PROGRESS IN PEDIATRICS

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

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The lymphatic area of the nasopharynx and pharynx is an immense portal of ingress for infection. Any disease, systemic or local, involving these areas, manifests very rapidly systemic phenomena. In children these areas are particularly susceptible to infection. The digestive tract in children, on account of its incomplete development, requires the closest attention as to diet, as any slight irregularity will produce digestive disturbance, and such digestive disturbance is rapidly manifested in the lymphatic areas of the pharynx and nasopharynx, rendering these areas particularly susceptible to local infections; and in many instances of a sudden febrile condition in children, the real, underlying cause will be found in the intestinal disturbance, and treatment directed toward the removal of this cause will rapidly relieve the pharyngeal and nasopharyngeal symptoms.

In the so-called infectious diseases of children — measles, diphtheria, scarlet fever, etc. — these lymphatic areas are of the greatest importance from the standpoint of diagnosis and treatment. In other words, the lymphatic area of the pharynx — the tonsillar ring and the nasopharynx — is a great barometer to the system. Journalistic literature is replete with reports illustrating just such conditions, and the general practitioner and the specialist should pay particular attention to these areas in diseases of the very young.

CARE OF NOSE AND THROAT IN CHILDREN

Harold Hays¹ states that the most common portal of entry of infection is through the mouth; the nose deserves second place. (a) Whether the tonsils exercise some individual function such as that of an internal secretion is questioned. During the first two years the tonsils should not be removed unless they cause some definite symptoms, such as impairment of breathing, attacks of tonsillitis, or tendency towards suppuration of glands of the neck. If it is necessary to remove tonsils, enucleation is the only operation permissible. (b) Children with high-arched palate and narrow nasal orifices should be referred to the orthodontist. (c)

1. Hays, Harold: *Am. Jour. Obstr.*, November, 1912.

Adenoids, if present, should be removed. (d) The sinuses of the nose are more open to infection than one usually supposes. A so-called cold in the head, discharging pus, excoriations around nostrils, red swollen mucous membrane, are the usual symptoms. For this class of cases Hays recommends the use of a spray in older children and a medicine dropper for younger children, using liquid petrolatum (albolene) having a few drops of 1-10,000 epinephrin solution, or if using boric acid or an alkaline solution, it should be followed by an oily solution.

THE TONSILS IN CHILDHOOD

J. Gordon Wilson² draws some very helpful conclusions bearing on tonsillar disease, especially relevant to the pediatrician, which he has made from anatomic and physiologic observations. He says:

The ease with which the palatine tonsil is observed and the association which it has in the minds of many with all kinds of diseases, lead often to a self-satisfying yet inaccurate diagnosis. Forgetful of its intimate relation to pathologic processes in the nose and naso pharynx, and of its frequent association with systemic disturbances, we too readily diagnose as a primary pathologic condition what is in reality a secondary pathological result. In a tonsillar enlargement we often erroneously see an active pathologic process instead of a hyperfunctionating organ.

His conclusions are as follows:

1. Since comparative anatomy shows that in all cases a communication with the pharynx has been preserved, it would appear that intimate relationship with the pharynx is a necessity to tonsillar activity.

2. The tonsillar activity is to be regarded as most active during developmental life. There is no evidence that in man it should be regarded as a recessive organ.

3. The tonsil cannot be regarded as merely a lymphatic node. Though it presents microscopically adenoid tissue, yet its developmental history and its physiologic activity at least make us pause before drawing such a conclusion. It is just this presumption that has led many to a hasty and unnecessary enucleation. The statement some have made that since the tonsil is only a lymphatic gland, its activity can readily be replaced by other lymphatic structures, is of very doubtful merit, even so far as lymph-nodes are concerned, and erroneous so far as the tonsil in the child is concerned.

4. We have every reason to believe that the tonsil plays an important rôle in the complex changes which occur at the upper end of the alimentary tract. The argument that no one has seen any local or systemic deficiency following removal of tonsils in childhood is not satisfactory, since we have not sufficient observations based on complete enucleations.

From these anatomic and physiologic considerations, the author distinguished in the life-history of the tonsil two distinct periods:

- (a) Before puberty — period of functional activity.

- (b) After puberty — when it persists chiefly as an aggregate of lymph-nodules which tend to atrophy.

The influence which these observations have on the author's views in regard to tonsillar diseases, and their treatment, is:

2. Wilson, J. Gordon: *AM. JOUR. DIS. CHILD.*, 1912, iii, 277.

In the child it should be conservative, so far as possible, and the younger the child the more conservative; in adults, let it be radical whenever necessary.

He then goes on to apply these deductions to some varieties of tonsillar disease. Throughout the paper the author takes the part of the often massacred tonsil, and pleads for it a more unprejudiced study than has heretofore been given it.

RELATION OF ADENOIDS AND RECURRENT VOMITING

J. P. Sedgwick³ reviews the theories advanced concerning the etiology of recurrent or periodic vomiting and reports a series of twenty-two cases, of which twenty patients had adenoids or enlarged tonsils. Most of them had fever before or during the attack. The posterior cervical lymph-nodes were enlarged. A very common prodrome of the attack was sore throat or nasal discharge. One "had bleeding nose at the time of the attacks." Geographical tongue and asthma were noted. He also shows by the detailed report of eight cases that these attacks were either improved or entirely relieved since the removal of the adenoids.

RECURRING ADENOIDS IN CHILDREN

L. Fischer⁴ points out that a recurrence of adenoid vegetation may be due to lack of proper aseptic precautions at the time of operation. If, however, these were taken we should look for syphilis as the underlying factor. In such cases the Wassermann reaction will be found of great diagnostic value.

T. Guthrie⁵ feels that true recurrence of adenoid tissue seldom occurs, if the removal was complete and the surface was left smooth and free from any palpable fragments. When the child is under 4 years the chances of recurrence are much greater; between 4 and 7 the risk is less, and after 7 years almost *nil*. Recurrence is favored by an attack, within a short time of the operation, of one of the specific fevers (measles or whooping-cough); by congenital syphilis, or by the presence of untreated anterior nasal obstruction, especially hypertrophied inferior turbinals.

ACUTE RHINITIS IN THE NEW-BORN

Rabasa⁶ points out that coryza is not only a troublesome, but also a serious affection in childhood, because the nasal obstruction interferes considerably with feeding and also causes complications in the ears (otitis) or larynx (glottic spasms). The origin and therapy are discussed. Rabasa prefers the suction treatment by means of the Escat apparatus or an ointment of resorcin and aristol to other methods.

3. Sedgwick, J. P.: *AM. JOUR. DIS. CHILD.*, 1912, iii, 318.

4. Fischer, L.: *Jour. Am. Med. Assn.*, Jan. 13, 1912, p. 106.

5. Guthrie, T.: *Lancet*, London, April 20, 1912.

6. Rabasa: *Bol. med.*, April, 1912.

A FAMILY WITH MEMBRANOUS DISCHARGE FROM NOSE

A. M. Gossage⁷ says that fibrinous rhinitis is not uncommon in children, and is associated with fibrinous or membranous exudation. It generally persists for six to eight weeks. A bacillus very closely simulating the Klebs-Loeffler is most generally found.

Baumgarten describes a case of a baby who had crust formation in the nose from birth, which, when removed, would reform in three to four days. Iodoglycerin was used to douche the nose, after which crusts did not reform. There was an odor from the nose at 3 years, and ozena at 4 years of age. Mother had ozena, but other children normal.

Gossage came across a family with several members having membranous discharge throughout life. No signs of ozena. Complete fibrinous casts were obtained from father and two children, reforming every twelve hours. Pathologically, they showed polymorphonuclear cells in fibrinous network. There were no bacilli, diplococci or diplobacilli present. History shows four generations affected.

PATHS OF RHEUMATIC INFECTION AND THEIR PROTECTION
IN CHILDREN

J. R. Mackenzie⁸ says that the rheumatic infection may be localized in the throat, bronchial tubes or unhealthy intestinal tract; the micrococcus makes inroads if the physical resistance, the protective properties of the local tissue or the defensive agencies of the blood are subnormal. In a child of a rheumatic family, congestion of the pharynx, palate and fauces should always receive immediate attention; salicylic acid preparations, with sodium bicarbonate, sodium salicylate, potassium chlorate and aperients are effective. The hygiene of the mouth should also receive careful attention.

PERMANENT WHEEZING IN A YOUNG INFANT DUE TO SIMPLE
TRACHEOBRONCHIAL ADENOPATHY

Halpire and Carpentier⁹ report a case in which, since the age of 3 months until death following bronchopneumonia complicating measles, the child had a persistent wheezing due, it was thought, to hypertrophy of the thymus. The mother had presented a similar condition, when young, which gradually disappeared. Neither during life nor at autopsy could any tuberculous lesions be found, but a very pronounced inter-tracheobronchial adenopathy involving the tenth pair and the recurrent nerve. Persistent wheezing is exceptional and usually ends fatally in infants.

7. Gossage, A. M.: *Brit. Jour. Child. Dis.*, April, 1912, p. 157.

8. Mackenzie, J. R.: *Brit. Med. Jour.*, June 1, 1912, p. 1232.

9. Halpire and Carpentier: *Rev. méd. de Normandie*, Feb. 25, 1912.

CONDITION OF NOSE, THROAT AND EAR AS FACTOR IN
EXCEPTIONAL DEVELOPMENT

O. Glogau¹⁰ bases his conclusions on a study of exceptional children in Herbart Hall. He found nasal obstruction with or without adenoids and tonsils present in both the advanced and the backward child. On the other hand, defects in the sound-conducting and sound-perceiving apparatus resulting in decreased hearing-power was only found in the backward children; in fact, the advanced type showed over-acute audition. This latter fact Glogau advances as a possible explanation of the musical prodigy. The function of the static apparatus of the labyrinth was found to be markedly impaired in the backward child, while in the exceptionally bright child an over-irritability was noted.

A BRIEF REPORT OF AN EPIDEMIC OF SORE THROAT WITH INVOLVEMENT
OF THE CERVICAL LYMPH-NODES

John Ruhräh¹¹ reports that in 600 odd cases of epidemic sore throat there were twenty-eight fatalities. Complications were severe and numerous; 30 to 40 per cent. had otitis media, nearly as large a number had irregular swellings of the neck over the epiglottis, base of tongue, etc., suppuration being unusual. Edema of the eyes was common, as was bronchitis and pneumonia as a complication; also gastro-intestinal disturbances; three cases of erysipelas and involvement of tissues around joints.

A diplococcus, often in pure culture, was isolated from a number of patients; had a distinct capsule, being Gram-positive. Nearly 80 per cent. of the children were using milk from one dairy, which had temporarily discontinued its customary pasteurizing of milk, the weather at this time being extremely cold.

CONGENITAL EDEMATOUS PROLAPSE OF THE NASAL MUCOUS MEMBRANE
IN THE NEW-BORN

N. Calamida¹² (Milan) reports the following two cases: Case 1. In a baby of 20 days a polypus projects from the right nostril. It is of the size of a small nut and of pinkish color. Breathing is interfered with. The growth is removed by the cold wire snare. Microscopic examination reveals the presence of juvenile connective tissue impregnated with serum; there is also present a small cell infiltration limited to the sub-epithelial layer.

Case 2. The left nostril of a baby of 24 days is obstructed by a polypus similar to the one described above. By instillation of menthol,

10. Glogau, O.: *Am. Jour. Obst.*, January, 1912.

11. Ruhräh, John: *AM. JOUR. DIS. CHILD.*, November, 1912.

12. Calamida, N.: *Arch. Internat. de Laryngol.*, 1912, xxxiv, 61.

cocain and epinephrin the growth soon shrunk and nasal breathing was restored. The author considers this condition to be a congenital edematous prolapse of the nasal mucous membrane.

REMOVAL OF ADENOIDS AS PREVENTIVE MEASURE AFTER EXPOSURE TO MEASLES

J. B. Greene,¹³ appreciating the great danger of a suppurating ear complicating measles in the presence of a large adenoid, believes that in such adenoid cases surgical intervention becomes conservative treatment after exposure to measles. He quotes a case in support of his contention.

A CASE OF FATAL HEMORRHAGE FROM THE THROAT

J. D. Rolleston¹⁴ reports the case of a girl, aged 6 years, who was admitted to the hospital October 22, certified to be suffering from diphtheria. She had had measles five weeks previously, since which time her voice had been husky. October 20 she complained of sore throat, and October 22 she had a croupy cough and her neck glands became swollen.

Condition on admission: Deposit on both tonsils and uvula, slight nasal discharge, voice husky, stridor, croupy cough and dysphagia. Temperature 100 F. Sixteen thousand units of antitoxin given.

October 22. Deposit clearing away, leaving marked ulceration of tonsils and uvula. No fetor. No Vincent's organisms in throat smear. Temperature 100.2 to 100 F.

October 25. Sudden and profuse hemorrhage from throat, cyanosis and death within five minutes. No diphtheria bacilli, but only cocci were found in three successive cultures from throat and one from nose.

Necropsy, October 26. Abscess cavities in both tonsils; ulceration of uvula, soft palate, epiglottis, frenum epiglottidis, valleculae and ary-epiglottidean folds. Deep ulceration of laryngeal portion of pharynx exposing muscular tissue. Three small superficial ulcers above right vocal cord. The exact site of the bleeding vessel was not determined, but there was no evidence of erosion of external carotid, internal carotid or internal jugular, nor any glandular abscess.

Walter B. Maurice¹⁵ reports a similar case, the patient being a boy, aged 6 years, sent to the hospital with supposed mastoid abscess. On examination he was found to have no mastoid trouble, but a much enlarged tonsil on the left side and free hemorrhage from the left ear. He had a fairly high temperature. The blood coming from the ear was bright and not mixed with pus. The following day marked respiratory obstruction was present and the tonsil was opened by the introduction of

13. Greene, J. B.: *Med. Rec.*, New York, 1912, ii, 388.

14. Rolleston, J. D.: *Brit. Jour. Child. Dis.*, February, 1913.

15. Maurice, Walter B.: *Brit. Jour. Child. Dis.*, May, 1913.

a pair of sinus forceps. No pus was evacuated, but the condition improved. For the next day or two the child seemed much better, but more hemorrhage occurred from the ear and temperature remained high. On the third day, while playing he suddenly gushed up a quantity of blood from the throat and dropped back, instantly dead. No post mortem was permitted, but from the great rapidity of death, the source of the hemorrhage was believed to be the carotid. The strangest feature was the hemorrhage from the meatus beforehand. The condition was obviously a septic one from the start, but there was no history or evidence of scarlet fever.

PERTUSSIS: THE HISTOLOGICAL LESION IN THE RESPIRATORY TRACT

F. B. Mallory and A. A. Hornor¹⁶ conclude, from a microscopic study of the trachea and lungs from three patients who died of whooping-cough, that this disease is due to a minute bacillus which occurs in large numbers between the cilia of the epithelial cells lining the trachea and bronchi and possibly also the nose. The location of the organism is apparently characteristic for the disease. Its action seems to be largely mechanical. It interferes by its presence with the normal movements of the cilia and possibly leads to their destruction.

The mechanical interference with the action of the cilia, and possibly their destruction, prevent the normal removal of secretion. The bacilli and the secretion produce a continuous irritation which results in coughing, and usually also in the characteristic spasm known as whooping.

Believing that the bacillus found in the lesions was in all probability identical with the organism discovered and described by Bordet and Gengou, they subsequently¹⁷ carried out experiments on animals which proved that the organism corresponded in every way with the Bordet-Gengou bacillus.

The failure up to the present time to observe the bacillus of whooping-cough in its peculiar and characteristic location in the respiratory tract is probably due to its small size and to its staining but faintly by ordinary methods.

The reason the Bordet-Gengou bacillus has not been unqualifiedly accepted as the cause of whooping-cough is largely due to its presence having been demonstrated only in connection with the disease, not in connection with any evident lesion. It might have been a secondary invader like the streptococcus in scarlet fever.

Mallory and Hornor have demonstrated the primary essential lesion of the disease and the characteristic relation of the causal agent to it. In addition, they have been able, with sputum and with pure cultures of a micro-organism corresponding in every way with the Bordet-Gengou

16. Jour. Med. Research, xxvii, No. 2, Nov., 1912, p. 115.

17. Jour. Med. Research, xxvii, No. 4, March, 1913, p. 391.

bacillus, to produce the same characteristic lesion in young animals and in four instances (one puppy and three young rabbits) to obtain the organism again in pure culture. Moreover, they have produced the same lesion in the nares, trachea and bronchi of a young rabbit after infecting it through the nares with a subculture of the bacillus obtained originally from Bordet, and were able to grow the micro-organism again in pure culture. They have, therefore, supplied the steps which have heretofore been lacking, according to Koch's laws, for the complete demonstration that the Bordet-Gengou bacillus is the cause of whooping-cough. This result should encourage further investigation in search for a vaccine or antitoxin which may be of use in the treatment of the disease. The diminution in numbers and final disappearance of micro-organisms under ordinary conditions in the course of comparatively few weeks strongly suggests that conditions for growth become unfavorable, probably owing to the development of some antibody.

VACCINE THERAPY OF WHOOPING-COUGH

C. Nicolle and A. Conor¹⁸ recently presented before the Academie des Sciences, Paris, the results of their attempts at vaccination of whooping-cough by inoculation of living cultures of Bordet's bacteria, which they used during the epidemic which raged in Tunis last spring. These cultures on agar-potato-blood, made into an emulsion in physiologic salt solution, were kept at 46 C. (114.6 F.) for thirty minutes, which does not affect their vitality, then repeatedly washed and centrifuged so as finally to obtain a perfectly homogeneous emulsion of bacteria, isolated and deprived of all foreign substances. For use in vaccination, each drop of the emulsion (representing about 400 million bacteria) is diluted with 2 c.c. of physiologic salt solution. Because of the difficulty of intravenous inoculation of very young children, Nicolle and Conor inject it under the skin of the thigh, from 1 to 5 drops of emulsion each time. They have observed no general or local reaction. Of 122 children treated thus, 18 have not been seen after the first inoculation. Of the remaining 104, there have been 37 cures (complete cessation of cough), or 35.37 per cent.; 40, or 38.46 per cent., improved (notable diminution of cough) and 27, or 25.96 per cent., remained stationary. In the cases of cure, improvement became manifest very rapidly, generally on the first or the second inoculation. The nightly coughing spells diminished in intensity and number. Out of the 37 cures, 29, or 78.38 per cent., occurred after from two to five inoculations; that is, in from three to twelve days. In view of the often discouraging duration of whooping-cough, the results obtained by Nicolle and Conor are distinctly encouraging.

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18. Jour. Amer. Med. Asso., lxi, No. 3, July 19, 1913, p. 209.