A Lecture

ON

CANCER OF THE TONGUE.

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BY

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LABORATORY research has so far failed to discover the immediate cause of cancer, though it is generally agreed that some form of irritation is an important factor in starting the changes that evolve in malignancy. These sources of irritation, often obscure, vary from case to case and from organ to organ. But in cancer of the tongue we have a definite group of mediate factors that arrest attention, and these consist primarily in syphilis, and secondarily in the superadded effects of minor irritants. Various figures are given by clinical observers regarding the frequency of syphilitic histories in cases of lingual cancer. To obtain a history or admission of syphilis is not always an easy matter, and the closest inquiry and most tactful cross-examination are often required. Too much reliance must not, therefore, be placed in the correctness of the routine hospital notes, for in many cases the patient has either forgotten the past trouble or has attached no importance to it, and one is apt to overlook the fact that not infrequently the primary sore and concurrent symptoms may disappear after a comparatively short course of treatment, and the disease may lie dormant only to break out in less tractable forms many years afterwards.

Histories obtained from women, too, are often most unreliable, for they may have been unaware of the nature of the disease, although they have been treated for actual manifestations. Here the tale of repeated miscarriages may be the only suspicious information available. Some years ago I collected figures of the history of syphilis in cases of cancer of the tongue under my care. It worked out at over 80 per cent., and seems to be conclusive as to the intimate association of the two diseases. It was held by neurologists—an opinion that in view of recent investigations has almost become a certainty—that without syphilis there would be no tabes. I should not care to go so far as to say that without syphilis there would be no cancer of the tongue; but certainly if there were no syphilis the numbers of the latter would be vastly diminished. This opinion has been forced on me as the outcome of clinical observation on the cases I have seen during several years at the Cancer and the Lock Hospitals.

Lingual cancer is a common sequela of syphilis, more common than locomotor ataxia and much more selective than the latter of the male sex. Its frequency with regard to sex is as 8 to 1, whilst the incidence of syphilis alone, judging from our experience at the Lock Hospital, might roughly be considered as ten times more common in males than in females.

How is it that there is such a striking relationship between syphilis and cancer of the tongue? Syphilitic lesions of the tongue are of very frequent occurrence, and they lower the resisting power of the organ, rendering it vulnerable to irritation of all kinds. The primary sore may occasionally be found there, mucous plaques of the secondary stage are by no means uncommon, but it is specially to the later or tertiary lesions that dangerous

sequelae ensue. These tertiary lesions occur not only in cases of neglected or insufficient treatment, but also where the most rigid mercurial treatment has been carried out. By no means do all cases of syphilis even obstinate or very chronic, exhibit tongue lesions, and women appear to be peculiarly exempt from them. Why should this be so? There must be some connecting link between the primary infection and such lesions, and that connecting link is long-continued irritation. Correlated with the high percentage of syphilis in the histories you will find that an equally large number have been smokers and very heavy smokers. To a person in normal health tobacco smoking is not a source of irritation of the tongue, and much as I should sympathize with a patient deprived of the solace of "my Lady Nicotine," I am convinced that were the use of tobacco discontinued from the onset of symptoms of syphilis until when, after thorough treatment, the Wassermann reaction is and remains negative, tertiary manifestations in the tongue would almost cease to exist, and cancer of the tongue would be amongst the rarities of our experience. Alcohol has come in for a good deal of abuse (and I use the word "abuse" in all its senses), and though when taken to excess it intensifies the evils of syphilis yet it is of little moment in determining these chronic lesions. Thus we have syphilis as the primary factor in producing vulnerability of the tongue, and tobacco further acting as an irritant on the abnormal organ, with the resulting production of chronic lesions that in themselves are to be regarded as, and indeed are generally nothing else than, precancerous conditions.

As the result of long-continued irritation there is first a thickening of the surface epithelium, perhaps in more places than one, producing the white patches that characterize "smoker's tongue." At first pearly grey in colour, they become denser and more pronounced as the result of further irritation. The cornification of the epithelium progresses. In the course of time it spreads over the tongue, the epithelium and papillae at some parts concurrently atrophying

Fig. 1.—Small ulcer of tongue, showing proliferation of epithelium down into fissure. Enormous round-cell infiltration. Islets of epithelium on base of ulcer.

and giving rise to bald, smooth areas amidst the thickening epithelium. Deeper in the tongue other changes are going on. There is round-cell infiltration beneath the mucous membrane, and the accompanying or subsequent cicatrization interferes with the vascular supply, producing the bald areas, and leads to puckering and fissuring of the surface. We see the surface of the tongue irregularly broken up with these fissures. Débris collects here and ulceration ensues. Unlike the normal organ, such a tongue is very irritable—irritable to the roughness of tartar or the edge of a dental plate. Smoking, spirit drinking, and hot condiments add to the irritation. Such a tongue is a source of danger, but the patient, becoming accustomed to minor annoyances, grows callous on the onset of ulceration, ready to endure, as best he can, his unfortunate lot. When fresh trouble breaks out—trouble which may be very serious—he pays little attention to it at first. If it be cancer, as it may quite well be, the cancerous ulcer, for some considerable time after its onset, not infrequently produces less pain and inconvenience than an ulcerated fissure or some other non-malignant lesion associated with chronic syphilitic glossitis. It is the old tale—familiarity breeds contempt.

Growing into the fissures, the epithelium dips down into a tissue robbed of resisting power, where it may take on malignant proliferating character (Fig. 1). Cancer once started tends quickly to extend to the deeper parts of the tongue, spreading out as it penetrates, its surface extent hiding its wider prolongations beneath (Fig. 2). The lymphatic glands become early infected, and, owing to the free anastomosis of lymphatic channels in the substance of the tongue, the lymph glands on both sides

of the neck are apt to be involved. It often happens that enlarged glands are found on the side opposite to the primary lesion. As the lingual growth advances, the tongue becomes more and more fixed, the loss of mobility renders articulation painful and difficult, swallowing is a matter of great difficulty, and saliva dribbles from the mouth. The increase in the size of the tongue may interfere with mastication and even with the closing of the mouth. The foul cancerous mass cannot be kept clean and the teeth

Fig. 2.—Cross section through a cancer of tongue to show small superficial ulcer and deep-spreading involvement of the muscles.

cannot be brushed. Usually there is very considerable pain and the necessity of taking nourishment becomes a penance. The condition of such a patient is harrowing; not only is he a pitiable object to his friends, but he is an offensive nuisance to those called upon to attend him.

DIAGNOSIS.

An early diagnosis of all forms of malignant disease is important, and in no situation more so than in the tongue, because of the great rapidity with which it spreads. When any doubt exists as to a particular lesion, the part ought promptly to be excised and examined microscopically. Valuable time should not be wasted in attempting to solve the nature of the trouble by the Wassermann reaction or by therapeutic tests. A positive Wassermann reaction proves only the presence of the syphilitic taint, and does not exclude carcinoma; and as most cases of cancer of the tongue supervene on syphilis, we find, as a matter of fact, that where there is an indubitable cancer the reaction is very frequently positive. It is, therefore, valueless in this case. Unfortunately, too, antisiphilitic treatment is too often resorted to in order to settle the diagnosis. The practitioner coming across a suspicious lesion, and perhaps influenced by the admission of previous syphilis, is apt to conclude that it may, after all, be only a tertiary manifestation; and if it does show signs of improvement, his conclusion is fortified. He loses sight of the fact that both syphilis and carcinoma not infrequently coexist in the tongue. The patient may probably express the opinion that the treatment is improving the condition, and his medical attendant, noticing himself the unmistakable change for the better, is apt to conclude that with perseverance a cure is in sight. Alas for fond hopes! I have been led astray myself by seeing a large lesion of the tongue apparently clearing up under iodides, only to wake up to the fact that it was a case of epithelioma grafted on to a large syphilitic ulcer, and that while the latter was cicatrizing and healing the former had been growing apace. My experience is that practically all epitheliomas of the tongue become cleaner and appear to undergo a change for the better under iodides, and more especially so after an injection of salvarsan.

Whether we shall have a sero-diagnostic method for cancer is a question for the future, but until it arrives and proves to be reliable my advice is, waste not a day, but have a portion excised and submitted to a pathologist. It cannot be resorted to too early. If the suspicious lesion is small, it can be wholly excised, but where it is comparatively large a portion from the edge of the most suspicious part should be removed, but it must be of sufficient size and, above all, of a good depth. Shavings are useless to the pathologist.

Cancer of the tongue is generally developed after the age of 40. The most common situation is the margin of the tongue, sometimes the dorsum, and occasionally the tip. Most of the lesions are in the anterior two-thirds. Sometimes the frenum and floor of the mouth are the sites of the origin. Usually there is concurrent evidence of syphilitic glossitis. When epithelioma occurs on the dorsum it arises frequently in a breaking-down gumma.

Epithelioma commences in a variety of abnormal conditions, such as in a wart, a fissure, a chronic ulcer, nodule, etc., and it is obvious that under these conditions it has no definite characteristic feature. Only the microscope will reveal the malignant change. But when well established, there are two main forms in which it manifests itself, the ulcerating form and the pseudo-papillomatous form. The ulcer is an indurated infiltrating sore

with raised and sometimes undermined edges and very hard base; in its early stages, when it occurs in a fissure, it has no peculiar characteristics beyond that of an ulcer that refuses to heal, with perhaps a slight suspicion of infiltration. The pseudo-papillomatous form is characterized by the appearance of a slight raised flat patch of crowded warts; and though in its early stages, at least, it may be less infiltrating than the ulcerating type, yet it is hard and indurated. The lesions that may cause difficulty in diagnosis are simple ulcers and breaking down gummata. In the case of the former there will be evidence of irritation from the sharp edge of a tooth or a stump, and the induration and infiltration that characterize a carcinoma will be absent. A breaking down gumma is generally found in the dorsum of the tongue, and is characterized by a very deep, almost punched out, ulcer with marked induration but with a septic, sloughing base. Great stress is laid on the tuberculous ulcer in the textbooks. It is, as a matter of fact, exceedingly rare, is generally far back on the tongue, and is invariably secondary to tuberculosis elsewhere.

TREATMENT.

(a) *Preventive.*—As I have already pointed out, tobacco is dangerous in all cases of syphilis, and its use ought to be prohibited, in my opinion, in every case of syphilis, and certainly on the slightest appearance of leucoplakia of the tongue. Syphilitic lesions of the tongue should have thorough treatment, and are most successfully dealt with by the combined administration of calomel and salvarsan injections. Treatment should be continued until the Wassermann reaction is negative and remains so after six months. Leucoplakia is not amenable to treatment, and is, perhaps, best left alone. All chronic tertiary lesions should be kept under observation and all sources of irritation should be removed. This entails the removal of carious stumps and rough edges of teeth, careful brushing of the teeth, and attention to the general hygiene of the mouth. The prolonged use of strong, stimulating applications is a mistake. The frequent application of some bland antiseptic is indicated, and boroglyceride is as good as anything else. It is advisable to excise any chronic ulcer or papilloma that refuses to yield to treatment. I should not hesitate to recommend excision of the tongue in the case of a very extensive chronic syphilitic lesion that remains unamenable to antisiphilitic remedies. It is important to keep cases under observation, as early malignant disease may thus be detected. I have watched several cases of syphilis in which malignancy has supervened and has been discovered at an early stage.

(b) *Radical.*—The spread of the disease is always more extensive than clinical examination would lead one to believe. The glands are early involved. The situation of the primary focus does not determine the particular chain of glands or even the particular side that may first be involved. Deviation of the tongue on protrusion or impaired mobility is a sign of the spread of the disease, though unimpaired mobility is no guide as to the extent. My last case, for example, had no impairment of mobility, yet the spread was very extensive. Enlargement of the glands in the neck always adds seriously to the outlook, but I do not regard the enlargement of the submental glands with the same amount of gravity as I do those of the carotid group. In all cases it is necessary to remove the lymphatics, fat, and fascia in the anterior triangle on both sides of the neck. The complete removal of the tongue, together with the dissection of the neck on both sides, entails a very serious operation, attended by shock, and we are compelled, much against our ideas, to do the operation at two sittings, removal of the tongue and dissection of one side of the neck being done on the first occasion, and the other side of the neck being cleared out at a subsequent operation. It is a matter of difficulty to obtain a patient's consent to a subsequent removal of glands from the side of the neck not apparently involved, but I have seen patients who refused the double operation return later with involved glands on the untouched side.

I always advise complete excision of the tongue. Where the lesion is very minute a very wide removal might suffice, but the larger operation even then would be more ideal. With an incision carried from behind the angle of the jaw along the anterior border of the sternomastoid to opposite the sterno-clavicular articulation, and

another from beneath the tip of the chin to meet this at right angles, the anterior triangle is first cleared of the fascia, fat, and lymphatic glands belonging to the submental, submaxillary, inferior parotid, and carotid groups, taking care to prevent tearing of these glands, as otherwise cancer implantation followed by recurrent nodules, or, more frequently, widespread and rapid malignant induration of the whole side of the neck, might result. Drainage tubes are inserted before closing this wound, to remove blood-stained exudation or secretion from any of the salivary glands, or in case a communication be accidentally made with the oral cavity. Thereafter the mucous membrane of the floor of the mouth and the fraenum is divided, allowing of the tongue being pulled forward and the lingual arteries ligatured. The tongue is divided transversely as far back as possible and the mucous membrane of the floor of the mouth sutured over the stump. Preliminary laryngotomy is quite unnecessary, and is not adopted by us. The modified Trendelenburg position in which the patient is put at operation prevents blood entering the trachea. The patient is propped up in bed as soon as is possible; mucus is removed by swabbing; and nourishment is given by means of a rubber tube placed on the spout of a feeding cup and passed well into the pharynx, where swallowing is entirely a reflex action. As the healing of the wound progresses the patient is able to drink out of a cup. He is supplied with a writing block, and is forbidden to make attempts at speech. Gradually the scar tissue disappears and mobility of the floor of the mouth and the stump becomes restored, so that after the lapse of a fortnight articulation is possible and improves with time, finally approaching so near the normal that the uninitiated might not detect the loss of the tongue. You will hear from one of the patients here to-day, whose tongue I removed for cancer fifteen years ago, how perfect is this articulation. For the first week after excision of the tongue, partly as a result of the operation and partly from the enforced silence, the patient is apt to become very depressed, and I always advise getting him out of bed as soon as possible to sit in an armchair, as this cheers him up.

(c) *Palliative*.—In those cases which are beyond the stage of operation, where their life becomes a burden to them and their sufferings grow more acute, can nothing be done? I strongly advise removal of the tongue where it is possible, even when there is no hope of cure owing to the widespread glandular involvement. In many cases it may be removed even when the disease is far advanced, and with the aid of the cautery any suspicious foci of recrudescence can be attacked and the condition rendered vastly more satisfactory than if the disease had been allowed to pursue its course unchecked. Unless something is done to alleviate the patient's condition terrible suffering has to be endured. For a considerable time I have been endeavouring to carry out some sort of starvation treatment of the growth by avascularizing the part. The fact that the tongue is a fairly well isolated organ with a definite blood supply coming from the two lingual arteries seemed to hold out the hope that by ligation of these vessels avascularization would result, but I found that, owing to the free anastomosis between the various branches of the external carotid arteries, such a proceeding was attended with but little success. Further attempts by tying the external carotids did not give any better results, and it is, in fact, impossible by mere ligation to cut off the blood supply anywhere in the carotid area. Dawban suggested the injection of the vessels with a paraffin preparation of a melting point somewhat higher than body temperature. This I have adopted on several occasions. The method indubitably accomplishes more complete avascularization than ordinary ligation. It causes shrinking of the part, the ulceration becomes less foul, contrary to what one would expect, but the great benefit derived from it is the marked alleviation of pain. In one case, where there was extensive recurrence in the stump of the tongue and the floor of the mouth and where the disease had spread to the anterior pillar of the fauces and the right side of the pharynx, the whole affected area cicatrized over and the disease seemed to have disappeared. It, however, recurred on the side of the pharynx a year afterwards. I cannot recommend paraffin injections as a routine method, as they appear to be not wholly free from risk.

CONCLUSIONS.

The lessons to be learnt are: Wide removal in definite epithelioma; microscopic examination of suspicious lesions; the avoidance of tobacco by those who have syphilitic lesions of the tongue; and radical treatment of all syphilitics till serologically they are pronounced free.

The thorough treatment of syphilis would wellnigh abolish cancer of the tongue.

ENUCLEATION OF TONSILS AND REMOVAL OF ADENOIDS UNDER GAS ANAESTHESIA.*

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By enucleation of the tonsil I mean the complete removal of the circumscribed mass of lymphatic tissue lying between the anterior and posterior faucial pillars, together with its capsule.

The earlier operations on the tonsils were directed chiefly towards the removal of the redundant mass of tissue which projected beyond the pillars of the fauces, leaving the tonsillar base and capsule *in situ*. Such tonsils gave rise to some mechanical obstruction, associated with occasional inflammatory attacks, and these constituted the indications for their amputation.

With the evolution of the view, as to the part played by the tonsils as a path of entry for local and systemic infections, came more vigorous attempts at their removal as a whole, greater importance being attached to septicity than to size. These attempts were more or less successful, but no surgeon could state with any degree of tolerable certainty, when about to operate, that he would be able to remove the gland with its capsule completely, except in a limited number of medium-sized, compact, and firm tonsils, until the method of enucleation by dissection was introduced.

This method is a certain and efficient one, and in the hands of its advocates has been used frequently to enucleate the portion of the glands which the older method failed to remove, and with decided benefit to the patients.

Any operator with a fair degree of dexterity can soon master either or all of the various types of technique used in this method, but there are certain essentials of the operation which stand in the way of its popularity. This applies particularly to the depth of chloroform anaesthesia required, which is always a source of anxiety to surgeon and anaesthetist; and, indeed, many of the latter dislike pushing the anaesthetic to such a degree. Partly on account of this difficulty with the anaesthetic, and at the same time recognizing the value of complete removal, surgeons have latterly turned their attention to perfecting some method of enucleation by tonsillotomes.

To Greenfield Sluder of St. Louis belongs, I believe, the credit of having first originated the idea of applying the tonsillotome by its outer aspect to the tonsil, whilst laying special emphasis on the sliding of the tonsil on to the alveolar projection of the lower jaw, to facilitate pushing the gland through the ring of the instrument. Sluder's idea has been considerably modified by some surgeons in this country, notably Pybus and Whillis of Newcastle and Peters of London. The points which, in my opinion, are of most importance, and my reasons for specially emphasizing some of them, will probably be best conveyed by giving a description of the whole of the method and the technique which I adopt at the Evelina Hospital for Children, where an average of about thirty cases in a morning have to be operated on.

1. Preparation of the Patient.

If the patient has any decayed teeth the help of the dentist is sought to get the mouth into good condition. It is obviously bad surgery to operate in the presence of manifest sepsis, in the absence of urgency. The bowels are cleared out the day previous to operation, and on the

* Read before the Dartford Division of the British Medical Association.