances of cure in tuberculosis decreases as time passes. In the early stage from sixty to ninety-five per cent. of the cases are being cured. Turban of Davos says that ninety-seven per cent. of those in the early stage should be cured. How hopeful this disease, then, if only an early diagnosis be made!

As rhinologist then we must assume a two-fold duty in the fight against tuberculosis. We must keep the upper air passages healthy and thus diminish the chances of infection and we must be able to diagnose the disease in those incipient cases which seek relief at our hands.

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