The Journal of
Laryngology and Otology

(*Founded in* 1887 *by* MORELL MACKENZIE *and* NORRIS WOLFENDEN)

May 1940

KERATOSIS PHARYNGIS

By GEORGE SWINBURNE (Melbourne)

KERATOSIS PHARYNGIS is an affection of the epithelium associated with the lymphoid tissue found in that area known as Waldeyer's ring, which includes the pharyngeal tonsil, the faucial tonsil, the lingual tonsil, the so-called lateral pharyngeal bands, and any outlying or lesser collection of lymphoid tissue in the naso-, oro- or hypopharynx; rarely, it even affects the lymphoid tissue lying in the region of the vocal cords of the larynx.

The condition is characterized by the presence of yellowish-white out-growths which may take many forms; sometimes they appear as horn-like projections of varying lengths up to 5 mm. (see Fig. 1). Longer ones are seen occasionally in sheltered positions. Less commonly they may appear as plâques, on the surface of the otherwise normal looking mucous membrane, or they may be seen in a crypt (see Fig. 3). They are, as a rule, painless and are usually discovered accidentally. Once discovered by the patient, they are prone to give rise to a varying degree of irritation, the most common complaint being of a pricking or tickling sensation.

Historical

At a meeting of the Berlin Medical Society held in 1873, B. Fraenkel showed a young man affected with a "benign mycosis of the pharynx". From the description this man apparently suffered from keratosis pharyngis. In 1884 Heryng

https://doi.org/10.1017/S0022215100005478 Published online by Cambridge University Press

wrote a paper on the subject recording six cases that he had seen in two years. He thought the leptothrix associated with the horny out-growths was causative, and suggested the name pharyngo-mycosis leptothricia.

In 1895 Siebenmann[1] proved what several observers had suspected, namely that the mycosis was only an associated condition ; he brought forward histological evidence to show that the fundamental pathological condition was a cornification of localized areas of the epithelium of the tonsillar crypts and he suggested the name hyperkeratosis lacunaris.

In 1896 A. Brown Kelly[2] in a classical article supported Siebenmann's hypothesis of a keratosis, but showed that the condition was really of much wider distribution and could affect the lymphoid tissues of the whole of Waldeyer's ring. He suggested the name keratosis pharyngis which has now been universally adopted for this affection. He also finally cleared up the confusion existing with regard to true mycosis pharyngis leptothricia, and described that condition, pointing out that it was quite distinct from keratosis pharyngis, although the confusion persisted in some later papers, including that of Max Toeplitz[3] in 1898. Wood[4] in 1906 confirmed Siebenmann's view.

In 1906 Logan Turner[5] recorded a case of keratosis confined to the larynx and noted that five cases had been reported up to that time. The writer includes one keratosis of the larynx in his collection.

Clinical Characteristics

(*a*) *Frequency.*

The condition is not very common, but probably it is often unnoticed because it is painless ; it apparently disappears after a variable time. When follicular tonsillitis and diphtheria have been excluded interest in the affection is often lost and its true nature unrecognized.

The author has seen 8 patients affected with the condition in two years since his interest was aroused by the first one, and can recall having seen about 8 others in the previous four years. In 1893 B. Fraenkel observed that he had seen nearly 100 cases in twenty years.

Brown Kelly's interest was aroused in 1893 by a patient who had an unusually large number of the keratoses on his pharynx and, although he kept a very careful watch during the

https://doi.org/10.1017/S0022215100005478 Published online by Cambridge University Press

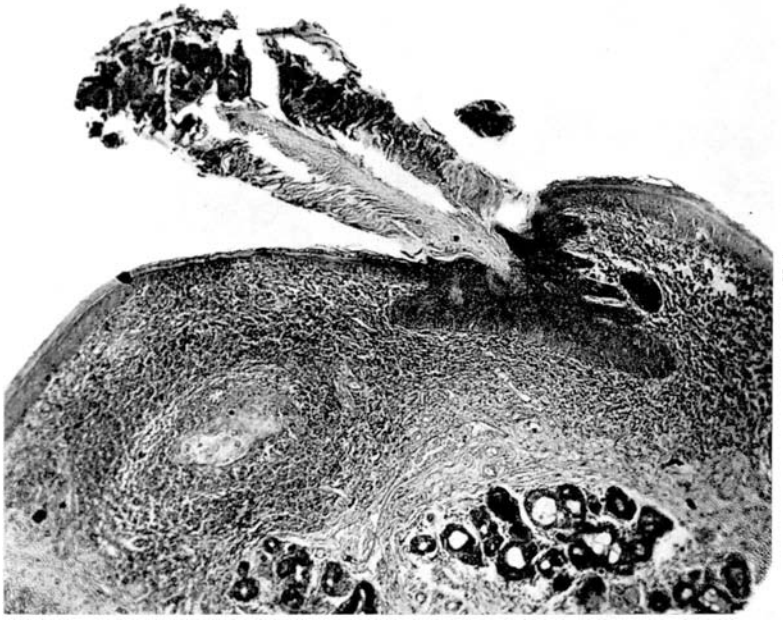


FIG. 1.

Lower power photomicrograph of horn-like outgrowth showing keratinous core with attached mycelia and organisms. Found on lymphoid nodule on surface of posterior pharyngeal wall. × 70.

[*face p.* 238

https://doi.org/10.1017/S0022215100005478 Published online by Cambridge University Press

https://doi.org/10.1017/S0022215100005478 Published online by Cambridge University Press

next three years and made a careful examination of all suspicious deposits on the tonsils and base of the tongue, he found only eight more.

Baginsky, an early writer, saw about 6 to 7 cases a year. Kelly, in a series of 130 found 52 males and 78 females. St Clair Thomson[6] states that the affection usually occurs between the ages of 15 and 40 years, but that it has been found in a patient aged 66 years. It is rare before puberty but Siebenmann found it in a child aged 8 years, Colin in one aged 11 years, and Baginsky in one aged 12½ years.

(*b*) *Etiology.*

Occupation does not seem to have a bearing on the incidence; it was once thought to be commoner in professional voice users, but this is not so. The majority of those affected were in 29 cases also once thought to belong to the private patient class. Garel found only 2 in his hospital practice. This has not been confirmed, the real reason for his figures probably being that the poor do not worry about the condition to the same extent. Keratosis pharyngis is now considered to be a metaplasia. It has been observed in two sisters three times by Wrobleski, Wright and Campbell, and in two room-mates by Mulhall. These, if genuine cases, would seem to the writer to be more than a coincidence. However, no details of causative lesions which may have caused the metaplasia in these cases are available, but it is possible that the infective focus responsible for the metaplasic change may have been transferred to another person in close contact, resulting in formation of keratoses in this person also.

Kelly mentions that Decker and Seifert recorded having transplanted the disease of " pharyngo-mycosis " but had not given any details of their methods. Kelly repeatedly tried to reproduce the condition in one of his own tonsils by implanting an excrescence in a large crypt under various conditions, normally, and after irritating the crypt by cauterization producing an inflammatory reaction, but all with negative results. Heryng could not reproduce it in rabbits. Jacobsen produced pure cultures of the leptothrix on sterilized slices of cooked potatoes, but a number of other observers were unsuccessful in obtaining pure cultures on a variety of media. The general health of the patients is usually good. The diets of the writer's cases were investigated to ascertain if there were

https://doi.org/10.1017/S0022215100005478 Published online by Cambridge University Press

any vitamin deficiencies, but this was not so in any case. This was done because there is some evidence that keratoses occur more frequently in the presence of a deficiency of Vitamin C. There is no evidence that indigestion or tobacco have any influence.

(*c*) *Site.*

Keratosis pharyngis occurs most commonly on the faucial tonsils and the base of the tongue but can occur anywhere in Waldeyer's lymphatic ring, usually in several regions at once.

Kelly, in 100 collected cases from the literature, found one or both tonsils affected in 98, in the other two only on the tongue, and he thought that even in these two cases the condition was passing off, and had affected the tonsils earlier. The base of the tongue was affected in 65, the pharyngeal wall in 26, the nasopharynx in 7, the glosso-epiglottic fossae in 3 and the ary-epiglottic fold in 1. Hopman, Schmidt, Wroblewski, and Moure have seen the epiglottis affected, usually on the laryngeal surface. J. Wright found excrescences in the nose in one case.

The keratoses are present on exposed parts only when the condition is extensive, and protected positions seem to favour their development. They occur more often in the tonsillar crypts and behind the faucial pillars, on the tongue between the circumvallate papillae and the epiglottis, and at the sides of the pharynx. The specimen in Fig. 1 was obtained from an isolated lymphoid nodule near a lateral pharyngeal band.

In the few recorded nasopharyngeal cases the roof or pharyngeal tonsil is the favoured area. It has been recorded several times on the Eustachian cushion (Schmidt, Garel, and Labit). Chiari saw it on the upper surface of the soft palate in one case.

The patient who aroused Kelly's interest showed affection of the pharyngeal tonsil, fossa of Rosenmuller, Eustachian cushions and upper surface of the soft palate. Kelly noticed that if the condition was very extensive on one tonsil the corresponding side of the tongue, if affected, is so to a more pronounced degree than the other side, and thought this possibly of etiological significance. The writer has also noticed this tendency to a greater affection of one side of the pharynx and tongue in some of his patients.

Logan Turner and others have reported a few cases of

https://doi.org/10.1017/S0022215100005478 Published online by Cambridge University Press

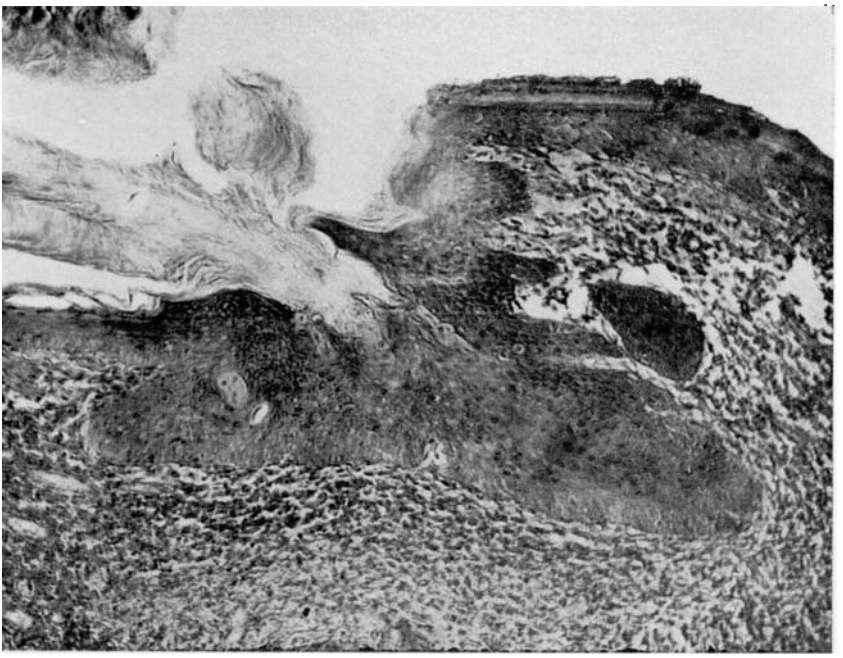


FIG. 2.

High power photomicrograph of base of horn showing hyperplasia of the epithelial layer with down-growths. × 240.

[face p. 240

https://doi.org/10.1017/S0022215100005478 Published online by Cambridge University Press

https://doi.org/10.1017/S0022215100005478 Published online by Cambridge University Press



FIG. 3.

Low power photomicrograph of keratotic horn found at the lower extremity of a deep tonsillar crypt, showing usual structure. × 70.

https://doi.org/10.1017/S0022215100005478 Published online by Cambridge University Press

https://doi.org/10.1017/S0022215100005478 Published online by Cambridge University Press

keratosis of the larynx, the condition being sometimes mistaken for a malignancy of this region; one such case (No. IX) is included in this series.

Pathology

Macroscopically keratosis pharyngis consists of the horny out-growths mentioned in the introduction, of varying sizes and shapes and occurring in the positions indicated. Colin grouped them as (i) the small pin-point excrescences which hardly project above the mucous membrane (see Figs. 4 and 5).

(ii) The more elongated out-growths of varying shape (see Figs. 1 and 3). These large ones if touched are found adherent, often breaking off short if an attempt is made to remove them. They have a central hard horn-like core which is covered by a softer outer layer. These are especially common in the base of the tongue, but also occur in the depths of tonsillar crypts (see Fig. 3).

(iii) The patches or plaques. These are nearly always in the crypts of the tonsils (see Fig. 8). The out-growths are discrete, unlike the pus points of follicular tonsillitis. The tissues around them are not reddened or inflamed. One or two large ones in tonsillar crypts may call for a closer examination to exclude a diphtheritic membrane (see Case No. II, appendix). Occasionally in a patient taking an iron or bismuth mixture the points may become black, and the exclusion of a pigment forming fungus may be necessary.

Microscopically—the microscopic pathology is seen typically in the commonest elongated out-growths (see Fig. 1). The horny projections have their base in a mass of lymphoid tissue. The writer has gleaned the following facts from his observations:—

At their point of contact the stratified squamous epithelium is hypertrophied, and masses of its cells pass deeply into the lymphoid tissue. From the centre of this hypertrophied mass a finger-like process of keratin-like material projects upwards usually at an angle. Surrounding this is a zone of soft bacteria consisting of mycelial threads and chains of cocci.

This formation is similar to that found in the keratinous filaments that form the hairs in black " hairy " tongue. The writer has brought forward evidence in the case of black " hairy " tongue to show that there is a metaplasic change in the squamous epithelium on the tips of the filiform papillae of

https://doi.org/10.1017/S0022215100005478 Published online by Cambridge University Press

the tongue ; a change to stratified squamous epithelium similar to that in the skin, where keratinization occurs in the superficial layers. This change to keratinization seems to cause the cells to adhere to each other, interfering with the normal shedding process, resulting in elongated keratinous filaments—which are the " hairs ".

In this case a similar change to stratified squamous epithelium similar to skin may be postulated, producing a localized area of keratinization and consequent adhering together of the cells over that area forming the horny outgrowth. The associated bacteria find the horny substance a suitable medium for growth. The writer was unable to prove to his satisfaction that the horny material was keratin, partly because of the small amount available for testing and partly because it is a matter of some difficulty to afford proof of the chemical character of keratin. This difficulty was also encountered in dealing with the filaments in black " hairy " tongue, but, here at least, the writer was able to prove that the " hairs " were not digested by active trypsin. This finding supports the hypothesis that they are composed of keratin, as do other features including staining characteristics.

If the two substances were of the same composition, one would think that the horny keratoses would be covered by similar organisms, and be pigmented more often, but the writer does not recollect having seen a case where they were pigmented, nor is there any report of such in the literature. They rather are definitely greyish-white or yellow. This is excluding cases where the tips are coloured from taking mixtures containing the heavy metals. In this connection it may be noted that Lebar in 1916 recorded the fact that he had seen " hairy " tongues which were not black but white or grey. The writer has seen parts of a tongue where the " hairs " were not pigmented but greyish-white, but not one where the whole of the hairs were not pigmented. This colour being due to associated bacteria, it may be that the pigment-forming leptothrix does not thrive farther back in the mouth than the anterior two-thirds of the tongue. Kelly repeatedly examined specimens of keratosis from the nasopharynx and always found that the leptothrix was absent ; this is also the case in many of those on the lateral pharyngeal wall. The writer was unable to examine any nasopharyngeal specimens because, as it happened, none were present in any of his eight cases.

https://doi.org/10.1017/S0022215100005478 Published online by Cambridge University Press



FIG. 4.

Low power photomicrograph of keratotic outgrowth removed from groove between base of tongue and lateral pharyngeal wall. Note constriction produced by Luc's forceps in removing specimen. × 90.

[*face p.* 242

https://doi.org/10.1017/S0022215100005478 Published online by Cambridge University Press

https://doi.org/10.1017/S0022215100005478 Published online by Cambridge University Press

It is of interest to record that in several of the writer's cases where chronic lacunar tonsillitis was evident, metaplasia to cartilage and bone had also occurred in the connective tissue.

Siebenmann claimed to have observed the onset of the disease. He stated that " the early stage is characterized by the presence of sub- and intra-mucous nodules around the crypts. Examination of the nodules showed them to be solid, apparently closed cysts, the contents of which were formed of a pearl of epithelium firmly united with the walls. A few of the nodules presented a fine lumen on their free surface, from which the contents of the cyst projected, as a hard, white mass."

Kelly in two separate instances observed two white submucous spots, on the tonsil in one patient and on the lateral pharyngeal wall in another, which were replaced a fortnight later by typical excrescences. No one else mentions this mode of origin. Kelly reproduces an illustration in support of this hypothesis but there is a flaw in his argument. He supposes that these submucous nodules break through the surface, producing the projections.

The writer has cut serial sections of an area containing two of these submucous nodules (see Fig. 4) and found that in his case the apparently closed-off cavities, in sections farther along, really opened on to the surface and appeared to be the openings of narrow crypts (see Fig. 7). The keratinous-layered contents seen in the " submucous nodules ", on further sectioning in the opposite direction, were found to have a formation similar to the ordinary elongated keratotic horn (see Fig. 8). One possible explanation of these " nodules " is that they are really a section of a narrow crypt which is nearing the surface and contains a keratotic horn which has its point of origin lower down in the crypt and fills the narrow lumen. This, possibly, also explains why no leptothrix or other organisms are present in these circumstances, namely, because of the lack of space available the conditions for growth are unsuitable.

The writer considers then, that some of the masses may be formed by projection from a crypt ; sometimes a small crypt and sometimes a large one, but that others arise directly from the surface epithelium. The following two facts are unexplained : firstly, why the keratoses develop at the particular locations where they are found, and, if they are due to a metaplasic change, why are these particular areas chosen for

https://doi.org/10.1017/S0022215100005478 Published online by Cambridge University Press

this change? secondly, if they are metaplasic in origin, why do they disappear spontaneously if they are due to a local irritation arising from the chronic inflammation in the lymphoid tissue from which they grow? In this latter connection, if the keratoses are painted with a dye, it will be found a few days later that the colour is now only on the distal portions, the bases being white, that is, the horns grow like hairs do, and the distal portions are cast off, just as the outer layers of the skin are cast off. It is possible then, that the local inflammatory irritation may become less intense and a reversion in the deeper layers back to squamous epithelium occurs with casting off of the keratotic patches. This would seem to indicate that metaplasic changes are reversible in some circumstances. As the whole process is one of change, it is possible that this may be so in this condition.

Symptoms

The majority of the patients have no symptoms and it is probable that numbers of cases, especially of a mild grade, are never discovered, pass through their course, and finally disappear without exciting the patient's attention.

There are no general symptoms associated with the keratosis but it is nearly always, if not always, accompanied by chronic lacunar tonsillitis with cheesy débris in the crypts. Hence some general lassitude with fibrositic or arthritic symptoms may be present due to this associated tonsillitis.

The horny projections are usually discovered accidentally either by the patient or by the medical attendant during a routine examination.

If the patient discovers it he often becomes alarmed, and seeks advice on that account.

Local symptoms will vary with the site and extent of the condition and also with the temperament of the patient. In nervous worrying types relatively mild grades will cause continued annoyance, while in more phlegmatic individuals quite large horns may not attract their attention, or cause them any mental or physical upset once they have been discovered for them.

Local symptoms, mostly mechanically produced, may take the following forms: tickling, pricking, sensation of dryness, sensation of the presence of a foreign body, or the production of coughing or hawking, or the desire to swallow frequently,

https://doi.org/10.1017/S0022215100005478 Published online by Cambridge University Press

or even vocal fatigue possibly secondary to the hawking and coughing.

A foul smelling breath is due to the associated chronic tonsillitis.

In one of Garel's cases where the excrescences involved the Eustachian tube some deafness was produced.

Course and Prognosis

Kelly says that the condition develops slowly as a rule, but sometimes rapidly, after an irritation, even an acute inflammation of the throat precipitating it.

From his experience he concludes that strong and irritating applications tend to favour its maintenance.

If the condition is untreated it usually disappears, taking a varying time. E. Fraenkel saw it persist for eight years and Guinbuvier recorded a case of five years' duration.

In Kelly's first case, or rather the case which first attracted his close attention, the condition disappeared seven months after treatment was stopped. Another of his cases ran a course of two and a half years.

Prior to disappearing, the horny out-growths become softer and more loosely attached and are more easily brushed off ; they appear to get smaller and smaller and finally disappear, usually simultaneously, but sometimes more quickly in some areas than others.

The duration of the affection in the writer's cases is given in the appendix.

The condition rarely recurs, but Garel had one recurring two months after the first disappearance.

On theoretical grounds the condition would probably disappear after the removal of the cause of the metaplasia, and this apparently means the removal of the tonsils which are the seat of a lacunar follicular inflammation. In one case in the writer's series, the keratoses persisted in the hypopharynx and base of the tongue after tonsillectomy, but the remaining ones were associated with the lingual tonsil or lower pole extensions which were still present, and which were almost certainly the seat of a lacunar tonsillitis as well.

Diagnosis

At first glance the condition resembles a follicular tonsillitis, but on careful examination the absence of local inflammation

https://doi.org/10.1017/S0022215100005478 Published online by Cambridge University Press

is quickly noticed, and then the horny discrete nature of the projections is observed. An examination of the posterior surface of the tongue and lingual tonsil with a laryngeal mirror serves to confirm a diagnosis that has already been made, if any of the excrescences are present on the posterior or postero-lateral walls of the pharynx.

In cases where there are only spots on the tonsil, chronic lacunar tonsillitis may be diagnosed, but, apart from the fact that it is unusual not to find spots elsewhere than on the tonsil in the keratosis, in chronic lacunar tonsillitis the cheesy masses are fairly easily expressed from the crypts, and do not appear to be attached as keratotic projections are. Also they are always in a crypt, they are soft and of the same consistency throughout and are usually more whitish in colour and are foul smelling. The only time that any real difficulty might arise is in the declining stages of keratosis, when the projections are softening and becoming less adherent.

If a careful examination is made diphtheria can hardly be confused with keratosis pharyngis. A bacteriological examination will decide in a doubtful case ; the writer records one case in which the double lesion was present.

In the case of true mycosis pharyngis leptothricia, again confusion can hardly occur if a careful examination is made. There is a definite general constitutional upset, the patches are soft and easily removed and the surrounding mucous membrane is inflamed. The patches are flat and more closely resemble diphtheritic membrane.

Microscopic examination reveals leptothrix in both cases but there is no keratinous core in true mycosis. Antiseptic gargles quickly cure mycosis, but do not affect keratosis other than by aggravating it.

Treatment

Local treatment with drugs by means of gargles and paints seems to have little effect, and may even prolong the duration of the condition.

If the horny out-growths are confined to the tonsil and are worrying the patient—it would seem justifiable to perform tonsillectomy, especially if the tonsils are also the seat of chronic lacunar tonsillitis, as is nearly always the case ; on theoretical grounds the removal of the cause of the metaplasia, usually the tonsil, would be indicated.

https://doi.org/10.1017/S0022215100005478 Published online by Cambridge University Press

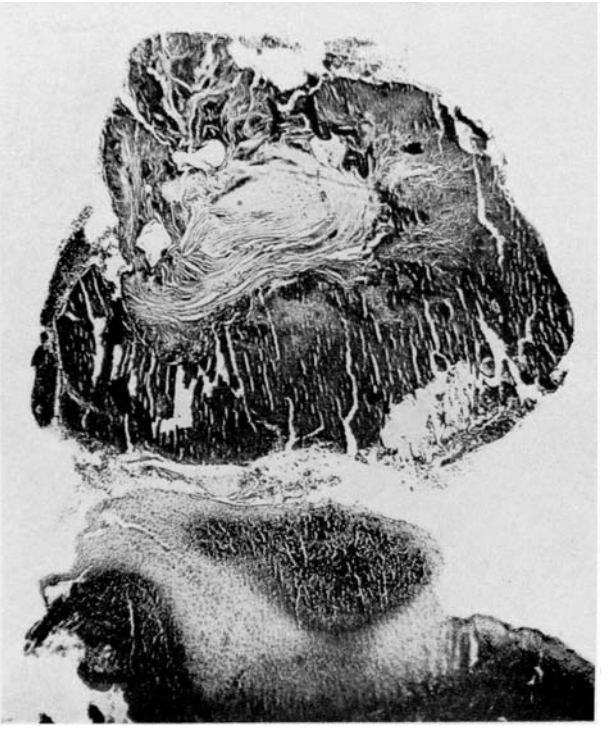


FIG. 5.

Low power photomicrograph of a keratotic outgrowth, in cross section, showing keratinous core. × 90.

[*face p.* 246

https://doi.org/10.1017/S0022215100005478 Published online by Cambridge University Press

https://doi.org/10.1017/S0022215100005478 Published online by Cambridge University Press

If tonsillectomy be decided upon, the lower pole extensions and the lingual tonsil, if present, should be removed. However, at the moment, the question of etiology is still open and if the tonsils cannot be condemned on any other ground than the presence of keratosis, they should be left. But if removal is decided the surgeon, in his own interests, should warn the patient that all the keratoses may possibly not clear up or he will be blamed for their non-disappearance and for an apparently unnecessary operation.

Any other obvious focal sepsis in the mouth, pharynx or nasal accessory sinuses should be eradicated.

General tonic treatment, with local treatment on the above lines would seem to offer the earliest chance for the disappearance of the keratoses.

Summary

1. A short historical survey is made.

2. The clinical characteristics including the frequency, etiology and site are mentioned.

3. The pathology of the condition is discussed. In this section most of the writer's original observations on keratosis pharyngis are recorded.

4. The symptoms, course and prognosis, diagnosis and treatment, are briefly dealt with.

Acknowledgments

I am indebted to Professor MacCallum and Dr. E. S. J. King for much helpful advice in the preparation of this paper.

APPENDIX

Reports of Cases

CASE I. R.R., male, *æt.* 29, came to hospital in October 1936, complaining of the " white spots in his throat ". He had felt a pricking sensation and had suddenly discovered the condition on looking at his throat. On examination, keratotic horns were present on both tonsils, the base of the tongue, the posterior pharyngeal wall below the level of the lower edge of the soft palate, and the lateral pharyngeal wall, well down to level of the vallecula. There were no excrescences in the nasopharynx and there were more on the right side of the base of the tongue and on the right tonsil

https://doi.org/10.1017/S0022215100005478 Published online by Cambridge University Press

than on the left. A mild lacunar tonsillitis was present, but no other focus of infection was found in the nose or throat or mouth cavity. The patient's diet did not appear to be lacking in any of the vitamins, and certainly not in Vitamin C. No treatment was given and the patient assured that the condition was not detrimental to his health. He was not traced at a follow-up in May 1939.

CASE II. D.M.W., female, *æt.* 23 years, came in May 1937, complaining of a large whitish area on her left tonsil which had been slightly sore recently. Until her soreness had been present, she had not noticed anything amiss. On examination, a very large greyish-white mass was seen in the large crypt near the upper pole. This mass grew a culture of Klebs-Loeffler bacilli. On the base of the tongue, mainly on the left side, there were several keratotic horns. No other focus of infection was present in the nose or throat. The patient spent several weeks in an Infectious Diseases Hospital. Finally her tonsils were removed. Two months later she was again seen and the keratotic horns had all disappeared. This patient's diet was also investigated, but no lack of vitamins was evident.

CASE III. R.M., male, *æt.* 23 years, was seen in June 1937, presenting features very similar to Case I. He had discovered the condition accidentally after examining his own throat because of pricking sensations in the pharynx. The distribution was in the main also similar, there being no nasopharyngeal involvement. There was a definite lacunar tonsillitis, but no other infection in the nose or throat. Tonsillectomy was performed and, six weeks later, no keratosis was present.

CASE IV. C.P., male, *æt.* 17 years, was first seen in October 1937, with the usual distribution of keratotic horns on the tonsils, base of the tongue, and pharyngeal walls, up to the level of the lower margin of the soft palate. The patient was of the lymphoid diathesis and had an enlarged, infected pair of tonsils with a large pad of adenoid tissue. Mucopus was washed from both antra and clinical evidence of a fairly gross sinusitis was present, the duration of the latter being difficult to estimate, but apparently for some considerable period. In May 1938 a tonsillectomy with removal of adenoids was performed. He reported intermittently for antral lavage until May 1939, when he was followed up by the writer. The keratosis had disappeared despite the persistence of his sinusitis. This is an interesting point in regard to the etiology; on analogy with a metaplasia like that seen in black " hairy " tongue, one might have expected that the keratosis would have persisted in the presence of gross sinusitis.

https://doi.org/10.1017/S0022215100005478 Published online by Cambridge University Press

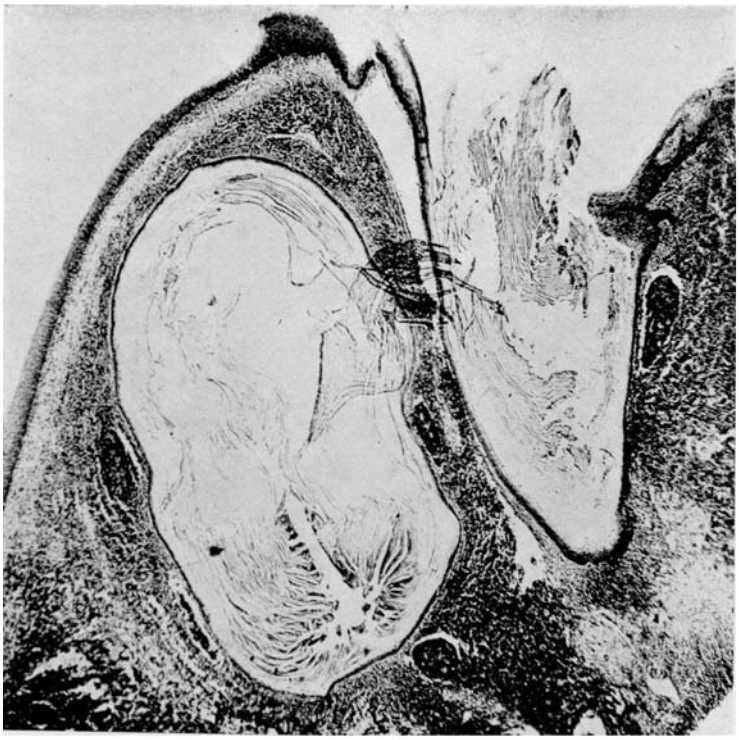


FIG. 6.

Low power photomicrograph of submucous nodules in section. The one on the right was also complete, the piece of tissue closing the gap on the surface being displaced (just above the limits of the photomicrograph) in the preparation of the section. These nodules are similar to those illustrated by Kelly. × 40.

[*face p.* 248

https://doi.org/10.1017/S0022215100005478 Published online by Cambridge University Press

https://doi.org/10.1017/S0022215100005478 Published online by Cambridge University Press

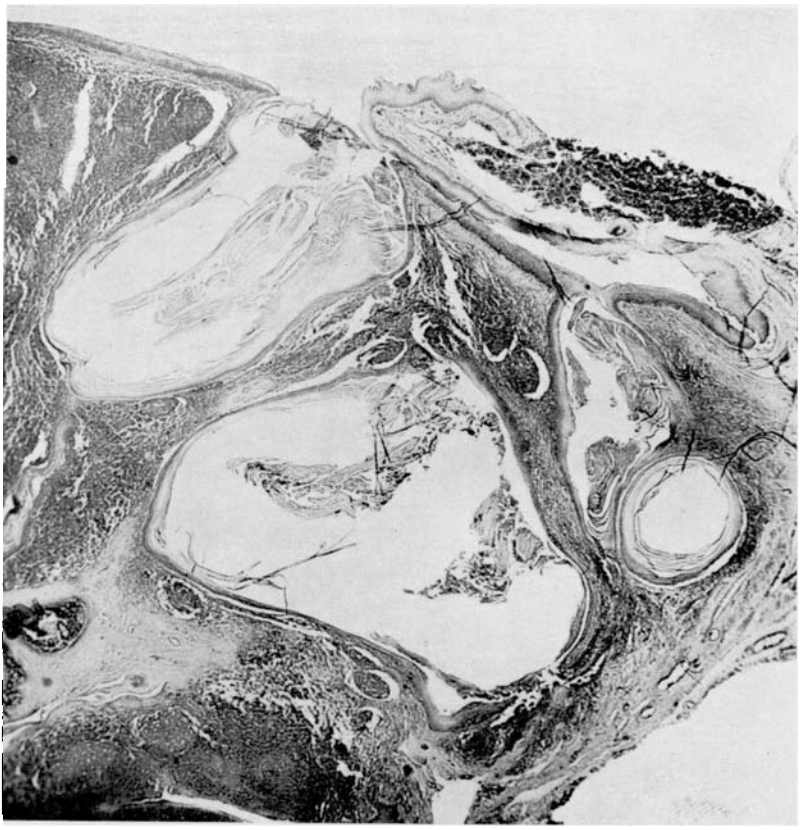


FIG. 7.

Low power photomicrograph, showing how an apparent enclosed sub-epithelial collection communicates with the surface if serial sections are cut (same specimen as shown in Fig. 6) but section deeper in the block. × 24.

https://doi.org/10.1017/S0022215100005478 Published online by Cambridge University Press

https://doi.org/10.1017/S0022215100005478 Published online by Cambridge University Press

CASE V. E.W., female, *æt.* 47 years, was seen in September 1937, with numerous horns on both tonsils, base of the tongue, and lateral pharyngeal walls. Without any treatment they began to disappear twelve months later, first from the right side, followed gradually by those on the left, becoming smaller before finally disappearing. When seen in May 1939 the throat was clear. No other sepsis, except a possible mild lacunar tonsillitis, was present.

CASE VI. V.S., female, *æt.* 22 years, was first seen in May 1938. She had discovered the horns on both tonsils accidentally, but after discovery was very worried about them. She had a distribution similar to Case I, and foul smelling débris could be expressed from both tonsils. Tonsillectomy was performed, and in May 1939, the condition had entirely disappeared.

CASE VII. W.W., female, *æt.* 29 years, was first seen in October 1937, with a large number of keratotic horns on both her tonsils, and a great many in her pharynx and on the base of the tongue down to the valleculae. There were none in the nasopharynx. She had a definite chronic tonsillitis, and the lymphoid tissue over the base of her tongue was hypertrophied. She did not know how long the excrescences had been present but had discovered them on looking at her throat, following the development of a mild sore throat. No other sepsis was present in the nose or throat. Following tonsillectomy, a number of horns still persisted, twelve months later, on the base of the tongue. These were associated with the remaining portions of the hypertrophied lymphoid tissue in that region. She was not traced in May 1939.

CASE VIII. O.M.H., female, *æt.* 42 years, was seen in December 1938, with keratosis pharyngis on both tonsils, left more than right, with a great many on the base of the tongue. Tonsillectomy was performed. On January 20th, 1939, ten to twelve horns were still present on the right side of the tongue base, and one on the left. On May 19th, 1939, there were still six on the right side and one on the left, but they were a little smaller in size. The only possible local sepsis was a chronic infection of the lymphoid tissue on the base of the tongue.

CASE IX. W.G.F., male, *æt.* 44 years, came in December 1937, with an attack of acute sinusitis, which quickly responded to treatment. In the course of a routine examination, a keratotic patch was seen on his left vocal cord, just posterior to the mid-point of the cord in position. It did not involve the edge of the cord, so there was no hoarseness. Twelve months later he was shown at a clinical meeting, the condition being unchanged.

https://doi.org/10.1017/S0022215100005478 Published online by Cambridge University Press

George Swinburne

REFERENCES

1 SIEBENMANN. *Arch. f. Laryngol. u. Rhinol*, 1895, ii, 365.
2 KELLY, A. BROWN. *Glasgow Med. J.*, August 1896, xlvi, 81; September 1896, 179; October 1896, 274; gives 82 references.
3 TOEPLITZ, MAX. *New York Med. J.*, 1898, lxvii, 885-9.
4 WOOD, GEORGE B. *Trans. Amer. Laryng. Assocn.* (28th Congress), 1906, i, 194.
5 TURNER, A. LOGAN. *Edin. Med. J.*, 1906, xix, 344.
6 THOMSON, SIR STCLAIR, and NEGUS, V. E. *Diseases of the Nose and Throat*, 1937, 438. (Cassell and Company, London).

https://doi.org/10.1017/S0022215100005478 Published online by Cambridge University Press

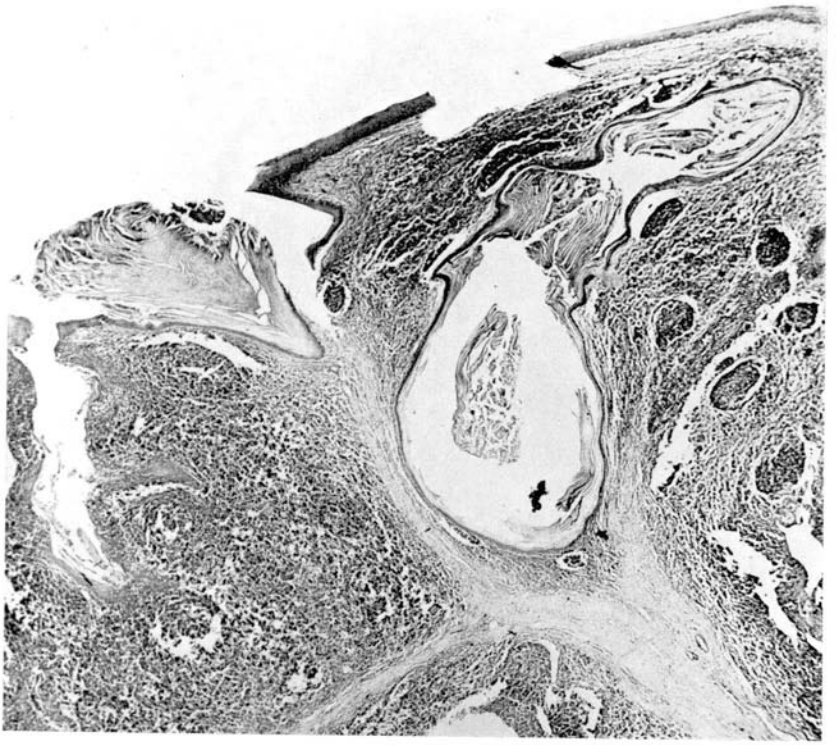


FIG. 8.

Low power photomicrograph of section of same specimen as in Fig. 6 and Fig. 7 still farther into the block, showing one keratotic patch appearing on the surface and one beginning deep in the crypt. × 24.

[face p. 250

https://doi.org/10.1017/S0022215100005478 Published online by Cambridge University Press

https://doi.org/10.1017/S0022215100005478 Published online by Cambridge University Press