SOCIETIES' PROCEEDINGS

ROYAL SOCIETY OF MEDICINE—SECTION OF LARYNGOLOGY

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President—LIONEL COLLEDGE, F.R.C.S.

The Problem of Early Laryngeal Tuberculosis

The opening paper read by Dr. N. RH. BLEGVAD is published in this issue of the *Journal of Laryngology and Otology*, Vol. LII, No. 3, pp. 153-62.

DISCUSSION

L. S. T. BURRELL : I have been asked to speak about the larynx in tuberculous cases in relation to the disease in the lungs. I was interested in what Dr. Blegvad said about simple laryngitis, because I have found that of the tuberculous patients (consumptives) sent to the throat department for an opinion, on account of hoarseness or difficulty in speaking, about one-third were returned as not tuberculous. That type of case always does well. On that account it has seemed to me that the tuberculous or consumptive patient suffers from hoarseness or even loss of voice, owing to some change which is not necessarily tuberculous. When these patients have been followed up in order to see whether, at a later stage, they developed tuberculous laryngitis, no greater incidence of tuberculous laryngitis has been found in those who had preliminary hoarseness.

When I first went to Brompton Hospital I looked upon tuberculous laryngitis as an extremely grave condition. It is still a grave one, but I do not now consider that a small degree of laryngitis enhances the gravity of the outlook to such an extent as was formerly believed.

Recently I have been much impressed by seeing cases of extensive laryngitis, even with ulceration, which made a complete recovery. I hope future speakers will tell us why it was that our grandfathers took such an extremely serious view of these cases. I have found that a tuberculous larynx responds very well to artificial pneumothorax. It will also respond to other collapse methods, such as thoracoplasty, but it is usually pneumothorax which is induced in cases of laryngitis. I have frequently been asked to induce

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pneumothorax because of laryngitis in a bilateral case, in which it would not usually have been attempted, and I have been so impressed by the results of even partial collapse that now, when I find a patient with any degree of tuberculous laryngitis, unless there is a definite contra-indication, I try to induce artificial pneumothorax. In cases in which it is possible to produce complete collapse of the lung it is exceptional for the tuberculous laryngitis to continue. When the larynx continues to grow worse in spite of medical treatment for the chest, the outlook is practically hopeless. If the larynx improves there is a good chance that the patient will recover.

Early diagnosis is a question for the laryngologist, not for the physician, but sometimes in cases of early laryngitis the question of early treatment arises. In this form of tuberculosis I have found that smoking is most injurious. I am loath to tell people not to smoke; I do not do so in ordinary cases of tuberculosis, but I have found so many cases of hoarseness and laryngitis heal at once when the patient stops smoking that I do not hesitate to urge the patient to be strong-minded enough to give up smoking.

It is interesting to inquire why a patient should develop tuberculous laryngitis. In pulmonary cases the sputum is passing over the larynx in large quantities, and yet one patient with advanced disease and cavitation escapes, while another with mild lung tuberculosis develops laryngitis, and the same can be said of enteritis. Is it possible, that some patients cause by coughing an injury to the larynx, so rendering its infection easy?

I find that not only such complications as laryngitis, but also enteritis, improve when the lung has been collapsed. Therefore if it is possible to improve the primary source of the trouble, that is the lungs, it is reasonable to expect improvement elsewhere also. One patient with laryngitis and diarrhœa, the latter supposed to be due to tuberculous enteritis, was thought to be quite unsuitable for the induction of pneumothorax, but Nature stepped in and induced pneumothorax spontaneously, and uninterrupted recovery of both the larynx and the intestine ensued.

Sir St Clair Thomson: Following the lead of our distinguished visitor, I will limit myself to some considerations of the problem of early diagnosis. It depends chiefly on the trained eye of the laryngologist, with regular practice in this department, particularly as tuberculosis has almost vanished from our hospital clinics and is relatively rare in our consulting rooms. One inspection, however complete, is not always enough. It should be made in a well darkened room. The appearances of a larynx change, to some extent, from day to day and under varying conditions, such as recent cough, pyrexia, or fatigue, and it is important to obtain a good

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view of the interarytenoid region, the area most frequently invaded. Inspection after a period of silence will help to define a lesion.

Any one-sided congestion should arouse suspicion, as also should any irregularity. A second separate focus also *requires* attention, as a malignant growth spreads only from one centre. Tuberculosis often simulates pachydermia, particularly in the elderly. I think that the pachydermia of forty years ago is now more rarely seen, since its true nature in many cases is more frequently recognized. We are apt to forget that tuberculosis is far from being rare in the old. There is a larger proportion of cases of tuberculosis in people between 60 and 75, in relation to the number living at these ages, than there is between the ages of 20 and 30, though of course, as the young are more numerous, there is a far larger number of deaths. The young also die more quickly. In the elderly, confirmatory signs in the chest may be overlooked. I often think that Shakespeare's lean and slippered pantaloon may have suffered from senile phthisis; so true is it that old age is not only a disease in itself but is the favourite time for diseases.

Just as old age must not put us off our guard, so is it with youth. A man aged 26 was sent to Midhurst with a diagnosis of stridor from tuberculosis. He was shown at a meeting of the Section, and an alternative diagnosis was not even suggested. Yet when I started on an exploratory laryngo-fissure, the tissues outside the thyroid cartilage were found to be infiltrated with extensive sub-glottic cancer. Intrinsic cancer beginning in the sub-glottic region is not uncommonly mistaken for tuberculosis when its edge reaches the vocal cords.

A completely negative search for pulmonary tuberculosis must not mislead us. One such case in a vigorous policeman induced me to do a laryngo-fissure (in a case of laryngeal tuberculosis). Fortunately, the patient made a good recovery, with a soundly-healed larynx.

Nor must the report of a chest specialist be allowed to weigh too heavily. An elderly man was reported to have tuberculous trouble in both lungs. The cord certainly looked somewhat mouse-nibbled. But when we failed to find T.B. and there was no pyrexia or other confirmation, I became suspicious, and the next examination showed a more characteristic appearance of epithelioma with incipient paresis of the cord. Laryngo-fissure confirmed this, and the patient survived many years without any recurrence. So also is it with syphilis. One case sent as tuberculosis of the larynx was seen not to be characteristic and a Wassermann reaction was strongly positive. The appearances did not yield to three months' anti-syphilitic treatment, and a successful laryngo-fissure showed epithelioma. Again, a patient with healed pulmonary

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tuberculosis who develops a laryngeal lesion is apt to be sent back with a diagnosis of tuberculosis, and the lesion may then prove to be epithelioma.

The laryngeal picture may look almost typical of tuberculosis, but the appearance may be misleading. A man, aged 39, had suffered from fatigue and night sweats; in his boyhood he had had tuberculosis at the ankle-joint and walked on crutches for two years; one brother had died of acute tuberculosis. Signs in the chest were abundant, and so was the sputum. He was sent to Midhurst by a member of this Section with a diagnosis of tuberculosis and the picture of the larynx was almost typical of that disease. But tubercle bacilli were never found in the sputum, which contained small black bodies visible to the naked eye about the size of millet seeds. Under the microscope these showed aspergillus fumigatus, a rare affection chiefly seen in birds. Without any treatment other than the sanatorium régime the larynx healed and, with the exception of the loss of the epiglottis, returned to normal.

The appearances, extension, and progress of the laryngeal lesion are valuable in prognosis. Of 2,000 patients whom I saw in ten years and who were reported upon ten years later, the number then alive was just double in those with a sound larynx compared with those with a diseased larynx. During these years two out of every three patients with laryngeal tuberculosis were dead, while in those with a sound larynx it was the reverse: two out of every three patients were still alive. Tuberculosis in the larynx is still a very serious disease. It is sad to think that out of about 500 such cases seen during ten years, no less than 70 per cent. of the patients were dead within three years of their leaving the institution. Therefore, nearly three out of every four patients we see, are still doomed to death.

Let us get some comfort from the fact that, in contrast with the dictum of Morell Mackenzie that he was doubtful if he had ever seen one case recover, we can now show a recovery of 25 per cent. or, as Dr. Blegvad has demonstrated, of 29·1 per cent. Our chief hope lies in early diagnosis and in differentiating the disease from carcinoma. There is less harm in regarding a lesion for a time as a sign of tuberculosis than in deciding precipitately on a diagnosis of cancer.

F. C. Ormerod said he assumed that "early tuberculosis" meant not very advanced tuberculosis of the larynx, such as might be included in Group I of Aschoff's classification, tuberculous infiltration, with or without œdema. He had collected the notes of the cases of early tuberculosis seen at the Brompton Hospital in 1934, numbering 65, and had considered particularly the

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condition of the lungs in those patients. Of the 65 patients, 12 had phthisis in both lungs ; 53 had phthisis in one lung ; 4 had cavities in both lungs ; 28 had cavities in one lung ; 50 had tubercle bacilli in the sputum, while 4 were free as judged by the sputum after 8, 5, 4, and 2 examinations (in 11 the sputum was not examined at Brompton) ; 9 of the cases had infected tonsils, 6 had nasal obstruction.

In these early cases of tuberculosis of the larynx, the lung disease was usually fairly advanced, most of these were in Groups II or III. Dr. Burrell had asked why, in some cases in which the sputum was teeming with bacilli, tuberculous laryngitis did not develop, while in other cases showing no bacilli in the sputum there was advanced tubercular disease of the larynx. That, he (the speaker) suggested, was because in some cases the bacilli were borne by the blood or by the lymphatic stream and not by the sputum. A slight laryngeal condition did not necessarily mean slight disease in the chest. The progress of laryngeal disease tended to run parallel with that in the chest, and in a case which was going downhill it was not possible to effect improvement in the larynx. A patient whose laryngeal condition was improving was likely to do well generally. There were occasional cases in which the larynx steadily improved, while the pulmonary and general condition deteriorated, until death occurred with an almost healed larynx, but these cases were exceptional. He felt that the essential treatment of tuberculous disease in the larynx largely depended on the physician, but the patient must be silent and have, in appropriate cases, applications of the galvano-cautery. The physician and thoracic surgeon, by means of various methods of collapse therapy, took a great part in the treatment of tuberculous laryngitis.

He had studied the question of early lesions and their incidence in different parts of the larynx. In the 65 cases the lesion was on the vocal cords in 41, i.e. on one cord in 20, on both cords in 21 ; on the ventricular bands in 9 (on one band in 7, on both bands in 2) ; on the arytenoid processes in 2 ; in the inter-arytenoid space in 9 ; on the epiglottis in 1, and there was paresis of the internal tensors in 3. These proportions differed somewhat from some previously reported in this discussion, and that was probably because he had strictly demarcated his " early cases ", and those did not include cases of ulceration. He wished to mention a type of early disease which began in the ventricle and caused a swelling of the ventricular band. As the ventricular mucosa itself swelled it tended to present at the mouth of the ventricle and a fringe of infiltrated mucous membrane could be seen overlapping the vocal cord. This was the explanation of many cases of so-called prolapse of the ventricle. Of the 41 cases of

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infiltration of the vocal cord, 4 patients died, 8 became worse, 15 improved, 10 were transferred to sanatoria with the result not known. None of the 9 cases of ventricular band involvement died, 3 became worse, 4 improved, and 2 remained *in statu quo*. Of the 9 cases of interarytenoid infiltration 4 died, 4 became worse, and had probably died by now, and only 1 remained *in statu quo*.

Dr. JOBSON HORNE, speaking of his own clinical and pathological researches [1,2] said that the earliest clinical evidence of laryngeal tuberculosis was not hoarseness but dysphonia or transient aphonia. The earliest change in the larynx was not acute laryngitis but pallor and impaired adduction of the vocal cords, leaving at times a triangular opening at the posterior third of the glottis, causing phonatory waste.

In the earliest stage the laryngeal mirror would reveal on the glottic aspect of the interarytenoid region a crenulation, very fine, very frequent, and very significant.

The explanation of the above was sought in the *post-mortem* room, in larynxes normal in appearance to the naked eye but removed from bodies with tuberculosis in one or both lungs.

These apparently normal larynxes were microscoped throughout. Under the microscope, in the intrinsic muscles, a myositis, at times very diffuse, was found. This myositis, as distinct from a tuberculous destruction of the muscles, so far as he knew, had not been previously described.

It might exist without occasioning any changes that could be observed clinically other than the various forms of paresis of the cords. A myositis in the interarytenoid muscle and a deposition of tubercle in the submucosa with distension of the superficial epithelium explained the impaired adduction of the vocal cords and the resulting aphonia, and also the crenulation so frequently present in the interarytenoid space in quite the earliest stages of laryngeal tuberculosis, and at a time when the examination of the thorax might yield no positive signs.[1,2]

The possibility of pulmonary tuberculosis must always be kept in mind in all cases of aphonia, whether intermittent or persistent, more particularly in women. It must not be labelled " functional " or " hysteria " and treated accordingly.

If the disease progressed the further deposition of tubercle in the submucosa caused infiltration, tumefaction, and œdema, with departures from the normal in the outline or contour of the larynx, and a loss of symmetry before a breach of epithelium.

" *Prolapse of the ventricle.*"—This term should, he considered, always be printed in inverted commas. He questioned whether " prolapse of the ventricle " could occur. If it did it was rare. What did occur was a solid tongue-shaped growth from the roof

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of the ventricle projecting between the lips of the ventricle. The roof of the ventricle was corrugated, and a ridge might become so large as to depend in the manner described. He had cut vertical sections through the ventricle of a larynx, demonstrating the tongue-like excrescence. An attempt to push one of these back into the ventricle with a probe, under the belief that it was the prolapsed lining, would prove the fallacy.

Curability of laryngeal tuberculosis.—Another question was why laryngeal tuberculosis was curable in the present day but was not curable a hundred years ago. He offered the following explanation : The disease in the larynx always went *pari passu* with that in the lungs. In the present day sanatorium treatment was available. If patients were sent to sanatoria and the lung disease arrested the larynx would take care of itself.

Incidence of the disease.—A further question raised was why tuberculosis of the larynx occurred in some cases of phthisis and not in others. If there was a definite history of tuberculosis on both sides of the family, or on one side only, that fact told against the patient. If a young man coming from such stock acquired syphilis, and subsequently developed phthisis, the liability to laryngeal tuberculosis would be materially increased.

Hence the importance and value of a carefully taken family and past medical history.

Absence of the disease in childhood.—Tuberculosis of the larynx did not occur in childhood. However, he had microscoped the larynx of a child, aged one year, with typical laryngeal tuberculosis ; it was the exception that proved the rule, the rule being that tuberculosis could not occur in the larynx unless there was some disintegration of the lung. In children the disease in the lungs was of the miliary type. In this particular case there was miliary tuberculosis of the lungs. The bronchial glands were much caseated and associated with a caseating gland was a cavity the size of a walnut close to the root of the upper lobe of the right lung.

The cervical glands in laryngeal disease.—Lastly there was one point he would like to mention, as it threw light on the pathogenesis of laryngeal tuberculosis and also on tuberculous disease in the larynx simulating epithelioma.

At the summer meeting of the Section in 1926 he had contributed a paper on the " Rôle of the lymphatics in laryngeal disease ",[3] in which he had pointed out that the factor determining the involvement of the adjacent lymphatic glands was whether the disease in the larynx was primary or secondary. In tuberculosis, no matter how destructive the disease in the larynx, the adjacent glands were not involved as the disease was always secondary. Again an exception proved the rule. When the lungs had completely healed and cicatrized and there was a recrudescence of the

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disease in the larynx, the cervical glands were apt to become enlarged and hard and suggestive of epithelioma in the larynx. In one case a gland was removed first and as it was found to be tuberculous the larynx was spared.

SUMMARY

1. When the larynx was infected with tuberculosis the disease was already established in the lung. Primary tuberculosis of the larynx was negligible.

2. The disease in the larynx progressed *pari passu* with that in the lungs; when the disease in the larynx presented ulceration that in the lungs had advanced to cavitation, and *vice versa*, when that in the lungs had become arrested, then that in the larynx healed.

3. When the disease in the lungs was confined to the pure miliary form, the larynx was not infected.[4]

REFERENCES

[1] HORNE, JOBSON (1898), *Journ. Laryng.-Rhinol.-Otol.*, xiii, 481, *et seq.*
[2] ——— (1907), *Ibid.*, xxii, 281.
[3] ——— (1926), *Proc. Roy. Soc. Med.*, xix (Sect. Laryng., 59).
[4] ——— (1905), *Brit. Med. Journ.* (ii), 1188.

Dr. BLEGVAD (in reply) said he agreed that in many cases the laryngeal tuberculosis was cured when the lung disease was cured, but that was not true of all. He was sure that all his colleagues had observed cases in which the laryngeal tuberculosis, as proved microscopically *post-mortem*, had healed, and yet the patient had died from the pulmonary tuberculosis. On the other hand, there were cases, but not many, where the laryngeal tuberculosis progressed, although there was only a small and stationary tuberculosis of the lungs.

Why some people contracted the disease and others did not depended on the immunity of the particular patient. In his own personal case, for twenty years he had been sitting in front of tuberculous patients, seeing some forty per day, and sometimes receiving their expectorations in his face, yet he had never had even a suspicion of tuberculosis. At his hospital no nurse was engaged who had a negative von Pirquet reaction as such persons were very apt to contract tuberculosis.

He felt convinced that in addition to a general immunity there was a local immunity—in lungs, kidneys, and intestines. Not all people with abundant tubercle bacilli in the sputum had tuberculous laryngitis. He did not think tuberculosis of the larynx could be conveyed by the blood-stream. In only 17 of 921 cases with proved tuberculosis of the larynx were there no tubercle bacilli in the sputum. Different sanatoria gave wide variations

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in the proportions of patients showing tubercle bacilli in the sputum. Much depended on the method and the degree of thoroughness of the examination. In the returns made from France—in which country the examinations were very thorough—the proportion was very high. If the sputum was injected into animals, the bacilli were found in practically all cases. In cases of tuberculous mastoiditis, no tubercle bacilli would be found, but if inoculations into animals were carried out, such as in guinea-pigs, tubercle bacilli would be found in the glands.

AMERICAN LARYNGOLOGICAL ASSOCIATION

(FIFTY-SEVENTH ANNUAL CONGRESS)

Held at Toronto, Canada, 1936

Chairman—DR. PERRY G. GOLDSMITH (Toronto)

(*Abstract of Proceedings*)

By P. E. IRELAND (Toronto)

THE members of the Society, were entertained at a clinical meeting in the lecture amphitheatre of the Toronto General Hospital. The case history, along with the patient, was presented and the discussion was led by one of the assigned members who had previously had ample opportunity of seeing and familiarizing himself with the particular patient. Owing to the number of cases presented and the large attendance, each member was not permitted to examine the patients. The remainder of those attending had necessarily to accept the presentation as a " Dry Clinic ".

CASES

Carcinoma of the Retro-cricoid Area with modified Trotter Operation and Laryngectomy.—DR. H. WOOKEY.

History.—A female patient, aged 50 years, was admitted with a carcinoma involving the pharynx and the upper end of the œsophagus, with invasion of the posterior wall of the larynx.

Treatment.—A laryngectomy with removal of most of the lower pharynx and a portion of the upper end of the œsophagus was performed. The œsophagus was reconstructed by a tube graft. The procedure was carried out in stages and on discharge from the hospital, healing was complete and the patient was able to take practically any type of food.

Laryngectomy with Œsophageal Voice.

—DR. R. S. PENTECOST.

History.—A male patient, 43 years of age, with symptom of hoarseness for several years, was found on examination to have a

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