disease over a long period will not usually affect the decision to operate. If there have been prolonged periods of toxæmia the outlook is not so favourable; amyloid disease may have started, and the heart muscle may be in a much poorer condition than is apparent. Patients who are more acutely toxic, but in whom the disease has not been present for very long, do not present so much a problem as to whether the operation should be performed as to when the most favourable time has arrived. Active disease in other organs, except the larynx, usually excludes a thoracoplasty. Tuberculous laryngitis is not a contraindication, as it is always secondary to the lung lesion. Cases with bronchitis must be approached with care, and if the bronchitis is extensive it constitutes a contraindication; most of these have a low vital capacity. If for any reason the vital capacity is more than 50 per cent. below normal, great care should be taken in planning the operation to put the minimum amount of functioning lung out of action.

When to Operate

In considering thoracoplasty nothing is more important than the choice of the correct time for operation. If it is possible by means of rest in bed with adjuvant treatment or by less drastic collapse methods to make the patient fitter, this should be done. On the other hand, the operation should not be postponed if the limit of improvement by such means has been reached. Speaking generally, if the limit of improvement by other means has been reached the case requiring thoracoplasty will tend to become a less favourable risk as time goes on. When the patient knows that thoracoplasty has been decided on, undue delay should be avoided unless there is a reason for it. It is the duty of the physician to present the patient to the surgeon in the best possible psychological as well as physical condition.

Problems of Technique

The tuberculous patient if not very toxic stands up to short operations comparatively well, but the mortality rises rapidly as the time taken for the operation increases; hence the experienced and dexterous surgeon operating with a skilled assistant will always obtain better results than surgeons who perform the operation infrequently. A skilled anaesthetist with a wide experience of thoracic surgery will help greatly in obtaining good results. On the Continent thoracoplasty is often performed under local anaesthesia only. Equally good results are claimed, but the preference for this method is probably due to the scarcity of skilled anaesthetists, and the effect on the morale of patients (at any rate British) is often bad. It will thus be realized that a surgeon should be able to widen the scope of the operation if he is working with a trained team as compared with what he could safely undertake with less skilled assistance. But a skilled team at the operation is not sufficient in itself; the immediate after-care has many pitfalls for the inexperienced. No physician should recommend a thoracoplasty unless he is satisfied that adequate technical skill and conditions are present.

In England the weather must be considered; personally I prefer to avoid recommending cases to surgeons for thoracoplasty in London between November and March, unless there is special cause. The onset of foggy weather or the intervention of an attack of influenza during the week after the operation is likely to lead to bronchopneumonia with fatal results.

The Functional Result

The patient needs the greatest possible physical and mental health. The anatomical and radiological results only interest him from their bearing on this point of view. Figures have been published recently by Brown

and Sampson which show that of what they call "good chronic cases,"* treated at Trudeau Sanatorium, 80 per cent. are alive and 50 per cent. are working at the end of five years, and 64 per cent. are alive and 52 per cent. are working at the end of ten years. It must be remembered, however, that Trudeau patients are frequently well-to-do and likely to live under good conditions; thus the figures are not generally applicable.

The subject of a thoracoplasty is crippled to a lesser or greater degree. The mortality from the operation, though small, is not negligible. There are thoracoplasty cases which are physical and mental wrecks, though no longer suffering from active tuberculosis. Hence the patient's probable condition with or without the operation must be considered from a wide angle.

Thoracoplasty represents the last stage in the active treatment of any tuberculous lesion in the lung. An error made in the selection of the case, or the stage in the disease when the operation is performed, can never be repaired, but in no form of treatment will skilled collaboration between the physician and the surgeon be more amply repaid.

A NOTE ON LARYNGEAL VERTIGO WITH RECORD OF CASE

BY

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The following case is of interest on account of its rarity. The patient, a manufacturer aged 35, gives the following account of his illness.

In March, 1935, he developed a severe cough, which persisted for a period of three weeks. In view of its spasmodic nature he thought that it might be whooping-cough, from which disease he had not previously suffered. During one attack of coughing, while walking in his garden, he suddenly became momentarily unconscious, and fell to the ground. He immediately regained consciousness, and on entering his house made the remark "Have I been sleeping?" The attacks of coughing subsided, but in April his wife and two children developed a spasmodic cough, which was medically diagnosed as whooping-cough. All three recovered from a mild attack of this illness without the occurrence of any complications. Towards the end of August the patient's cough returned. On August 29th, during an attack of coughing, which was unaccompanied by cyanosis, he again became momentarily unconscious, and fell to the ground. He states that on recovering from the attack he felt slightly sleepy. On a subsequent occasion while coughing he fell into the fireplace and sustained serious bruising. Up to this point he had not been inclined to regard his illness seriously. In the next attack he was driving his car when he commenced to cough. Realizing the danger in which he was placed he attempted to stop the car, but before he could do so he had become unconscious and crashed into a tree. When he regained consciousness he found the car had travelled a distance of twenty-five yards. His head had fallen forward on the steering-wheel and he had sustained extensive bruising.

* A "good chronic" is a case with a cavity at least 2 cm. in diameter which for three months has had no symptoms of toxæmia on some exercise. Tubercle bacilli may or may not be present, but expectoration must not be excessive.

He consulted Dr. Bryson, who suggested that he might be suffering from laryngeal vertigo, and recommended further investigation and observation. During the first fortnight of September he became unconscious on ten occasions, in each instance following an attack of coughing. None of these seizures were observed medically or by any member of the nursing staff of the institution in which he was a patient, a fact which was due to their sudden onset and brief duration. He gives the following account of his sensations.

The Type of Attack

In every instance the attack of coughing was initiated by what he describes as a tickling sensation in the back of his throat and upper part of his windpipe. He found from his own observations that the attacks of coughing fell into two groups. The more frequent attacks consisted of very severe coughing, in which he had to hold on to furniture for support, to prevent him from falling. At this stage he felt slightly giddy, but on no occasion did he experience the sensation of objects revolving round him. When the cough subsided he developed severe generalized shaking of his body and limbs, and felt that the cough had "taken a lot out of him."

Less frequently the attacks of coughing were not so severe. They also were initiated by the same tickling sensation. He would give three, or at most four, coughs of very slight degree and then, without any warning, would become momentarily unconscious and fall to the ground. No attack of coma lasted for more than a few seconds. He would pick himself up and resume whatever he had been doing. He usually felt somewhat sleepy after the attack.

These attacks of coughing have been witnessed repeatedly by relatives and friends, but on only one occasion was he under observation when actually unconscious. The witnesses state that he was unconscious for only a few seconds, and showed no involuntary movements of any kind. He was treated first by bromides and belladonna, and later by luminal in large doses, but the treatment had no effect on his seizures, which were steadily increasing in frequency.

Clinical Findings

Previous Health.—Eight years previously he had suffered from an attack of phlebitis, followed by pulmonary embolism. He had not suffered from whooping-cough in childhood. Otherwise his medical history contained no fact of note. There is no record of any epilepsy having occurred in his family.

Present Condition.—He is a man of 35 years of age, 6 feet in height, and weighing 18 stone. He is of a somewhat phlegmatic disposition, with a well-balanced outlook on business matters. No abnormality was detected on examination of heart, lungs, and abdomen. The blood pressure was 120/80. The urine contained neither sugar nor albumin. The tendon reflexes throughout the body were normal. The plantar responses were flexor in type. No defect was detected on examination of the sensory neurones. The pupils were equal and reacted normally. The optic disks and fundi showed no abnormality, and the fields of vision were normal. He gave no history of any visual defect. Sphincter control was not impaired. X-ray examination of the skull was negative, the pituitary fossa appearing normal. X-ray examination of the chest revealed no abnormality, except for a basal thickening of the pleura. The Wassermann reaction was negative.

He was seen in consultation with Dr. George Brand on September 7th. Dr. Brand found a septal deflection towards the left side, with crusting in both nares. The nasopharynx was healthy, except for an excess of mucus. The pharynx was congested. The tonsils were moderate in size, and there was no glandular enlargement. The laryngeal mucosa was injected and the cords were pink in colour. The hearing was normal and the labyrinth tests were normal. With the object of removing a potential source of irritation, submucous resection was performed on September 17th, 1935. He made an uninterrupted recovery, and since the date of his operation has had no attacks of unconsciousness, although on two or three occasions he has had fairly severe fits of coughing.

Points in Diagnosis

The diagnosis of this case presents points of unusual interest. The possibility of a laryngeal crisis of tabes can be excluded by the history, the normal physical neurological findings, and the negative Wassermann reaction. The normal findings as regards tests for labyrinthine function exclude vertigo of aural origin, in which condition consciousness is not lost. The absence of any history of tonus or clonus during an attack excludes an ordinary epileptic seizure of the grand mal type. There is no history of any digestive derangement which might form a basis for attacks of vertigo. His appetite is uniformly good, and is, indeed, above the average.

Historical Note

The term "laryngeal vertigo" was introduced by Charcot in the year 1876. It is a remarkable fact that few, if any, of the ordinary British medical textbooks even mention the condition, which would appear to be largely unknown to the present generation of clinicians. A possible explanation of the omission of this disease from current standard works might lie in the fact that Charcot's communications on the subject have not been included, so far as I can ascertain, in the English translation of his works published by the New Sydenham Society in 1889. In November, 1876, Charcot applied the term "laryngeal vertigo" to a series of cases which he communicated to the Société de Biologie.¹ In 1879 Decaisne² reviewed a case published by Gasquet³ in 1878 under the same title. This case is so closely similar to the one above described that it may be briefly translated and summarized as follows.

An admiral on half-pay, who had always enjoyed excellent health, at the age of 70 developed a severe bronchitis, with spasmodic cough and attacks of dyspnoea occurring several times a day. At this time he became subject to seizures, of which he gave the following description. He would suddenly lose consciousness and fall to the ground. At the end of two or three minutes he would recover, but remain for some time in a dazed condition (*étourdi*). The attacks were restricted to these phenomena without accompanying convulsions or crises. The patient was treated successively for a cerebral condition, for epilepsy, and for vertigo of gastric origin, without success. At the end of a certain time he noted that the attacks, which returned at very irregular intervals, were always preceded by an irritation of the larynx and by a spasmodic cough, although an attack did not constantly follow these symptoms. He therefore decided to have his larynx "seriously attended to." This was followed by the complete disappearance of the attacks, the patient remaining in good health for a period of nine months.

Decaisne commented on the similarity of this case to the cases described by Charcot. In one of Charcot's patients⁴ the attack was always ushered in by a tickling sensation situated a little above the larynx and accompanied by a short soft cough. Suddenly the patient would lose consciousness and fall. During the attack onlookers noticed that the face became cyanosed and he developed convulsive movements of the face and one arm. The tongue was not bitten, and bladder control was retained. The attack was of very short duration, and at its termination the patient would rise up without mental confusion and continue his conversation in a consecutive fashion. On each occasion the attack of unconsciousness was preceded by a tickling sensation in the larynx and by a cough. The attacks of coughing were not invariably followed by loss of consciousness, the patient experiencing a sensation of giddiness, which he was not able to define clearly, but which did not cause him to fall to the ground. Charcot was inclined to think that in these cases the starting-point of the sequence was an irritation of the afferent nerves of the larynx, and he regarded the condition as being analogous to the vertigo of Ménière's

disease. He prescribed cauterization of the pharynx with nitrate of silver, and counterirritation to the front of the neck. He also recommended the administration of potassium bromide in large doses, with apparently successful results. In the same year Sommerbrodt⁵ described the case of a man of 54, who suffered from epileptiform seizures with laryngeal symptoms. The recognition and removal of a laryngeal polypus was followed by clinical recovery. In Charcot's series a sensation of tickling or burning in the larynx or the upper part of the trachea, accompanied by cough, always preceded the fall and loss of consciousness. Convulsive movements in the face or in one or more limbs were frequent.

Bourneville,⁴ in a review of the cases published by Charcot, Gasquet, and Decaisne, regards the condition as similar to epilepsy, with a laryngeal aura. He regards it as "a more or less direct consequence of laryngo-bronchial affections developed under the influence of trivial causes." In conclusion, he expresses the opinion that laryngeal vertigo is not a definite entity, and suggests that future investigations might include experimental stimulation of the superior laryngeal nerve in animals.

It is also a noteworthy fact that subsequent references to this condition in the literature are almost entirely limited to the last century.

Review of Twenty-seven Cases

One of the most important contributions on the subject is an article by De Havilland Hall.⁶ The author has collected twenty-seven cases, previously recorded by Lefferts,⁷ McBride,⁸ Dauvin,⁹ Cartaz,¹⁰ Huguin,¹¹ Garel,¹² Massei,¹³ Knight,¹⁴ Weill,¹⁵ and Armstrong,¹⁶ and adds one case observed by himself. In twenty-one of his twenty-seven cases the sex is stated, and it is a remarkable fact that, in all but two, men were attacked. The condition almost exclusively affects middle-aged patients. Granular pharyngitis, enlargement of the tonsils, and chronic laryngeal or bronchial catarrh are mentioned as the conditions most frequently associated.

The exact nature of the attack, De Havilland Hall states, has not been definitely settled. He mentions a congestive condition of cerebral vessels consequent on coughing. He quotes Massei, who regards it as an epileptic equivalent produced by irritation of the vagus. Charcot considered the term "laryngeal vertigo" should be restricted to cases in which the loss of consciousness appears independently of the passive congestion brought about by the cough, a limitation which applies to the case described in the present article. Krishaber makes use of the term "spasm of the glottis of adults" in describing the condition.

Further review of the existing literature reveals a diversity of opinion as regards the exact nature of this syndrome. Buzzard¹⁷ states that laryngeal vertigo is a very rare condition, and that the trouble may be of an epileptiform nature. McKenzie¹⁸ regards it as a group of symptoms obviously related to epileptic petit mal. Thomson¹⁹ refers to atmospheric conditions and tobacco smoke as precipitating causes. Jackson Coats²⁰ regards it as representing a spasm of the larynx transitional between a sensory and a motor neurosis, and emphasizes that attention must be paid to any reflex source of irritation. He also adds that it must be differentiated from the marked laryngeal spasm of whooping-cough. W. L. and H. C. Ballenger²¹ regard the condition as a neurosis, and quote Getchell as having collected seventy-seven cases, of which all but four were males. Negus²² states that laryngeal vertigo is ascribed by various observers to the slowing of the circulation, and quotes the following references: Hunt,²³ Hunter,²⁴ McBride.⁸ He states that persons with weak hearts are especially liable to the condition, and may die from it. In discussing the effects of

increase of intrathoracic pressure, resulting from prolonged coughing, he quotes Starling²⁵ as follows: "Weber showed that by a forcible expiration with the glottis closed the pulse might disappear at the wrist, and the circulation be brought for a time to a standstill, so that even loss of consciousness might supervene."

Allbutt and Rolleston²⁶ also quote McBride as explaining the phenomenon by the act of closing the glottis, with the resulting intrathoracic pressure changes causing syncope or a tendency to syncope. Relief would follow relaxation of the spasm. While this would seem to be a reasonable explanation of the sequence of events in some instances, it certainly is not applicable to cases of the type described in the present paper, where the coughing was unaccompanied by dyspnoea and cyanosis.

Analysis of Cases

On considering the cases previously described they would appear to fall into three groups. In the first group one would place those cases in which coma follows severe and prolonged coughing, accompanied by extreme distress and dyspnoea.

In the second group might be included cases with a laryngeal aura followed by coma and clonic movements of the limbs and other accompaniments of an epileptic fit.

In the third group we have cases of the type described in the present article, where a slight attack of coughing, preceded by a tickling sensation in the larynx, is followed by momentary coma without clonic movements of any kind.

It would appear, therefore, that laryngeal vertigo is not a definite clinical entity. The tickling sensation in the larynx seems to be a common factor. The associated conditions of minor abnormalities are numerous and variable.

It seems improbable that the clinical incidence of seizures of this type is so rare as a review of the literature might suggest. The important point has to be considered as to whether attacks of this nature may not be occasionally the cause of death by drowning. The most frequently accepted explanation of such accident is the occurrence of cramp, of which there is often no direct proof and which, by itself, is not likely to be the cause of death in an experienced swimmer. It would seem to be not impossible that the involuntary inhalation of a few drops of cold water in the larynx in susceptible persons might cause, under such conditions, temporary loss of consciousness with resulting loss of life.

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