CHART I.—Showing haemoglobin estimations. The black line shows lower limit of normal. CS = congenital syphilis. M = meningitis. B = bronchopneumonia. P = Pyelonephritis. CHD = congenital heart disease.

CHART II.—Showing red cell estimations. The black line shows lower limit of normal. M = meningitis. P = pyelonephritis. BP = bronchopneumonia. A = septic arthritis. N = nephritis. B = bronchiectasis. C = congenital syphilis.

part the readings fall within the range of the physiological, and therefore do not suggest any great incidence of anaemia of a nutritional or any other variety.

Red Cell Count

In Chart II the red cell estimations are represented in the same manner as were those for haemoglobin. The continuous line delimits the lower range of the physiological according to Hutchison (1909) and Holt and McIntosh (1933), and thus it is only those readings which fall below this level that can be taken as evidence of anaemia. The red cells show the same general behaviour as the haemoglobin—a fairly wide variation, a high initial value, and a fall during early infancy with a later recovery, which is continued throughout childhood. In the case of the red cells, just as was noted with regard to the haemoglobin, the great majority of the figures fall within the range of the physiological. And again, the majority of anaemic readings are during the first months of life, although an occasional slightly subnormal value is observed at every period of childhood. But it will be noted that for the most part these low readings were found in examples of severe toxic conditions, in which a more probable aetiology is seen than in that of a deficient iron intake. Another feature deserving comment is the parallelism between the haemoglobin and red cell estimations, a fact which by itself militates against any idea of nutritional anaemia.

Conclusions

1. Examination of the blood of the sick child in the East End of London reveals for the most part normal haemoglobin and red cell values.
2. Anaemia when present during infancy is most frequent during the first three months, and is probably the result of congenital causes or of haemorrhage at birth.
3. Anaemia occurring during later infancy and childhood is rare, and, when present, is probably the result of toxic conditions.
4. There is no evidence from the section of the population studied that nutritional anaemia is common.

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DIAGNOSIS OF MALIGNANT DISEASE OF THE PHARYNX

BY

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It is now about a quarter of a century since the technical difficulties of the surgical treatment of cancer of the pharynx were solved. The chance of cure which lateral pharyngotomy holds out might have been expected to stimulate interest in the early diagnosis of this common form of malignant disease. It is a fact, however, that recognition of these growths in their early stages, upon which any successful application of surgical excision depends, is still a rare event.

Before describing in detail the symptoms of carcinoma of the pharynx there are two points which I wish to emphasize. The first is that the early symptoms of this disease are trivial in nature, but although superficially resembling trivial symptoms of less significance they have certain peculiarities which should always arouse suspicion of malignancy. The lack of familiarity with these early symptoms is doubtless largely due to the overwhelming nature of the major symptoms which always supervene sooner or later. The patient with severe dysphagia, urgent dyspnoea, or continual pain is unlikely to dwell on the minor disturbances which preceded them, and in the presence of an obvious case of malignancy there is little temptation to the busy practitioner to probe into the past history.

The second point is that in the majority of cases, when symptoms first appear, some abnormality can be seen by

indirect laryngoscopy: it is in a wider use of this simple method of examination that there lies most hope for an improvement in diagnosis. The use of the laryngeal mirror is not the prerogative of the specialist, nor for the purpose with which we are concerned does it require the specialist's skill. In what follows the elaboration of these two points will be my chief object.

Distribution

The tumours which I have chosen to discuss fall within the anatomical limits of the epiglottis above and the lower border of the cricoid cartilage below. Those above the epiglottis do not present the same difficulties in diagnosis, being, with the exception of the nasopharyngeal, accessible to direct examination. Within these limits the vast majority of malignant tumours are squamous carcinomata. In the oropharynx and nasopharynx the pathology is more varied, and many of the tumours are of lymphatic origin. Below the epiglottis there is little lymphoid tissue in the pharyngeal wall, and tumours arising from it are very rare.

Squamous carcinomata of the region defined fall into well-defined groups according to the sites at which the neoplasm starts, and it is one of the peculiarities of the disease that these groups have a very definite sex distribution. These sites are: (1) the epiglottis, (2) the aryepiglottic fold, (3) the lateral wall, (4) the pyriform sinus, and (5) the post-cricoid region. For convenience the first four are grouped together as epilaryngeal; the fifth is often referred to as hypopharyngeal.

The epilaryngeal cancers occur almost exclusively in men, the hypopharyngeal exclusively in women. A further difference between them is that the hypopharyngeal tend to occur about ten years earlier than the epilaryngeal. The anatomical distribution of 100 consecutive cases seen at this hospital in the years 1926-35 inclusive is shown in Table I, the age distribution of the same series in Table II.

TABLE I.—One Hundred Consecutive Cases of Carcinoma of the Pharynx

(Period of observation: Ten years—1926-35)

Sex.	Total Cases.	Epilaryngeal.	Post-cricoid.
Male ..	70	70	None
Female ..	30	1	29

The epilaryngeal group includes tumours of the epiglottis, the lateral wall of the pharynx, the aryepiglottic fold, and the pyriform fossa.

Symptomatology

The symptomatology of the disease may conveniently be considered under the two main groups defined above. It is not necessary to consider separately the four types in the epilaryngeal group. Their differentiation is important to the surgeon, but of no moment in diagnosis.

EPILARYNGEAL GROUP

The commonest early symptom in this group is a persistent abnormal sensation in the throat, which is variously described; it may be a sore throat, a tickle, a feeling of a lump, or a little pain on swallowing. Whichever of these it be, there are two features that should arouse suspicion of malignancy. The first is that the patient is able to locate the sensation to a definite part of the throat, and the second is its persistence. Sometimes the symptoms start with the supposed arrest of a crumb or small bone in the throat, and the patient complains that his throat feels as if the foreign body were still present. Too often, of course, the patient himself decides that nothing serious is wrong, and neglects to consult his doctor until more urgent symptoms develop, but this failure to attach

due importance to these sensations is by no means confined to the patient.

Next in frequency among the initial symptoms is the presence of enlarged glands in the neck; this type of case will be considered later. Another symptom that may be present early is some interference with the voice. The presence of the tumour may alter the resonance of the voice, or it may infiltrate the arytenoids and limit the movements of the cords.

TABLE II.—Age Incidence of 100 Cases of Cancer of the Pharynx

Sooner or later dysphagia occurs, and at the time of admission this is most commonly the dominant symptom. In some of our case histories dysphagia is the first symptom noted, but it is doubtful whether it ever occurs without any preceding abnormal sensations. I have already mentioned the tendency to overlook minor symptoms when the major have supervened.

POST-CRICOID CARCINOMA

In the history of the typical case of post-cricoid carcinoma there are two features which, if their significance were realized, would always arouse suspicion of malignant disease, but which unfortunately more often have the reverse effect of allaying such suspicion. The first is that the patient says that she has for many years, sometimes all her life, had some slight difficulty with deglutition. This all too often makes one suspect the patient of hysteria, whereas it is a most important indication of the possibility of post-cricoid cancer. The second is that, when other symptoms are added, they are at first intermittent. Perhaps the patient has a sudden difficulty during one meal with a fit of choking or a sensation of a bolus sticking in the throat, and then no more trouble for a week or two.

The fact that the dysphagia is a single incident, or appears as a few such incidents separated by intervals of freedom, is very likely to lead to its dismissal as something trivial. So important do I regard this combination of symptoms that I consider a single serious attack of dysphagia in a patient with a long history of slight difficulty to be an indication for a thorough examination, if necessary including oesophagoscopy.

In the later stages dysphagia of a persistent type becomes the dominant symptom, overshadowing all others. Owing to the position of the growth obstruction to the passage of saliva is usually a prominent feature when real dysphagia begins. The saliva collects in a pool behind the arytenoids, and has frequently to be coughed up because it tends to overflow into the larynx. I shall refer again to the importance of the pool of saliva in laryngoscopy.

Interference with the movements of the cords is common in this type, and sometimes a change in voice is the first symptom for which the patient seeks advice. Another symptom that may occur early is a little pain and tenderness in the neck, due presumably to extension of the growth outside the pharynx.

Common to both groups, and in our series more frequent in the epilaryngeal, is the occurrence of glandular enlargement as the first symptom. Any patient at or past middle age who develops enlarged glands in the neck should be suspected of malignant disease. The teeth and tonsils seldom give rise to such enlargements for the first time in the second half of life. All too often, however, they are held responsible and removed. In a case of carcinoma of the pharynx this is a most unfortunate error, since the elimination of oral sepsis always improves the condition of the pharynx and, if the growth is latent, diagnosis will be further delayed.

There can be no doubt that sepsis plays an important part in the evolution of a pharyngeal cancer, and its aggravating effect on the symptoms is such that the chances of early diagnosis are much greater when it is present than when the mouth is clean. Moreover, so dramatic may be the improvement after its elimination that no case can be dismissed as inoperable on the local signs in the pharynx before the teeth have been extracted. It is perhaps unfortunate that the majority of women who develop post-cricoid carcinoma are edentulous. It may well be for this reason that, when symptoms first occur in this type, the growth is often surprisingly large.

Some indication of the relative frequency of the symptoms enumerated is given in Table III. It must be understood that these data are taken mostly from students' case histories written with no special knowledge of the disease, and often all too brief.

TABLE III.—*One Hundred Cases of Cancer of Pharynx*

First Recorded Symptoms:

Abnormal sensations in the throat: males 30, females 13.

Sore throat.
Pricking sensation.
Intermittent soreness.
Dry throat.
Relaxed throat.
Tickle in throat.
Roughness in throat.
Pain on swallowing.
Pain in tonsil.
Excess of phlegm in throat.
Feeling of a lump in throat.

Enlarged glands: males 22, females 1.

Dysphagia: males 10, females 11.

Hoarseness: males 7, females 1.

Dominant Symptom on Admission:

Dysphagia: males 32, females 25.

Stridor: males 4, females 1.

Diagnosis

I shall refrain from any systematic account of all the possible manifestations of carcinoma of the pharynx, since I am only concerned with the early diagnosis of the disease. If a patient seeks advice for any of the symptoms enumerated previously it may be possible sometimes from palpation of the neck alone to decide that the patient is suffering from malignant disease. In most cases, however, this is not possible, and there is only one method that is readily available whereby the significance of the symptoms can be determined—namely, indirect laryngoscopy. It follows that every patient who has a persistent or recurrent abnormal sensation in the throat should be examined with the laryngeal mirror. In the majority of cases when symptoms first appear there will be some visible abnormality.

I have already mentioned that no great skill is necessary to detect the signs of carcinoma of the pharynx with the laryngeal mirror. In every clinical examination, however, it is useful to know what to look for, and laryngoscopy in these cases should be performed, with certain possibilities in mind. The abnormalities that may be found are as follows.

1. *Ulcer or Tumour.*—The site and extent of the lesion is unimportant; a single glimpse is all that may be necessary to show that a growth is present.

2. *Swelling of the Arytenoids.*—The mucous membrane over these structures is very sensitive to circulatory disturbances and readily becomes swollen in the presence of adjacent growth or sepsis. If the arytenoids are swollen it indicates organic disease, and it does not matter in the first instance if the growth cannot be seen.

3. *Alterations in the Movement of the Arytenoids.*—The arytenoids may be fixed by infiltration or by recurrent nerve palsy. They are much easier to see than the vocal cords, and in a difficult case it is much better to study their movements than to struggle for a glimpse of the larynx itself.

4. *Abnormal Accumulations of Mucus or Pus:* (i) in the pyriform fossa, and (ii) in the hypopharynx.—These two parts of the pharynx must always be examined during phonation, which opens up the recesses and may reveal abnormalities not visible with the larynx at rest.

It is not possible to see the whole pharynx in a single field of vision, and it is therefore necessary to tilt the mirror to examine in turn the epiglottis, the arytenoids, and aryepiglottic folds, the lateral and posterior walls, the pyriform fossa, and the hypopharynx. Phonation is necessary to show the movements of the arytenoids, and to open up the pyriform fossae and hypopharynx.

In the epilaryngeal group an ulcer or tumour can usually be seen, except in the early pyriform cases. In these the only abnormality may be an accumulation of muco-pus in one pyriform sinus, or oedema or limitation of movement in the adjacent arytenoid. In the post-cricoid group three stages may be recognized with the laryngeal mirror. In the first there is an accumulation of mucus or muco-pus behind the arytenoids; in the second there is, in addition, some oedema of the arytenoids; in the third the edge of the ulcer is seen projecting from the pool of mucus. At any stage limitation of movement of the arytenoids may be observed.

It is not to be supposed that indirect laryngoscopy solves all diagnostic difficulties in cases of carcinoma of the pharynx; it will seldom fail, however, to reveal some abnormality. It is a great responsibility to decide whether further investigation of a case with negative findings is necessary. But if there is a reasonable suspicion of malignancy it should not be dismissed until all possible methods of investigation have been employed. The only certain way to detect an early carcinoma of the hypopharynx is by oesophagoscopy, and it requires courage to insist on this when the patient's symptoms are still of a trivial nature. There is, however, no escape from the fact that this disease always starts with trivial symptoms, and our only chance of making early diagnoses lies in regarding every case of persistent or recurrent abnormal sensation in the throat as a possible example of malignant disease.

Since the practical applications of this principle will mean much extra trouble, both for the patient and for the doctor, it may well be asked whether there is anything to be gained by early diagnosis, whether in fact it would not be better to leave the patient in peace until his serious

symptoms develop. I can give you no dramatic statistics to confound the attitude of *laissez-faire*, but I can state and show by examples that the disease is curable by surgery.

The results of the application of surgery in the 100 cases of carcinoma of the pharynx is shown in Table IV.

TABLE IV.—*Operative Treatment in One Hundred Cases of Cancer of Pharynx*

Operable:

49 cases: 35 males, 14 females.

Radical Operations Completed:

25 males: mortality 9, alive 4.

14 females: mortality 7, alive 3.

You will see that the operability rate is fairly high, but it must be understood that "operable" in this hospital is a somewhat elastic term; many of those that were submitted to radical operation were really advanced cases. The fact that operation can occasionally succeed in apparently hopeless cases may be taken as an indication that the type of growth is not essentially very malignant. The mortality of the treatment is high, again partly on account of the advanced state of the disease in many

cases, but also on account of the severity of the operation. Seven of the hundred patients are alive as the result of surgical treatment alone, the longest interval since operation being ten years, the shortest eighteen months. Other cases in this 100 have been relieved by radiotherapy, but there are as yet no long-standing survivals as a result of this treatment.

These few successes show that these forms of malignant disease are curable by surgery. It has yet to be shown that any other method gives better results. But, whatever method of treatment is favoured, it will obviously have more chance of success if diagnosis is made early.

Summary

Cancer of the pharynx begins with trivial but characteristic symptoms.

A plea is made for closer investigation of minor disturbances of the voice and of swallowing.

Indirect laryngoscopy is the most useful method of examination in suspicious cases.

The disease is curable by surgical excision.

ULTRA-VIOLET IRRADIATION IN THE TREATMENT OF VARICOSE ULCERS, VARICOSE ECZEMA, AND VARICOSE VEINS

BY

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When taking charge of the light department of the St. John Clinic four years ago some ninety-two patients suffering from varicose ulcer and varicose eczema had been attending once or twice a week for over three years. Although they had regularly received local treatment with ultra-violet rays emitted from the tungsten arc their lesions did not heal. The technique of treatment was changed to methods which will be fully described, and after three months sixty-six of these patients were completely healed and discharged cured (72.5 per cent.).

Briefly the technique adopted included: (1) exposure of the ulcer and the skin area 1 to 1½ inches surrounding the edge of the ulcer to massive doses, equivalent to six erythema doses of rays, emitted from the quartz air-cooled mercury vapour lamp; (2) application of adhesive elastic bandages. The result of such treatment has been consistently successful. In past years many clinics and hospital out-patient departments have contained numerous patients attending regularly for long periods, months and years, for treatment of chronic varicose ulcer. Much tiring labour applying dressings was the task of nurses, doctors, and their patients. The difficulties of the economic "home conditions" and finance of these patients made the task of healing varicose ulcers and the hygiene of clean limbs almost impossible. Many such patients have to work for a living. The introduction of elastic adhesive bandages has been a great boon. The exposure to ultra-violet rays of wave-length shorter than 3,000 Angström units sterilizes the surface of the ulcerated area and augments the circulation; this promotes the healing and makes the surface wound inoffensive and free from unpleasant odour.

Technique of Treatment

The size and nature of the ulcerated area of skin is recorded by direct tracing over a piece of transparent

tissue paper with a dermatograph pencil. This tracing is transferred to a sheet of foolscap paper, and the area of unhealed skin is recorded week by week, so that observation as to the nature and rapidity of healing can be observed. The leg and ulcerated area is then cleansed with acetone and oil of eucalyptus. A piece of tissue crêpe paper is next applied to cover the whole leg. The paper covering the ulcer and the skin area surrounding this for 1 to 1½ inches is cut away, and pieces of adhesive strapping are applied to support the paper covering the healthy skin of the leg and foot. The ulcer area and surrounding skin is then exposed to the rays of the quartz air-cooled mercury vapour lamp at a distance of 12 inches for ten minutes. A vacuum type of quartz air-cooled mercury vapour lamp, consuming 2.5 amperes and 105 volts between the electrodes, is employed. This is equivalent to five times the erythema dose of the normal white skin.

Immediately after exposure the tissue paper is removed and an elastic adhesive bandage is tightly applied from the base of the toes, over the foot including the heel, and up the leg to the knee. The patient is instructed to keep the bandage clean but not to interfere with it in any way. It is kept on for one week, when the patient again reports. The bandage is then removed, the skin is cleansed with acetone, and the treatment repeated. Week by week the ulcer area becomes smaller and smaller until healing ultimately occurs.

It is indeed amazing to see the clean ulcer area exposed when the bandage is removed. Although this bandage has been left undisturbed for one week and covers a septic discharging ulcer, the surrounding skin remains clean, with no foul odour and no evidence of reinfection or undue inflammation. The use of elastic adhesive bandage has been of great help in augmenting the circulation, supporting varicose veins, and healing varicose ulceration. The application of erythema doses of ultra-violet rays is of much value in accelerating the formation of granulation tissue and stimulating the skin cells.

It is impossible to obtain a consecutive series of similar clinical types to make a critical comparison of the effect of elastic adhesive bandage alone and the added effect of exposure to ultra-violet rays. The exposure of varicose ulcers to ultra-violet rays in mild suberythema doses is of no avail; more intensive dosage equivalent to five skin erythema doses causes local inflammatory reaction, and