PROGRESS IN PEDIATRICS

REVIEW OF THE LITERATURE ON NOSE AND THROAT WITH REFERENCE TO CHILDREN

THE RELATION OF TONSILS AND ADENOIDS TO THE DEVELOPMENT OF THE CHILD

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The subject of tonsils and adenoids in children is always interesting to the pediatricist, especially from the point of view of their relation to the mental and physical development of the child, and has received considerable attention during the past year.

In the first place, the tonsillar and adenoid tissues are physiologic structures, and their relation to the mental and physical development in children is of extreme importance. The position of the tonsil is such that, owing to its size and location or the fact that it is imbedded or adherent or pathologically altered, it will interfere with the mechanism of phonation, and therefore in early life bear an important relation to the development of speech, and if diseased it will in turn affect physical development.

These glandular structures are apt to be large in children, so that, at the formative age, in which the child is learning to talk, any abnormality of this structure or any interference with the mechanism of phonation may cause defects of speech, or rather, peculiarities of speech, which will be detrimental to the development of the child.

Children, as well as adults, are very impressionable and extremely sensitive to ridicule, and a child is very quick to notice that it has difficulty in saying certain words correctly, or that it has some defect of speech caused by the presence of the tonsil or adenoid, which gives a peculiar intonation. To the child its own voice is natural, and it is only by comparison with others that it notices the peculiarity. Such peculiarity may lead to so-called backwardness, not that the child has any deficient mental capacity, but that on account of the interference with the mechanism of phonation and the fear of ridicule and of being laughed at by its little playmates or schoolmates, the child would rather admit that it does not know than to use its voice and be the subject of ridicule. Such defects are frequently observed in children from $3\frac{1}{2}$ to 6 or 7 years of age.

The same is equally true of the adenoid structure. We know that children who have a large adenoid growth and who are mouth-breathers, have very poor enunciation. They have lack of nasal reso-

nance and difficulty in enunciating, especially in certain sounds and words. Besides, there is a certain mental hebetude observed in children who have this adenoid growth. There is also a peculiar relation to the mentality of the child suffering from enlargement of this gland. Drs. Harrison Allen and J. Solis Cohen were the first, I believe, to call attention to the intimate relation of this gland structure to the brain and meninges.

The child's mentality may be normal, but it would require more effort to attain development in such a child than in one in whom the adenoid structure does not exist, or in whom it is not obstructive.

The child who has enlarged adenoids frequently shows a backward manner, timidity, lack of confidence and in some instances, on account of the interference with the eustachian tube and middle-ear involvement, feels an uncertainty as to equilibrium, is a little uncertain in his gait and feels at a decided disadvantage. This child is also handicapped by the facts that nasal respiration is interfered with, the respirations are entirely through the mouth, and the physiologic process of aeration does not fully take place. This in itself renders the child below par in its physical condition and handicaps it mentally.

While the defects in speech, which are purely mechanical, are not exactly the same as in the enlarged and imbedded or adherent tonsil, yet the effect on the child is practically the same. The child is unable to recite as the other children do, and notices very quickly the ridicule of its classmates, and besides, I am sorry to say, frequently the impatience of its teachers and also its parents. Some children are discouraged by comparisons.

With the removal of the adenoid tissue early in life and a little training on the part of the parents and teachers, it will be found that the child's capacity is equal to any other, and that the handicap was purely a mechanical one.

Usually the pharyngeal tonsil attracts the general practitioner's or specialist's attention only when it is the site of some pathologic process or when from its physiologic growth it becomes sufficiently large to obstruct nasal respiration and interfere with the development of the nasal and facial bones.

In early infancy the tonsil is rarely affected, but in early childhood it too often causes trouble mechanically and systemically.

The tonsil becomes pathologic only when its presence injures the individual, either locally or generally, not because some one discovers a pair of tonsils in that throat. The submerged tonsil, which may be quite small, is more liable to be doing harm than the fairly large, free tonsil. It is only in the last few years that the tonsil has been judged pathologically otherwise than from its size alone. The tonsil that is

more or less submerged is the one that nearly always is to blame for the infective processes about this region and in the neck, and from the neck to the general system.

A submerged tonsil that extends well up into the velum, diseased or not, may cause interference with the normal function of the eustachian tube, and, indirectly, with the middle ear, producing tubal catarrh, or one of the acute or chronic catarrhal or suppurative inflammations of the middle ear. By pressure alone it will interfere with hearing, even before its presence has caused inflammatory action. The tubal adenoid, that portion which sometimes is found in the eustachian orifice and often overlooked in operation, may be the direct cause in early life of serious ear involvement later.

The imbedded tonsil and the adherent tonsil also affect the child's general physical condition, as we all know, owing to the fact that the crypts and pockets formed behind such tonsils always permit of absorption into the lymphatic system of toxic material from the tonsil, which interferes with the general health and physical condition, and in turn would necessarily create a mental handicap. The child is below par, peevish, fretful and irritable, and lacks the energetic vitality of childhood.

The adenoid gland structure is particularly susceptible to inflammatory action and the slightest inflammatory change in this structure will produce in children marked rise in temperature with all the associated febrile phenomena. Frequently we have to deal with febrile conditions in children in which there is no apparent cause for the symptoms present, and the cause of such temperature, with the accompanying systemic phenomena, could be traced directly to the inflammatory condition of this adenoid structure. In any case in which there is the slightest infection, with inflammatory condition of the adenoid structure, the systemic phenomena are all out of proportion to the local cause; that the gland seems to rapidly absorb any toxic material, and that the temperature suddenly rises before there is any very marked constitutional effect.

Children with adenoid structure are more susceptible to cold and the diseases of childhood than those who do not have it, and the symptoms produced by the cold are aggravated in proportion to the amount of gland structure present.

It is vastly important, then, in many instances, not only from a point of view of physical development, but from a point of view of mental development, that these mechanical interferences with phonation such as an imbedded or enlarged tonsil or the obstructive adenoid, be corrected early in life, before habits are formed and fixed; otherwise the child grown to adult age will go through life handicapped both

mentally and physically. Extreme care should be taken in correcting these defects that the muscular structure of the soft palate and pharyngeal pillars are in no way injured, and thereby prevent the formation of any scar tissue which would involve the mechanism of phonation later in life.

Max Toeplitz¹ gives the results of five hundred examinations of the nose and throat in an institution for delinquent boys. To sum up the results of these 500 examinations, 351 boys were diseased, 106 had enlarged tonsils, 89 enlarged adenoids and 116 were combined cases. Of these, 292 required operation, 23 refused it, 24 were operated on by radical methods.

Because of the apparent large number of operations, it was decided not to touch soft adenoids or small tonsils. As a result, 40 per cent. of the cases treated by the physician during the year 1910 were attributed to the presence of adenoids and tonsils. The operative work was then extended in 1911, and 18.6 per cent. of the cases treated were traceable to the nose and throat.

According to T. F. Harrington, adenoids and tonsils will heal themselves in four out of five cases if the child is given plenty of outdoor air. In view of this, 300 boys were reexamined after a year's stay under the most hygienic conditions. It was found that in only six of these had the tonsils and adenoids disappeared; that four not previously affected were now suffering, the remainder had finally to come to operation. At the end of 1912 the general improvement of the hygienic status was marked, this being directly due to the operative work in 1911.

Arthur M. Corwin² points out that beside the morbid adenoid there is no other affection in childhood that is so common and far-reaching in its malign influence on comeliness, comfort, reliability and individual usefulness. He states that symptomatic hypertrophy of adenoids occurs in from 25 to 35 per cent. of all children between 3 and 10 years of age. It is, however, the direct and remote results of their abnormal presence on mental and moral integrity that he specially deals with. Among four hundred children at Bologna, Bonazzolo found that 141 displayed great lack of the power to concentrate attention, and therefore were backward students. In all but twenty-four of these, adenoids existed, and the twenty-four without them had nasal obstruction from some other cause. These children were neurasthenics. They are duplicated by the thousand in every school community as intellectual dwarfs.

In New York it was found that in a school population of 650,000, 30 per cent. of the children were about two years behind their grades,

1. Toeplitz, Max: *Med. Rec.*, March 14, 1914.

2. Corwin, Arthur M.: *Illinois Med. Jour.*, October, 1914.

and that 90 per cent. of these were delinquent because of removable eye, ear, nose and throat lesions. Cronin found, in New York schools, 150 marked defectives who were very backward in their studies and incorrigible in character; 137 of them had enlarged tonsils and adenoids. These were removed, and in six months the children were reexamined. All were doing well in studies, and their characters had undergone marked improvement.

It has been estimated that 40,000 children annually in Minnesota have adenoids that retard them one year in work.

In the United States 20,000,000 children constitute about 20 per cent. of the entire population. Of these twenty million children it is estimated that 75 per cent. suffer from remediable defect, more or less formidable, six million of them having operable adenoids.

The lack of attention, aprosexia, and lowered power of memory, resulting from typical adenoid obstruction and irritation are responsible for an enormous amount of backward and deviate mental development originating in infancy. The child is unable to apply himself to his prescribed work. Thus handicapped he falls behind his fellows and fails to catch up; he is accounted a dunce; he is punished by his teachers and parents, ridiculed by his mates, and soon finds other matters to take his attention. He grows sullen, apathetic or mischievous, and is considered incorrigible and a nuisance.

From a modern point of view, hypertrophy of the lymphatic ring of the upper air-passages, together with high arched palate, hypertrophy of the thymus with the associated deviation of other structures from the normal are considered among the stigmata of degeneracy and therefore to be referred to the same hereditary or acquired influence that results in hypoplasia in general. Certain it is that the hypoplastic infant is peculiarly afflicted with hyperplasia of the glands in question. The hypoplastic child, fundamentally unstable and still further handicapped by enlarged tonsils and adenoids, with their attendant train of evils, is prone to respond nervously in an exaggerated degree to harmful environmental influences and needs careful study and attention to insure the advancement of which he is in a great number of instances capable.

Corwin emphasizes the fact that a multitude of children with normal brains and normal means for developing them, if denied proper surgical attention, will suffer deterioration of their normal gray matter, and therefore of mental force. And though they may not graduate into criminals or degenerates or public dependents, they will be seriously handicapped all their lives.

THE TONSIL OPERATION IN CHILDREN

T. B. Layton⁴ states that while there is much discussion as to the relative merits of tonsillotomy and tonsillectomy, we have not taken time to determine whether too many operations are performed. While we do not know the function of the tonsillar tissue, we have good reason to believe that it forms an early and important line of resistance to infection. The presence of hypertrophy is not alone sufficient ground for operation, as the proper care of the teeth, training in nasal breathing and the working out of a correct hygiene will frequently obviate the necessity for operation. He feels that the dangers from anesthesia, infection, hemorrhage and traumatism are real and not to be ignored in determining on operation, and that all patients operated on should receive prolonged and thorough aftercare. When the throat condition is part of a general lymphatic hypertrophy little may be expected from operation, and it is wise to operate in no case in which the temperature exceeds 99 F., as in this way one may usually avoid complications incident to beginning infectious diseases. He knows of no operation by which so much good is so easily done in carefully selected cases and urges against indiscriminate operation as a means of needlessly bringing this procedure into disrepute.

Thomas R. French⁵ deplores the indiscriminate enucleation of the tonsils and offers a method for making a differential diagnosis which consists in making an exploratory section of one of the tonsils after the patient has been etherized for operation, and this section is immediately examined in a brightly lighted field under a finely ground loupe, with a magnification of from five to ten diameters. If it is found to be free from disease, the remainder of the gland and the one on the opposite side are both removed down to the capsule; but if the gland is found to be diseased, the tonsils together with their capsules are removed by the Sluder dull dissection method. He thinks that, when a substantial portion of one tonsil is diseased, with few exceptions both tonsils are diseased and require complete enucleation, but that only about 20 per cent. of all enlarged tonsils are diseased and require extracapsular enucleation.

Dr. Bryson Delavan⁵ believes that the tonsil must have some useful function in nature which sometime will be better understood, and that the capsule is a valuable organ which should, if possible, be preserved for the protection and support of the pharyngeal wall and the prevention of cicatricial deformities after the operation. He thinks that such deformities are of common occurrence and are highly detrimental to

4. Layton, T. B.: *Lancet*, London, April 18, 1914.

5. Symposium before Brooklyn Pediatric Society, Oct. 28, 1914, *New York Med. Jour.*, Dec. 5, 1914.

the future welfare of the patient. Not every large tonsil necessarily requires excision.

Henry L. Swain⁵ says that the young, growing and healthy tonsils of children should not be confused with older adult tonsils which he characterizes as being of a retrograding, degenerating, and often diseased type of tissue. The common habit of always completely removing all faucial tonsils from all children whenever they come to operation, as for adenoids, and with no further excuse than that they may make trouble later on, is strongly condemned as being "unscientific, illogical and thoroughly reprehensible." He says that it would be quite as logical to remove all inflamed lymph-nodes from the neck, for the faucial tonsils are to all intents and purposes the exact counterpart of these nodes.

Hubert Arrowsmith⁵ goes further than French and says that of those tonsils which need surgery at all before puberty, 90 per cent. may be satisfactorily dealt with by conservative measures, and only the remaining 10 per cent. may require complete tonsillectomy. He says that tonsillar disease may be induced by infection from other focal points, and that the tonsillar flora may be but surface contaminations and without clinical import. He has for many years favored conservatism in tonsillar surgery and is pleased that pediatricists and internists are gradually beginning to adopt the same view.

G. Hudson Makuen⁵ describes some deformities that have followed tonsillar enucleations and how defects of voice and speech must necessarily follow such procedures. He also describes the so-called capsule of the tonsil, asserting that it is not, strictly speaking, a capsule at all but only that depressed portion of the pharyngobasilar aponeurosis in a recess of which the tonsil develops and to which it gradually becomes attached. This aponeurosis is composed of several layers of thin fascia, and in the young subject an extracapsular tonsillectomy may consist merely in the removal of the tonsil together with a very thin, single layer of fascia, which constitutes its so-called capsule; but in older subjects the layers of fascia have become so firmly united that it is impossible to separate them and a thorough enucleation of the tonsil may result in a kind of window resection of the pharyngobasilar aponeurosis down to the important muscles which it covers, leaving an extensive cavity to be filled in with granulation tissue. A tonsillectomy, therefore, in an adult is a much more extensive and difficult operation than it is in children.

NEW EXPERIMENTAL OBSERVATIONS ON THE FUNCTION OF
THE TONSILS

In the course of a discussion of the numerous suggestions which have been put forth as to the functions of the tonsils, F. Henke⁶ expresses his belief that there has been great exaggeration during recent years on the part of some writers in regard to the frequency with which the tonsils form the portal of entry for many general diseases for whose onset they have been held responsible. The great differences in the statistics of various writers, from 80 per cent. (Faerber), to 1.4 per cent. (Pibram), in the case of articular rheumatism, suggest that much doubt still exists on the matter, and it is still a question whether the acute tonsillitis sometimes observed in association with various diseases is not in reality a secondary localization of an infection which has gained an entrance by some other channel. In order to test the capacity of the tonsils for the absorption of particles from the food, a series of rabbits were fed for a week on food containing large quantities of soot and chinese ink. Subsequent microscopic examination never showed any trace of absorption of these substances by the tonsils, although they were freely taken up by the intestines. The results of Lexer, who fed rabbits on virulent streptococci, and after death of the animals found the organisms present in the tonsil-tissue, do not justify the conclusion which he draws, that the tonsils were the only, or even the chief portal of entry of the infective organisms. The latter were present also in other portions of the pharyngeal mucous membrane, and were in fact more numerous in the periphery of the tonsil, that is, in its capsule, and in the surrounding muscular and glandular tissue, than in the tonsil itself.

Somewhat in opposition to the view that even the normal tonsil is to be regarded as a weak spot through which infection commonly enters is the suggestion that it serves as a defensive mechanism, in virtue of the phagocytic action of the leukocytes which migrate actively to its surface. Brieger, however, showed that the cells which pass out of the tonsil-tissue are in reality lymphocytes, and was forced to postulate a lymph-stream which carried these cells passively to the surface. As Levenstein remarks, proof of such a lymph-stream has been hitherto wanting.

A very different view is that of Schoenemann, who regards the tonsils as submucous lymph-glands, and acute tonsillitis as due to infection reaching the tonsil from the area which it drains. Clinical experience lends much support to this idea, and its correctness has been established as a result of experimental injection of the nasal mucous

6. Henke, F.: *Arch. f. Laryngol.*, 1914, xxviii, Part 2.

membrane carried out by Schoenemann in man, with iodine solution, and by Lenart and Henke in animals and man respectively, with solid particles in suspension. It may therefore be regarded as certain that in man there exists a direct lymphatic communication between the nose and the tonsils. A similar lymphatic communication was proved by Henke to exist between the mucous membrane covering the alveolus of the upper jaw and the tonsil, an observation which he claims to be new. As a result of numerous carefully conducted experiments, he was further able to satisfy himself that there exists a constant lymph current passing from the lining membrane both of the nose and of the gums towards the tonsils, and through it on to its free surface. Such a current must act as a powerful defensive mechanism against the entrance of micro-organisms, and the proof of its existence must dispose of the view that the tonsil is not only a useless organ, but a *locus minoris resistentiae*.

The function of the tonsils is therefore comparable to that of the ordinary lymphatic glands. They serve for the production of white blood corpuscles, and act as a filter for the lymph which passes through them. Foreign bodies, bacteria, etc., may be arrested in the tonsils as in the lymph-glands, and there rendered innocuous. As, however, the tonsils differ from the lymph-glands in having a large surface (much augmented by the presence of crypts) freely exposed in the pharynx, they offer an exceptional opportunity to the organism of freeing itself from foreign substances which have gained entrance to the lymph-stream.

It follows that tonsillitis, occurring either alone or in association with some other disease such as rheumatism or endocarditis, is seldom due to infective material gaining entry through the surface of the tonsil, but the result of a secondary infection conveyed by the lymph-stream, the portal of entry being in most cases somewhere in the nose, the accessory sinuses, or the mucous membrane of the mouth.

This view is in no way incompatible with the well-established fact that severe general infections do take their origin from diseases of the tonsil. In this connection it is necessary to distinguish carefully between healthy and diseased tonsils. When, as a result of marked pathologic changes, the tonsil has come to resemble, as Hopmann says, a "choked filter," it is obvious that it should be regarded as a constant source of danger to the body as a whole.

THE ETIOLOGIC RELATIONSHIP OF THE FAUCIAL TONSILS TO TUBERCULOUS CERVICAL ADENITIS IN CHILDREN

A. Philip Mitchell⁷ states that in tuberculous disease of the upper deep cervical glands the faucial tonsils have an importance not hitherto

7. Mitchell, A. Philip: Jour. Laryngol., Rhinol. and Otol., April, 1914.

well enough recognized or understood. The position of the tonsils at the entrance to the digestive tract favors infection more with food than with inspired air, a fact of great consequence in considering the frequency with which cervical glands in children harbor the bovine type of tubercle bacillus. Further, the very direct and short pathway between the tonsils and the tonsillar lymphatic glands explains the frequency with which well-marked tuberculosis of these glands may be secondary to a small focus in a tonsil.

He has investigated the faucial tonsils from sixty-four consecutive cases of children suffering from tuberculous disease of the upper deep cervical glands; twenty-four (37.5 per cent.) of these cases showed histologic evidence of tuberculosis in the tonsils. There are no clinical signs by which the condition can be recognized. In the majority of cases the tonsil retains its normal appearance, is small and frequently receding. Occasionally the tonsil is flat and its surface fissured, or it may be hypertrophied, the external surface showing no ulceration. The chief sites for tuberculous lesions in the tonsil are: (1) surrounding the deeper parts of the crypts, especially the supratonsillar group; (2) immediately under the mucous membrane near the mouths of the crypts; (3) deep in the tonsil, close to the posterior capsule. The lesions may be localized or generalized. Experimental inoculation of guinea-pigs and rabbits with pieces of tonsillar tissue yielded positive results in nineteen cases (30 per cent.), and of these the bovine bacillus was present in twelve cases, and the human in three cases.

Mitchell has also investigated the hypertrophied faucial tonsils removed from ninety children, in whom the cervical glands showed no clinical evidence of tuberculous disease; six (6.5 per cent.) of these hypertrophied tonsils gave histologic evidence of tuberculous disease, while nine (10 per cent.) yielded positive results when inoculated into guinea-pigs. The bovine bacillus was present in three cases, and the human in one case.

In conclusion, he says, primary tuberculous disease of the faucial tonsils occurs much more frequently than previously recognized. Considering the frequency with which the upper deep cervical glands are infected secondarily to tuberculosis of the tonsils, there is absolute need of removal of the tonsils in all cases of tuberculous cervical adenitis. The hypertrophied faucial tonsil is the seat of primary tuberculosis rarely as compared with tonsils from cases of tuberculous cervical adenitis.

ASSOCIATION OF FOLLICULAR TONSILLITIS WITH ACUTE
GASTRIC FEVER

Louis Fischer⁸ says that follicular tonsillitis and acute gastric fever are seen in the infant, as well as in the older child, as a sequence to a deranged stomach, following overfeeding. Loss of appetite, or rather a refusal to eat, will be noted; all symptoms pointing to a gastric derangement will be present, and still the predominating symptom will be the patches or follicles on the tonsils, causing pain on swallowing. Fischer emphasizes that too much importance cannot be placed on the necessity for throat inspection in every child that refuses to eat.

The treatment he advocates is as follows: An alkaline laxative such as a 3- to 5-grain dose of compound jalap powder should be given and repeated every three hours until a thorough evacuation has been produced. During this eliminative treatment water should be given liberally, but no food. Locally for the throat, tincture of iodine diluted with an equal quantity of water should be applied once with the aid of a cotton swab. After the bowels have been thoroughly cleansed, chicken soup, skimmed milk or weak tea may be permitted. Afterward, one or two drops, depending on the age, of tincture of nux vomica may be given before meals.

FATAL CAVERNOUS SINUS THROMBOSIS FOLLOWING TONSILLITIS

H. J. Davis⁹ reports the case of a healthy boy, aged 10, who developed on December 27 a unilateral parenchymatous tonsillitis. His two brothers had previously been laid up in the same house with follicular tonsillitis. This had run its usual course. On January 3 the temperature was 104 F., with rigors, and these continued in spite of all treatment until he died on January 13, the temperature being 107 F. January 5, antistreptococcic serum was injected, and the next day the palate and tonsil were incised. January 7, incision was made in the neck, but no pus was found. January 8, swab was taken from the wound and blood taken from elbow vein; swab was sterile, but after prolonged cultivation *Staphylococcus albus* was found in the blood. January 9, the diagnosis of cavernous sinus thrombosis was obvious. The eyelids were edematous and tightly closed over the eye, which was bulging; there was ecchymosis of the conjunctiva, and edema had spread to the forehead and face from blocking of the facial vein and extended down the neck. There was little to be seen in the throat except that the left tonsil was red and slightly enlarged. Incisions were made in the palate, face, neck and eyelids, and the conjunctiva was also incised and 5 minims of liq. ammon. fort. administered every

8. Fischer, Louis: Med. Rec., Nov. 21, 1914.

9. Davis, H. J.: Jour. Laryngol., Rhinol. and Otol., January, 1914.

two hours in water. January 10, twitchings and paresis of the leg supervened; lumbar puncture fluid clear; 4 c.c. drawn off apparently not under pressure. Fluid sterile and did not reduce Fehling's solution. Child died on January 13.

Davis believes that the infection of the cavernous sinus travelled through the facial vein, as it communicates by the angular vein with the ophthalmic vein in the orbit. The edema of the face was due to blocking of the facial vein.

KOPLIK'S SPOTS OCCURRING ON THE TONSILS OF A CHILD

Sydney R. Miller¹⁰ reports the case of a child of 10 months who was suddenly seized with a laryngeal spasm, associated with a temperature of 104.5. Examination of the throat showed a dusky red mucosa with very large swollen tonsils on which were a number of small bluish, semitransparent, elevated bodies, less than pin-head size. These were diagnosed as Koplik's spots which, from a search of the literature, had never been seen in this location before.

The child recovered from the laryngeal spasm after being given a hot foot-bath and was relieved in every way. Within a short time the entire body was covered with a dusky red mottling, characteristic of measles.

Within two days after the appearance of the external rash, the tonsils subsided to normal and no spots could be seen.

Another interesting phenomenon in connection with this case was the discovery that the child was anaphylactic to egg-albumin, which gave rise to laryngeal stridor, fever to 103, an urticarial rash and a swelling of the tonsils. The symptoms came on within a half hour after feeding the child egg-white. A dilution of one drop of egg-albumin in a quart of water was tolerated. The strength was gradually increased until in about three months the child had become desensitized to such an extent that it can now be given one dram of pure egg-albumin without any trouble.

THE EPIPHARYNX IN CHILDREN

According to Edgar M. Holmes,¹¹ over 90 per cent. of all pathologic conditions met with in otology are due to some preexisting pathologic condition in the epipharynx or eustachian tube. He believes that by improved methods in treatment in this locality more and more ears can be saved. Many children affected with middle-ear disease may be entirely relieved by simply removing their adenoids, but it is also well known that many more are but temporarily relieved and then become as bad as before.

10. Miller, Sydney, R.: Bull. Johns Hopkins Hosp., March, 1914.

11. Holmes, Edgar M.: Ann. Otol., Rhinol. and Laryngol., March, 1914.

Were it not for cicatrices and their effect on the eustachian tube the subject of adenoids would be very simple. A large number of the children referred to the specialist by school inspectors do not need an operation and are far better off without one. If an operation has been done, these children should be seen and examined a few weeks afterward with especial reference to adhesions about the eustachian tubes. Holmes' nasopharyngoscope has been of great help in making a good satisfactory examination of the epipharynx.

The treatment is general and local. Gastro-intestinal conditions must be looked after; malnutrition and anemia, and each child's resistance should receive attention. Infections of the epipharynx are almost always associated with those of the nasal cavities. He advises against the douche and prefers medication by means of a dropper. A 10 to 20 per cent. solution of argyrol dropped through the nose has given satisfaction. The solution can be made to run into the ear or eustachian tube by properly tilting the head when held over a table in Rose's position. The removal of bands of adhesion about the eustachian tubes is done by means of special ring curets, the use of which requires some practice.

CICATRICAL PHARYNGEAL DIAPHRAGM FOLLOWING SCARLET FEVER

J. F. O'Malley¹² reports the case of a boy, aged 5, who had scarlatina two years ago, and was then for about three months in a fever hospital. On returning from the hospital it was noticed that he "spoke through his nose," and the condition has become worse since then. He can swallow solids and liquids without difficulty, and there is no history of interference with breathing.

On examination of the throat one sees a diaphragm, appearing as a continuation downwards of the soft palate and formed by the union of the free edges of the two posterior pillars. It shuts off the nasopharynx from the oro- and hypopharynx and is complete except at the center of its upper and lower borders. The upper opening is a small space surrounding the normal uvula, in which the latter is free to move. At the lower border there are two openings, one on each side of a central adhesion, which passes obliquely downward and backward to the right and is attached to the posterior wall of the pharynx, opposite the level of the epiglottis. The anterior pillars, at their upper ends, blend with the new diaphragm, whilst the lower ends are normal and behind the latter. On the anterior aspect of the new formation the tonsils can be seen appearing rather superficial owing to the partial obliteration of the sinus tonsillaris.

12. O'Malley, J. F.: *Jour. Laryngol., Rhinol. and Otol.*, August, 1914.

O'Malley describes the method of formation of these adhesions as follows: There was an intense inflammation with inflammatory infiltration, and at the same time a myositis which put the muscular tissue in a condition of paresis. The swelling and infiltration, especially in the young child, facilitated the coming together of the parts, and the intensity of the myositis prevented the mobility which would otherwise exist and enable the parts to come away from each other. A denudation of the epithelium proceeded at the same time, owing to the severity of the inflammation, and that facilitated the joining up.

TUMOR OF THE SOFT PALATE CONSISTING MAINLY OF SALIVARY
GLAND TISSUE

Thomas Guthrie¹³ reports the case of a boy, aged 8 years, with a pear-shaped tumor hanging from the right side of the soft palate. The tumor was covered with normal mucous membrane similar to that of the surrounding parts, and showed no signs of ulceration. When cut through the middle, after removal, the tumor measured 9 mm. longitudinally and 6 mm. transversely, and was found to consist of a mixed salivary gland of the submaxillary type. Guthrie had not been able to discover any record of a similar case.

DOUBLE ABDUCTOR PARALYSIS IN A CHILD, AGED EIGHT

C. W. M. Hope¹⁴ reports the case of a child, aged 8, who was admitted to the hospital, 1913, with marked dyspnea. Up to fourteen days before admission was perfectly well; gradual onset of dyspnea, but voice was not noticed to be altered.

When first seen the voice was good, but there was marked dyspnea, sucking in of intercostal spaces and supra-clavicular regions; marked retraction of lower end of sternum, and slight cyanosis. Temperature was normal; pulse 120. On examination by the direct method under chloroform both cords were found fully adducted, normal in color, and no movement seen, either of them or of the arytenoids, which were of normal size. There was only a small area for aeration at posterior end of glottis. Intubation was tried with O'Dwyer's tubes, but they were coughed out within a few minutes of introduction. Tracheotomy was then performed. After four days tube was blocked by day and opened by night. Swab from larynx showed absence of Klebs-Loeffler bacilli.

Three weeks later cords showed some movement; there was slight abduction and also some movement of the arytenoids. Tracheotomy tube had been removed and left out on Jan. 14, 1914, but owing to night stridor was replaced (low tracheotomy) on Jan. 29, 1914. Skia-

13. Guthrie, Thomas: *Jour. Laryngol., Rhinol. and Otol.*, February, 1914.

14. Hope, C. W. M.: *Jour. Laryngol., Rhinol. and Otol.*, August, 1914.

gram of chest showed no enlargement of thymus gland or any increase in size of bronchial glands. The cause of the paralysis could not be determined.

SUSPENSION LARYNGOSCOPY IN CHILDREN

Albrecht¹⁵ states that suspension laryngoscopy in children is much simpler than in adults. The reasons for this he ascribes partly to the upright position of the epiglottis, which often permits a satisfactory view as soon as the base of the tongue is pressed on, and partly to the slender build of the neck characteristic of childhood. He states that clinically the procedure has rendered more certain: (1) the removal of the larger infantile nodes ("screamer's nodes") analogous to the singer's nodes in adult life, and ascribed to habitual crying or screaming; (2) the operative treatment of laryngeal tuberculosis; (3) the operative treatment of papilloma, which he considers the great field, and of which he mentions nine cases thus treated. To these three procedures he adds a fourth, enucleation of the tonsils, stating that in operating under narcosis, and with the head dependent, suspension gives a good view of the tonsillar region, so that enucleation can be effected in a few minutes under the strictest visual control.

A CASE OF RECURRING LARYNGEAL POLYPI WITH TETANY

R. Bishop Canfield¹⁶ reports the case of a child 2 years and 3 months old who had been growing more and more hoarse for six months prior to August, 1912, and for the past ten days had been showing a marked degree of dyspnea; cyanosis had been present for several hours, so that the respiration was gasping. A high tracheotomy was done and immediate relief obtained.

Nine months later the child was seen for the second time. He had been wearing the tube constantly and it had not been even removed for cleaning. The wound was in bad condition. Attempted removal brought on a brisk hemorrhage. This was stopped and two days later a bronchoscopic examination was made which revealed a mass of papillomatous tissue filling the larynx and extending down to the level of the lower end of the tracheotomy tube. This mass of tissue was removed and applications of absolute alcohol made; the tube was replaced. Two months later, the condition having not improved, a thyrotomy was performed and the growth thoroughly removed under ether. It was found to extend up onto the base of the tongue.

Ten days later the tracheotomy tube was removed, but had to be replaced and was worn for two months longer. At this time the larynx was intubated and the tube taken out of the trachea.

15. Albrecht: *Jour. Laryngol., Rhinol. and Otol.*, February, 1914.

16. Canfield, R. Bishop: *Ann. Otol., Rhinol. and Laryngol.*, March, 1914.

Dec. 13, 1913, the intubation tube was removed under suspension laryngoscopy, but edema quickly came on because of relief of pressure and the tube was reinserted. The edema became so great, however, as to cover the top of the tube, and it was necessary to replace the tracheotomy tube again.

Five hours afterward the child complained of being cold and developed a tremor resembling a chill; the temperature rose to 103.8 F., respirations 28 to 40 and pulse 80. There was profuse sweating. Within two hours the tremor had developed into clonic convulsions, beginning in the face, then the arms, hands and fingers, and lastly the legs. The convulsions became almost continuous and lasted several hours; the child became stuporous; opisthotonus appeared; erythematous rash developed over the chest and face. Three days after the first tremor the convulsions became tetanic and from then on the case was plainly one of tetany. The attack lasted thirteen days, during which optic neuritis developed from edema and the child was blind. After this the child gradually improved, vision returned and is good, and the child still wears the tracheotomy tube.

The cause of the tetany was believed to be either a toxemia from ether or an injury to the parathyroid from hemorrhage during some of the operative manipulations.

SINUS SUPPURATION IN CHILDREN

Suppuration of the accessory sinuses is more common in children than is generally supposed and the following cases reported by Dan McKenzie¹⁷ are very interesting.

CASE 1.—Frontal sinusitis in a girl aged 7. There was a curious history in the case. About three months before she came to the hospital patient was overturned by a bicycle and thrown on her face. A fortnight later pain and swelling in the left supra-orbital region and around the left eye set in, together with headache and pyrexia. After about ten days of fever and headache, the patient being confined to bed, a sudden gush of pus from the left nostril took place. Thereupon the pain ceased, the fever left her, and the child was able to be up and about; but the discharge from the nose continued. When she came to the hospital pus was seen to be oozing freely from under the left middle turbinal. A skiagram showed well-marked frontal sinuses on both sides, and the left frontal sinus together with the left antrum threw shadows. Treatment was confined to nasal drainage; the left middle turbinal was removed and nasal antrotomy performed, and the discharge gradually ceased.

CASE 2.—Double maxillary antrum suppuration in a girl, aged 12. After washing out the cavity several times with a Lichtwitz trocar, the radical antrum operation was performed on the left side and simple nasal antrotomy on the right. The discharge has now ceased.

CASE 3.—Left frontal sinusitis in a girl aged 15; radical Killian operation; necrosis of the bridge. The patient is now aged 17, her operation having been performed two years ago. The case was one of ethmoidal suppuration with polypi. After curetting and drainage the presence of headache and local pain

17. McKenzie, Dan: Jour. Laryngol., Rhinol. and Otol., April, 1914.

led to the radical frontal sinus operation (Killian). The bridge necrosed and was removed a fortnight later, but the wound had healed with very little deformity on account of the natural flatness of the patient's nose. There was still a fair amount of discharge.

ORBITAL ABSCESS WITH OPTIC NEURITIS DUE TO ACUTE ETHMOIDITIS
IN A CHILD

J. H. Guntzer¹⁸ reports the case of a girl, aged 7 years, a normal child and in apparent good health, who came to the hospital on March 18, 1914. She had had no recent illness until the right eye became swollen two days before.

There was well-marked orbital cellulitis, the upper and lower lid swollen with tenderness over the inner margin of the orbit, marked exophthalmos with displacement of the eyeball downward and outward, ocular motion limited above and internally, the eye dilated outward. Diplopia; vision 20/200. Conjunctival blood vessels injected. Fundus examination showed the veins enlarged, tortuous, the arteries normal. Disk-color red; margin blurred. Diagnosis: Optic neuritis.

The orbital abscess was incised at the most prominent portion on the nasal side below the brow in order to relieve the ocular pressure. The following day the ethmoidal labyrinth was exenterated by the external route. The patient made an uninterrupted recovery. Six weeks after operation the eye-ground had entirely cleared up with vision 20/20.

1517 Walnut Street.

18. Guntzer, J. H.: *Laryngoscope*, September, 1914.