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SOME REMARKS upon so-called FOLLICULAR ANGINA, and its RELATION to DIPHTHERIA.

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SO-CALLED follicular angina is a disorder with which not only the specialist but even the general physician has very often occasion to meet. Yet, as to the correct diagnosis or the rational treatment of this disease, no clear idea can be perceived among physicians. This applies especially to the relation of this disorder to true diphtheria of the pharynx.

Upon this question—very important from a practical point of view—I should like to say a few words, based upon my clinical experience and bacteriological researches.

Under the term follicular angina we understand an acute process, accompanied by more or less fever—a process of an undoubtedly infectious origin, which is characterized by the appearance of yellow or greyish-white spots (membranes), localized in the crypts. As to the definition itself, there may be observed some inexactitudes. The term follicular angina is improper, because the process is localized only in the tonsils, *i.e.*, their crypts.

On the other hand, the attribute "follicular" is not in accordance with fact, since the anatomo-pathological researches of Drs. Dmochowski and Sokolowski[1] prove that the follicles are not affected in this disorder. We must, therefore, reserve only one rational definition, *i.e.*, lacunar tonsillitis, adding at the same time "acute," in order to distinguish it from the chronic process, also localized in the crypts of the tonsils, which is known under the term "caseous" tonsillitis, or properly chronic lacunar tonsillitis. This term I shall always use in this paper. It is also applied by Prof. Jurasz of Heidelberg, in his recent manual of diseases of the nose and throat.[2]

Acute lacunar tonsillitis occurs very frequently. Indeed, during the three past years I observed 133 cases of this disorder out of the general number of 3470 patients, which makes about four per cent. (3·8 per cent).

Sokołowski and Dmochowski have also often observed this disease,

[1] Przyczynek de patologii i terapii sprau zapaluyen migdalhou. "Gazeta lekarska," 1891.
[2] Die Krankheiten des Rachens, 1891, p. 122.

namely, about five per cent. (out of 3482 cases, 169). It is astonishing, however, that Jurasz, in a period of about eight years, out of more than 4000 out-patients, has only noticed twenty-four cases of acute lacunar tonsillitis. It may be that there exist in our country (Poland) certain conditions which favour the development of this disease, as is the case, for instance, with peritonsillar abscess, which disease is here exceedingly frequent, while in other countries it occurs much less frequently. Jurasz, for instance, cites only eight cases of this disorder.

We must, however, not forget that strict statistics are impossible, because, as we shall see later, there are pathological processes, intermediate between diphtheria and acute lacunar tonsillitis, which it is impossible to describe under the one or other category, but only by the clinical picture. Only the bacteriological investigation could solve this question; unfortunately, it cannot be always performed.[1]

As to the question of which sex is oftener attacked by this disorder, relying on my observations, I have not been able to remark any noticeable difference (out of 133 cases, there were sixty-three men and seventy women). Jurasz seems also not to ascribe any importance to sex, although he observed this disease a little oftener in men (seventeen cases) than in women (twelve cases).

As to age, I only observed one case below one year (a girl of six months): most frequently I met with acute lacunar tonsillitis in the third decennium (sixty-one cases), and very frequently I observed this disease between the tenth and twentieth years (thirty-seven cases), less often in the period between thirty and forty years (eighteen cases), five and ten years (six cases), one and five years (three cases), and three cases between forty and fifty years; only two cases between fifty and sixty, and sixty and seventy years each. The oldest of my patients was sixty-two years of age.

Jurasz also observed this disease most frequently between the second and third decennium (twenty cases).

As to the *etiology* of this disorder, there cannot be the least doubt that it is of infectious origin (Bouchard, Leyden, Semon, Seifert, etc.). In favour of this supposition the whole clinical picture speaks: acute beginning, chills, general weakness (fever, etc.), and its appearance epidemically, in the shape of the so-called house epidemics (B. Fraenkel, Jurasz, etc.).

I, like Jurasz, was able to observe simultaneously several cases of this disease in private, as well as in polyclinic practice, which permitted the supposition of an epidemic appearance in the town. I also remember more precisely four house epidemics, which I here briefly report.

1. In June, 1892, I was called to the wife of an official, aged thirty-four years, who complained of pain in the throat, as well as of fever, lasting two days. On examination I found the following state: feebleness, great fever (more than 39 degrees Centigrade), swelling and pain of the lymphatic glands of the neck. On the reddened and swollen palatine

[1] Schrank (vortschlag betreffend die Arzergepflicht bei Diphtherie ("Allg. Med. Zeit.," 1893, 34) advises the introduction in Vienna of bacteriological examinations, such as have been made obligatory, for one year, in New York.

tonsils whitish-yellow points, localized in the crypts, were seen. Next day, being much better, the patient was ordered to take oleum Ricini, salol to gargle, and antipyrin ten grains internally. Simultaneously two little daughters (eight and ten years of age) showed symptoms similar to those of the mother (great fever, general weakness, chills—locally in the crypts of the tonsils—whitish-grey points), especially the younger one, whose tonsils were already hypertrophied. Finally, the youngest daughter (six months old), whom the mother suckled, exhibited acute lacunar tonsillitis in a very slight degree. After a couple of days the mother and her daughters recovered.

2. The second epidemic I observed in December, 1892, in the family of P. The servant girl, twenty years old, was the first to be attacked with this disease. The course was pretty severe: great fever, weakness, swelling of the tonsils, with numerous whitish points limited to the crypts (especially in the right tonsil). The little son of the family, aged eight years, was infected by the servant. The course was, however, much milder, the general and local symptoms much less severe. Lastly, the mother nursing the child was attacked with pretty severe acute lacunar tonsillitis of both sides. The epidemic ended favourably in a few days, after application of the usual remedies (salol, etc.).

3. The third epidemic was observed by me in August, 1890. The wife of a captain of the police was taken ill with a pretty severe acute lacunar tonsillitis on both sides—great fever (39·0), affection of the lymphatic glands, etc. At the same time the symptoms of this disease appeared in her husband. The course, however, was somewhat slighter, the left tonsil being especially affected, reddened and swollen, and in the crypts white-greyish spots. There was moderate fever.

Some days after I myself was infected, the symptoms also being very slightly expressed: little fever (38·2), slight weakness, pain when swallowing on the right side. The right tonsil was reddened, swollen, and in the crypts some typical points were observed.

4. The fourth and last epidemic I observed in the household of G. A schoolboy, twelve years old, got suddenly violent chills, fever (to 40°), pain when swallowing. On the strongly reddened and enlarged tonsils a considerable number of whitish-yellow points in the crypts were observed. The lymphatic glands of the neck were enlarged, and painful to touch. There was general weakness. At the same time his brother, sixteen years of age, was attacked with typical and pretty severe acute lacunar tonsillitis, especially on the left side, where the tonsil was enlarged; on the right tonsil, however, of which I extirpated a portion by means of the galvano-cautery snare last year, only some traces of membrane were seen. After some days both had quite recovered under the application of usual treatment.

After finishing this paper I had occasion to observe another (fifth) house epidemic, viz., the family of an apothecary, who was the first to be taken with acute lacunar tonsillitis, on both sides (especially on the right, where in the crypts pretty large membranes were seen); great fever and swelling of lymphatic glands existed. His wife, thirty years old, was then infected. On both sides was observed typical acute lacunar

tonsillitis, with great fever, weakness and swelling of lymphatic glands of the neck. On this occasion I was asked to examine the mother of the apothecary (about fifty years old), who had been ill for some days. To their great surprise I discovered in this new patient the same disease: both tonsils were swollen and reddened, in their crypts were numerous white-greyish spots, and great fever existed. Besides these three patients the child—a girl five years old—was also slightly infected. After some days all recovered.

As to the question if the season of the year has any influence on the appearance of this disease, I, similarly to Jurasz, have not been able to affirm it in my observations. It seems, however, that the spring and autumn—especially late (October, November)—are favourable to this disease. The same opinion is held by Sokolowski and Dmochowski.

Can hypertrophy of the tonsils predispose to acute lacunar tonsillitis? Authors do not quite agree as to the answer to the above question. Some, as Jurasz, maintain that this hypertrophy has no influence on the etiology of the disease. I, however, am of quite another opinion. Comparatively often I have remarked, in patients affected with acute lacunar tonsillitis, more or less considerable hypertrophy of one or both tonsils (36 out of 133 cases).

Further, I have observed more than once the fact that patients with hypertrophy of the tonsils get this disease very often (for instance, in the case of a woman, twenty-five years old, I observed acute lacunar tonsillitis not less than four times during two months).

This predisposition I was able very often to remove effectually by means of operative treatment of the tonsils (tonsillotomy, galvano-caustic snare), although it is not always so successful, as the case reported in the fourth epidemic proves. If I add that very often I only saw, or at least found much more affected the hypertrophied tonsil, I must come to the conviction that hypertrophy of the tonsils furnishes a suitable ground, predisposing the development of the pathological process, known under the term acute lacunar tonsillitis. I must further mention that once (in a boy ten years old) I saw the appearance of this disease a week after the operation for adenoid vegetation.

Further, I observed one case where acute lacunar tonsillitis appeared on the right side a couple of days after acute suppurative inflammation of the right middle ear. As I have already above mentioned, acute lacunar tonsillitis is of absolutely infectious origin, in which almost all authors agree. As to the character of the virus itself, however, opinions still differ. Some authors, amongst whom we must count (Poland) Sokolowski and Dmochowski, do not consider this disease as an independent one, but simply as a mild form of diphtheria, *i.e.*, caused by Klebs-Loeffler's bacilli. The authors, however, base their opinion only on anatomo-pathological researches. On the other hand, the bacteriological investigations performed by B. Fraenkel, Seifert, Gabbi, Ritters, and lastly Goldscheider, the author of the latest paper from the clinic of Prof. Leyden in Berlin (Bacteriologische Untersuchungen bei angina tonsillaris und Diphterie—"Zeit. für Klin. Med.," band 22, heft 4, p. 534) and others absolutely deny any relation between both these pathological

processes, so that so-called follicular angina is a disease *sui generis* not dependent upon diphtheritic bacillus, which none of the above authors were able to discover in the secretion of the crypts. I have also made a whole series of bacteriological investigations (cultures, inoculations on guinea-pigs) during 1893-94 in the laboratory of Jesus Child Hospital in Warsaw, upon the nature of acute lacunar tonsillitis. They were published in a special paper, read at the Eleventh International Congress in Rome, 1894.

I shall only say that they almost completely agree with the results of the above authors (B. Fraenkel, Goldscheider, etc.). In not one out of thirty cases was I able to discover Klebs Loeffler's bacilli, which, as is known (see my paper "Croup oder diphterie der Nase—" Monats. für Ohrenheilk," 1893), are now commonly regarded as the cause of diphtheria. On the contrary, I always found other micro-organisms not specific of this disease, but having the traits of common pyogenes staphylococci and streptococci (sometimes only the so-called pseudo-diphtheritic bacilli).

As concerns the *pathological anatomy*, it is very well worked out in the extensive paper of the above cited authors (Sokolowski and Dmochowski). These authors found in the specimens, coloured with Weigert's method, especially, very large crypts completely filled with secretion, which was composed of a great number of bacteria, especially small diplococci, as well as of lymphoid corpuscles contained in a fine net of fibrin, the character of which differed a little from that of malignant diphtheria, where the fibrinous net is found in the tissue itself, which becomes necrotic. Here, however, although the one and the other can be observed, yet this process has a very mild course. Necrotic points occur in several places, and only in the superficial layers of the tissue. The epithelium which covers the crypts is generally greatly infiltrated. As to the adenoid tissue, it does not show any particular changes, except infiltration; the same of the follicles (for this reason the definition of follicular tonsillitis, as I have already stated, is wrong). Finally, in one of three observed cases of this disease, these authors found changes characteristic of typical diphtheria (pseudo-membranes, necrosis of superficial larynx). From the above researches the authors express their opinion as to the identity of both these pathological processes, and propose for this disease the definition pseudo-membranous lacunar tonsillitis.

Symptomatology: The disease always commences acutely, generally with chills; afterwards follow more or less considerable fever, general weakness, headache, and dysphagia. In my cases, general symptoms were expressed, sometimes mildly, sometimes severely. The temperature in several cases rose to a high degree (41° C.); in some cases, however, a very quick fall of the temperature followed, so that frequently on the second or third day the patient was without fever. In general, the course of disease is *par excellence* acute; the process lasts very seldom a whole week, or longer. Headaches are frequent and pretty violent; the pain when swallowing, however, is very severe, but lasts always a very short time. In a couple of cases the patients complained of pain radiating to the ears, without changes, however, in these latter.

Very often I found in my cases more or less enlarged and painful lymphatic glands of the neck. Jurasz also reports this symptom as very frequent.

As to the local changes of the palatine tonsils, they present themselves in the form of more or less redness of the tonsils, likewise of the neighbouring parts (arches), afterwards in the form of more or less numerous yellow or whitish-grey points in the crypts, which sometimes are confluent, forming a kind of pseudo-membrane, so that it appears at first sight to be a real diphtheria, but on closer examination, absence of membranes upon other parts (palatum molle), and especially examination of the membranes from the bacteriological point of view, permit us to exclude diphtheria. They are atypical-transitory cases, and in these I mostly found, besides staphylo- and streptococci, the so-called pseudo-membranous bacilli, *i.e.* bacteria, which only resemble Klebs-Loeffler's bacilli by external appearance, not possessing, however, the character of these latter (*vide* the last paper of Prof. Escherich, of Graz: "Zur Frage des Pseudodiphtherie Bacillus und der diagnostischen Bedeutung des Loefflerschen Bacillus" (Berl. Klin. Woch., 21, 1893).

In most cases both tonsils are affected by the pathological process, but rarely in a like degree; sometimes, however, the process is localized upon one tonsil, generally more or less hypertrophied. Out of thirty-three cases I observed twenty-four with only unilateral affection (thirteen times on the left and eleven times on the right side).

The affection of the so-called fourth or lingual tonsil merits particular attention. Jurasz does not report such a complication. We, however, meet with it in Seifert's new and excellent monograph of the lingual tonsil ("Die Pathologie der Zungentonsille," Archiv. für Laryng., 1 Heft, 1893). This author, although he has not observed this complication himself, which he very justly explains by not having had his attention drawn to this point, cites Hagen, Fleischman, Michelson, and Gurowitsch. To these authors must be added Wróblewski (Poland), who in the year 1892 published an extensive paper upon the lingual tonsil.

Out of one hundred and thirty-three cases of acute lacunar tonsillitis I have had occasion to observe the simultaneous affection of the lingual tonsil twelve times. I am perfectly convinced that this complication must happen much oftener, but our attention is not always directed to it. This supposition I base upon the fact that only latterly have I commenced to examine every patient with acute lacunar tonsillitis by means of the laryngoscopic mirror, and since then I have found this complication comparatively often. In all twelve cases I found a more or less hypertrophied lingual tonsil, which seems to prove my opinion as to the predisposing agent, formed by hypertrophy of the tonsils for the formation of the antelacunar process. The picture presented by so-called follicular inflammation of the lingual tonsil does not differ in anything from that which I described above for the palatine tonsils. The base of the tongue, *i.e.*, the surface between the papillæ circumvallatæ and the epiglottis (the so-called valleculæ, *i.e.*, clefts situated on both sides of the ligamenta aryepiglottida and by the ligamenta aryepiglottida lateralia, which are then more or less filled with the hypertrophied tonsil) is

reddened and diffusely swollen. Sometimes single parts are more prominent—in the opening of these glands we find white-greyish, or rarely yellow, points, similar to those which simultaneously, or a little earlier, appear on the palatine tonsils.

Their number varies between two or more, generally less than on the palatine tonsils. The course of the disease is the same as above. They generally disappear together with the process in the pharynx .after some days ; sometimes they last a little longer. The pain on swallowing is very violent and generally localized in the region of the larynx.

As a rule, we must consider this complication to be a secondary process, descending from the palatine tonsils to the lingual tonsil. Once only have I observed on the contrary an acute lacunar tonsillitis, which had developed primarily on the lingual tonsil. The case was that of an employer, thirty-five years of age, who consulted me in October, 1893. The patient complained of violent pain in the region of the larynx, fever, weakness, and very strongly marked general symptoms. On examination I found the temperature 39° C. ; the lymphatic glands of the neck swollen and painful, and in the pharynx, besides slight reddening of the isthmus faucium, no more important changes could be observed to explain this painful swallowing. Only on examining the larynx by means of the laryngoscopic mirror, I found the explanation of this symptom in the acute inflammation of the laryngeal tonsil (great redness and some discrete whitish-grey spots). Ol. ricini, antipyrin internally, and a compress over the neck were then administered. Next day the swelling remained without change, and the general symptoms were as before (fever). The submaxillary glands, especially the right one, were greatly swollen and painful to touch.

On examination of the pharynx I remarked on both (more on the right) palatine tonsils typical spots in the crypts, besides great redness and swelling of the tonsils. The lingual tonsil showed the same condition. Gargles of salol were prescribed. Next day the condition was much better—subjectively swelling less, and objectively less fever, the process on the tonsils, especially the lingual, being slighter. After some days the patient completely recovered. The examination of the pharynx by means of the laryngoscopic mirror did not reveal the slightest change. The case merits attention from the fact that a week later, after severely catching cold, violent pains in the frontal sinus appeared, and severe catarrh of the nose, with purulent discharge.

Examination showed bilateral acute suppurative inflammation of the mucous membrane of these sinuses. Thanks to appropriate treatment (catheterization), a complete recovery ensued after some weeks.

The inflammatory—*i.e.*, follicular — process being frequent on the palatine and lingual tonsils, it would seem by analogy that the so-called third—*i.e.*, pharyngeal (Luschka's) tonsil—ought to undergo the same pathological process. Although I do not remember having read anywhere in literature such observations, I found in Grünwald's atlas of diseases of the nose and throat (1894) an illustration and description of follicular pharyngeal tonsillitis. I think, however, that in cases of acute lacunar tonsillitis the same affection of the pharyngeal tonsil must simultaneously

occur, and perhaps not rarely. I have, indeed, no sufficient proof of this supposition, because I have only latterly begun to examine the naso-pharynx in this direction by means of the laryngeal mirror (posterior rhinoscopy), which, as is known, is not always easy.

I have only up to now noticed three cases of this disorder. One occurred in a girl fourteen years old. On both palatine tonsils and on a greatly hypertrophied lingual tonsil were some white-greyish points. I found on examination of the pharyngeal tonsil a marked redness and swelling and several (four or five) discrete white-greyish points. After the application of the usual remedies (gargling with salol, compress over the neck, and douching of the naso-pharynx by Schmidt's method) recovery ensued in some days. Luschka's, as well as the lingual tonsils, except for moderate hypertrophy, did not show any changes.

The following case is also interesting on account of the simultaneous affection of the whole lymphatic pharyngeal apparatus with the above pathological process. A merchant's wife, twenty-five years old, consulted me in December, 1893. For some days there had been fever and violent pain on swallowing. On examination I found the temperature to be 38·5° C. ; the lymphatic glands of the neck enlarged and painful. On both palatine tonsils, which were very red and swollen, were several whitish-yellow points localized in the crypts. Similar points (spots), more whitish-grey, to the number of four or five, were situated on the lingual tonsil (also red and greatly hypertrophied). On examining the naso-pharynx with the mirror I remarked that the pharyngeal (Luschka's) tonsil was very red and swollen, and three or four discrete, circumscribed (the size of a pin's head), white-greyish points were observed. After application of the usual treatment (with addition of insufflating once a day the naso-pharyngeal cavity with aristol) complete recovery took place in a week. Except for moderate hypertrophy of Luschka's tonsil, and considerable increase of the lingual tonsil, the acute changes disappeared completely.

Latterly, I have observed one (third) case of simultaneous affection of the palatine, lingual, and pharyngeal tonsils—occurring in a business clerk, aged nineteen, who presented typical bilateral acute lacunar tonsillitis (great hypertrophy of the palatine tonsils, white-greyish spots in the crypts). Marked general symptoms were present, and very violent pain on swallowing. There was swelling and redness of the lingual tonsil, on which some whitish-grey points were observed. On the swollen and greatly reddened pharyngeal tonsil I remarked two or three similar looking spots. The course of the disease was pretty severe —especially the pain on swallowing, which disappeared only after several days under the usual treatment. Hitherto I had seen only secondary affection of the pharyngeal tonsil with the so-called follicular process. These combined cases—simultaneous affection of the lingual and palatine tonsils—were severer and characterized by a little longer course of the disease. The pains on swallowing are not characteristic of this affection.

The headaches in both my cases were very violent, localized behind (*cephalalgia occipitalis*). Locally, the process in the pharyngeal tonsil

showed itself to be completely identical with that of the palatine and lingual tonsils; there was more or less considerable redness and swelling, and generally in these cases and in the lingual tonsil there was a hypertrophic process, mostly of a moderate degree.

Finally, here and there small separate white-greyish points are found, generally in small number.

We pass now to the terminations and complications of acute lacunar tonsillitis. One of these, *i.e.*, suppuration of the frontal sinus, I have mentioned above.

Comparatively often I observed simultaneous affection of the air passages (acute laryngitis and bronchitis). Jurasz also reports this complication. This author in one case saw herpes. In two cases I observed termination in suppuration (tonsillitis abscedens)—generally unilateral; typical unilateral acute lacunar tonsillitis—with fever and white-greyish points, etc.—disappeared in some days; afterwards violent pains on swallowing appeared again on the same side. This hypertrophied palatine tonsil suppurated (in one case I was obliged to open the abscess, in the second case the abscess burst). Of such a complication I do not find any remark in Jurasz's book. In literature there exists one case of follicular tonsillitis, in which a fatal ending resulted in seventy-two hours from acute infectious phlegmon of the pharynx (described by Kohn, *New York Med. Rec.*, 1893-4).

The *prognosis* in cases of acute lacunar tonsillitis is absolutely favourable. The disease generally ends favourably in a few days, not leaving any traces (paralysis, etc.).

The *diagnosis* of this disease is generally easy—the acute disease, with fever, with characteristic affection of the tonsils (white-yellow-grey points in the crypts) can be only confused with true diphtheria.

This latter differs, however, in a simultaneous affection of the other parts of the pharynx (uvula, palatum molle, etc.); the membranes themselves are more diffuse and not absolutely localized in the crypts, in the form of more or less thick greyish, or dirty pseudo-membranes. The affection of the nose, naso-pharynx, or larynx in certain cases, and further, the course of the disease (secondary paralysis, etc.) permit us to distinguish these conditions. The general symptoms, the affection of the lymphatic glands of the neck, and the infectious character do not have any distinctive signification, because they can appear in cases of both these diseases.

Although typical appearances of the tonsils in cases of acute lacunar tonsillitis do not generally leave any doubts as to the nature of the disease itself, we cannot deny that sometimes this appearance is not characteristic—that the membranes, although localized in the crypts, are more diffused. These are the so-called transitory atypical cases, and I have already mentioned them. The diagnosis in these cases is not so easy, and can only be solved by means of bacteriological investigations. Such cases I have observed more than once, and have examined them in this direction (pseudo-diphtheritic bacilli).

Treatment.—We must first solve the very important question, as to which there is no agreement amongst physicians, viz., if in cases of acute

lacunar tonsillitis the patients should be isolated or not?—in one word, if we must act as in real diphtheria. The solution of this question is found in the mutual relation of both these pathological processes. If acute lacunar tonsillitis were only a slighter form of diphtheria, as is still maintained by some authors, it is plain that all which is obligatory in the treatment of real diphtheria must be also applied to the lacunar process: namely, isolation of children affected, from the healthy from the first onset of illness, etc. But as I have above stated, this is not so, since bacteriological researches show that this process is absolutely without etiological relation with true diphtheria.

Isolation as a prophylactic method is completely unnecessary.[1] It is true that acute lacunar tonsillitis is a disease also of infectious origin, which may even appear epidemically, yet (1) cases of infection with this disease occur comparatively seldom (I have very often seen that even mothers affected, suckling children, did not infect these latter), though sometimes the contrary was the case (*vide* first of my above described house epidemics). (2) What is more important, the infection always produces, at least in my observations, the same typical pathological process—*i.e.*, the disease is absolutely benign, but never real diphtheria, and *vice versa.*

I pass now to the proper treatment. This is very simple, and is based principally on the removal of general symptoms (fever, weakness, etc.), which we obtain by giving oleum ricini, antipyrin (quinine or salol) internally, wine and nutritive diet. As to the local treatment, in my cases I have limited myself to garglings with salol (of five per cent. alcoholic solution, a teaspoonful to a glass of lukewarm water—on mixing it forms a milky fluid) or menthol; very seldom sublimate or creolin (both these remedies are very disagreeable to patients). In slighter cases simply boric acid was prescribed. Very good results, especially in the alleviation of pain, are obtained by application of the so-called "compress échauffant" over the neck, especially in cases complicated with affection of the lingual tonsil. Being generally opposed to brushings in diphtheria, I do not apply them in this disease. Once only, *experimenti gratia*, I applied pyoktanin, without, however, any particular result. Jurasz, on the contrary, warmly recommends brushings of the membranes every two or three hours with two to five per cent. of carbolic acid.

In those rare cases where simultaneously the pharyngeal tonsil was affected, I applied insufflation of aristol to the naso-pharyngeal cavity, as well as nasal douches (Schmidt's method), with boric acid, etc. Finally I will mention, in passing, that twice, though not therapeutically, but for bacteriological researches, I excised the hypertrophied tonsils in the acme of disease by means of the tonsillotome. This operation was absolutely without ill effect to those patients, which also would speak against the diphtheritic origin of this disease. If excision

[1] Naturally I am thinking here of isolation in the strict sense of this word, *i.e.*, the removal of healthy children to other apartments, which generally, especially in poorer practice, is done with great difficulty. It is to be understood that the usual remedies of prevention, as in every infectious disease, must here also be applied.

of the hypertrophied tonsils during the existence of the pathological process must be generally considered as contra-indicated, so this operation, as a prophylactic method, in my opinion, is not to be condemned.

In most of my cases previous tonsillotomy, or excision of the tonsils by means of the galvano-caustic snare (*vide* my paper, "Quelques "remarques sur l'emploie de l'anse galvano-caustique dans l'hypertrophie "des amygdales"— Rev. de Laryngol., 1893), was successful. If sometimes after this operation acute lacunar tonsillitis occurred, it was always of slighter degree, which could be best observed in cases where only one tonsil was removed.

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