

measly in character, though occasionally papular, and then resembles that variety of urticaria which occurs in discrete rose-red patches over the skin. This is commonly accompanied by a vesicular eruption. My case differs in the erythema being uniform and general (though a few cases are described as showing this), in the absence of vesicles, and in the presence of the diffuse urticaria. A few cases are recorded of nettle-rash appearing after the administration of quinine, but I have not met with any described as showing diffuse erythema together with widespread urticaria.

These exanthematic rashes appear to occur most frequently in women, and seem to have no relation to the quantity of the drug taken, as in some instances they do not appear till after the administration of large quantities, while in others the smallest dose gives rise to toxic effects.

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VII.—SOME ETIOLOGICAL AND THERAPEUTIC OBSERVATIONS IN CONNEXION WITH BRONCHIAL ASTHMA: AN ADDRESS DELIVERED AT THE FIFTH SWEDISH GENERAL MEDICAL CONFERENCE, SEPTEMBER 1891.

By Dr O. TORSTENSSON.

Translated by E. E. N. Translation revised by Dr WILLIAM ELDER, Leith.

FEW illnesses have had so many different opinions expressed with regard to their origin as bronchial asthma; even medical writers are not certain yet if the opinions they have promulgated are correct. As I have, within a short period, had opportunity of treating 400 cases of this illness, partly in my own private practice and partly at the hydropathic establishment at Mösseberg, of which I have charge in summer, I have been able to make observations as to its cause as well as its treatment. I therefore venture to occupy part of the time of the Conference with some remarks on the subject in question.

First, let me notice historically the development of opinion regarding it. Although this complaint existed in olden time, as we find Hippocrates, Celsus, and Aretæus make mention of it, it was not then understood to be a different form of disease from other kinds of asthma. Only when physiological diagnosis came to be understood—*i.e.*, in the time of Auenbrugger and Lænnec—was this the case. Lænnec, who could not with his stethoscope find the specific cause of this peculiar illness, declared that it was produced by disorders in the nerves from unknown causes. Andral considered that it was caused by abnormal irritability in the vagi and phrenic nerves; that it could be caused by pressure of a bronchial gland on one of these nerves, and in one case he had found this to be the case. Several writers have more recently believed the cause to be irritation of the bronchial mucous mem-

brane by certain crystals discovered in the asthma sputum by Charcot and Leyden. But in addition to the fact that Zenker and others have shown that such formations occur in what is coughed up from the bronchi without asthma being present, and even in prostatic secretions, Berkart directs our attention to the fact that similar crystals occur in equally great numbers before and after the attack, and therefore they cannot possibly be regarded as its cause. Prof. See, one of the most celebrated physicians in France, who has paid much attention to asthma therapeutics, declares the illness to be a neurosis of the vagus, accompanied by, but never caused by, organic injury; and its chief symptoms to be bronchial exudations, tetanus of the diaphragm, and emphysema. Brügelman, who in the second edition of his pamphlet is, so far as I know, the last who has written fully about bronchial asthma, thinks it is caused by irritation of the central nervous system, through spots that are specially susceptible to such irritations, which may be situated as well in the upper part of the back of the pharynx as in other parts of the body; and in order that the disease may be produced, there must be a specific tendency thereto in the individual. Very much the same views are expressed by Berkart in the large work published on this complaint last year.

All these views, however, are too vague to be of real use therapeutically. In the beginning of the decade of 1870, several doctors came to be of opinion that asthma was caused by pressure on the nerves branching off from the upper air-passages. Frœnkel considered hypertrophy of the tonsils to be the cause, as he often found them associated, and by extirpating these in several cases he effected a cure. Voltolini, about this time, noticed one case of asthma which disappeared after the removal of a polypus of the nose. Others, on the other hand, found that an attack of asthma sometimes took place immediately after a similar operation. Consequently, the uncertainty as to the real cause was great. Hack was without doubt the first who, in the beginning of the last decade, carefully studied the connexion between asthma and other neuroses and new formations in the cavities of the nose, and he is (in my opinion) the one who has come nearest the truth. He believed that a hypertrophied spongy formation, situated on the lower turbinated bones, caused asthma by the irritation which it produced on the nerves there. He was indeed successful in producing a cure by diminishing these hypertrophies by means of the galvano-cautery. His writings caused much sensation in the medical world; and as several other neuroses as well as neuralgias were cured by him successfully by the same means, the inner part of the nose was soon regarded by some physicians as part of the human frame which ought most carefully to be examined. As a consequence of this, the odour of singed human flesh hovered almost constantly about their reception-rooms, but especially those of nasal specialists. It was, therefore, not long before a reaction

took place, and nasal therapeutics went too far to the other side; there it stands to-day with few exceptions.

As I have already mentioned, I have had opportunities during the last few years of studying this complaint, as every summer many cases of asthma come to Mösseberg. That asthma is connected with an inactive state of the skin I soon found, as in several cases when there were symptoms of nasal catarrh slight attacks of asthma followed, and very severe attacks of asthma began with these symptoms. I was also successful in curing several slight cases of asthma by strengthening the skin, and making it less susceptible by means of baths. Most cases, were, however, more stubborn. Even after I had, according to Hack's method, diminished the slightest swelling of the lower turbinated bones by the galvano-cautery, I was obliged to let patients leave me without receiving any real relief.

I then began to examine the inner parts of the nose, and especially its upper back cavities, in persons of perfect health as well as in those suffering from asthma, and found then that in every case where the person was suffering from asthma, no matter in what state the mucous membrane of the nose was, the superior turbinated, and sometimes also the middle turbinated, were swollen, so as to come close to the septum. It appears to me, therefore, clear that if the turbinated bones were increased in volume still more through acute catarrh or external local irritants, pressure must occur on the upper region of the septum, and on the many nerve fibres which through the nose ganglia anastomose with the vagus nerve. It has been found, especially quite lately by Lasarus in Berlin, through experiments, that by irritating the central points of this nerve an attack of bronchial cramp may be produced. It is not difficult, therefore, to conclude that pressure which has arisen in the manner already mentioned produces irritation, and accordingly an attack of asthma. It is very easy to produce an attack by applying mechanical irritation to the region above mentioned in persons who suffer, or have formerly suffered, from breathlessness. Thus some days ago I introduced a probe with a round ball at its tip into the nose of a person who had been cured of asthma from which he had suffered several years, and caused pressure between the superior turbinated bone and partition wall, a severe attack of sneezing was the result, followed by a fully typical attack of asthma, which was increased when I made a similar manipulation on the other cavity. Only after I had thoroughly anæsthetized the parts with cocaine did the attack cease, leaving, however, for about half a day a feeling of oppression on the chest. When, however, similar pressure was exercised on the lower turbinated, back of nose, and palate in the same way, no spasm occurred in the chest. It would, therefore, appear to me that only the branches of nerves which lie in the upper part of the septum have an influence on the bronchial muscles.

I had another proof of the correctness of this theory a short time ago, when I, "experimenti causa," after previous agreement, laid a small roll of cotton-wool, well pressed together, between the upper turbinated bone and septum of a person who had never suffered from bronchial asthma, but who was subject to chronic nasal catarrh, between whose superior turbinated and septum there still existed a space. Nothing transpired for some time, and the region of the nose did not seem particularly sensitive when the wool was put into it, so that I did not think sufficient irritation had been produced on the nerves. However, after a few hours the person returned to me manifesting all the symptoms of asthma. I cannot say whether in persons whose noses are quite healthy an irritation of this kind can produce an attack of asthma. Hitherto it has appeared to me that there must be an extra-sensitiveness produced by chronic catarrh of the mucous membrane, which affects the nerves embedded in it.

I also wish to mention that I have seen several cases of asthma only on one side,—a form of this complaint I have not seen mentioned before by any medical writer. In these cases the lung which answered to the side of the nose where the superior or middle turbinated was enlarged near the septum, manifested the signs of bronchial spasm with exudation so long as the attack lasted, while in the other nostril, where there existed a space between these bones and the septum, the lung was altogether free from symptoms of disease.

No more hesitation need therefore remain as to the cause of bronchial asthma, more especially as the therapeutics I have made use of as the result of my views on this subject have had the happy result, *that I cannot remember a single case where the aforementioned condition existed in the upper inner nasal region, which has not either been completely cured or so far relieved that when there has been a return of asthma the attack has only resembled a gentle swell after a great storm has passed away.* The latter cases have been such that either the upper inner cavities of the nose have been so narrow, or the septum so located towards one side, that sufficient space between it and the turbinated bone could not be produced; or, lastly, that the irritability of the nerves in the upper region of the septum have become so great through chronic catarrhs, that even a local astringent and roborating treatment has not been sufficient to fully remove it, so that when outside influences produce irritation, the symptoms mentioned above have been the result.

I am unable, without trying too much the patience of my colleagues present, to enter fully into the diagnosis of the disease. I will, therefore, only make a few remarks about the subject, using one or two concrete examples as starting-points.

I separate the acute febrile attacks of asthma connected with colds in the head from those which appear without the temperature

of the body being heightened, and which are caused by local irritation in the upper region of the septum, and also from those where oppression is felt in the chest caused by lying on the back at night, which is also accompanied by a rattling in the bronchi and severe cough.

The first form of asthma commences generally with pain in the limbs and slight shivering, accompanied by discharge from the nose, together with stoppage when the fever rises to  $38^{\circ}$  or  $39^{\circ}$  C. This nasal catarrh is soon followed by more or less laboured breathing, accompanied by wheezing in the lungs and a trying cough. To begin with, the expectoration is transparent and watery, resembling white of egg, but changes gradually to a "sputum cœlum," whilst the asthma diminishes and expectoration is easier. Even after the attack of asthma is over the cough and expectoration continue a longer or shorter period. Were one to examine the inside of the nose carefully at the beginning of the attack, a general œdematous reddish swelling would be seen in the whole cavity, and one or both of the superior turbinated bones would be so firmly pressed against the septum that one could not without injuring the mucous membrane press a probe up between them. After the attack is past the volume of the superior turbinated has so far decreased that this manipulation is no longer difficult, although no visible space can be seen between it and the septum.

The emphysema of the lungs, about which so much has been said in connexion with asthma, appears to me of less importance than what pathologists in general think. At least, I have seen hundreds of cases of asthma where there has not been the least resemblance to emphysema, or it has existed in no slight a degree that no inconvenience could be caused by it. Of the many cases of acute asthma which have been under my care, I will only give one as an example, as I regard it as rather a typical one, and so select it the more willingly. A landed proprietor, who owned large estates in the west of Sweden, but was a German by birth, had during several years suffered at intervals from bronchitis, which during the last years almost always returned when he attempted to go out into the open air, in consequence of which he was obliged to keep indoors all winter, and yet was unable to avoid catching cold and suffering several times during the winter from nasal catarrh, fever, and great difficulty of breathing, wheezing in the lungs, and the expectoration before referred to. It was only by smoking stramonium leaves and taking internally iodide of potassium and opium that he could alleviate the attacks. In the spring of 1886 he asked me if I thought Mösseberg would be a suitable watering-place for him to come to. From his description of his case I understood that he suffered from the ordinary form of asthma, and therefore gave an affirmative answer. His own physician, however, did not approve of his going there, and con-

sidered that hydropathic treatment in his case would be dangerous, and advised him to go to Ems. Though he drank and inhaled Ems water, and felt well when there, he had a severe attack of asthma the day after his return home. Without having half recovered from this he travelled, without consulting his physician, to Mösseberg. When his chest was examined a mucous rattle was heard more or less throughout both lungs; he experienced difficulty of breathing, and coughed up quantities of opaque expectoration; the temperature was normal, and both superior turbinates lying near the septum. The mucous membrane of the nose was pale and œdematous, and there was much discharge. The patient perspired on the least exertion, was pale and thin, but otherwise well.

After six or seven weeks of bathing and receiving local treatment, he was able to be out all winter with the exception of a few days. During these he suffered from only slight attacks of asthma. The following summer he continued his cure at Mösseberg, with the happy result that ever after he has been quite free from his old complaint even when he has caught cold.

The other form of asthma I can best describe by giving the following example, as it resembles in its chief traits many similar cases I have had under my care:—A middle aged man from the central provinces of Sweden, whose parents had been healthy and who had been healthy himself, and above all had no neurotic tendency, but whose skin was not in an active state, so that he easily perspired when he exerted himself, became ill in the spring of 1887 with a severe catarrh of the nose and larynx, which lasted several days. This was followed by a cough with copious expectoration, especially at night. He suffered also from very severe and prolonged attacks of coughing during the night. Oppression was felt in the chest and loud wheezing in the trachea heard, as soon as the patient tried to lie down. The cough continued all the following summer, and the discharge from the nose was great. In the autumn he began to feel it difficult to breathe through his nose at night, and when he attempted to move during the day breathlessness was the result. This breathlessness increased and became so troublesome, that when the patient tried to walk ever so little, especially in the afternoons, the difficulty of breathing became very great and soon produced a formal attack of asthma, so that he could with difficulty get back home to deaden the attack, by pushing up his nose a piece of cotton wool previously saturated with a strong solution of cocaine. The following winter he consulted several physicians, who told him he suffered from chronic bronchitis with emphysema. Besides the ordinary expectorants which were prescribed for him, the sides of his throat were pencilled with a solution of lunar caustic as they were found to be swollen. His cough was, however, only mitigated by this treatment, the asthma remained the same, consequently he travelled

in the spring of 1888 to Copenhagen, and let a specialist in the treatment of nose diseases burn away his inferior turbinated bodies with an electro-cautery. No improvement, however, resulted from this. After this he came to Mösseberg, where his superior turbinated bodies were found to be lying close to the septum, as is usual in asthmatics. In the mornings, after he had walked rather fast up a hill, or had exposed himself unwisely to the fumes of sulphurous acid, they became swollen and exerted a pressure on the upper region of the septum, in consequence of which an attack of asthma soon followed, which could only be removed by cocaine and rest. As the patient perspired copiously after the least exertion, baths, etc., were ordered with the object of strengthening the action of the skin, after which the superior turbinated bodies were treated, as will soon be described. The result of this was that the patient so far recovered that he was able the ensuing winter to follow his profession, in connexion with which he was obliged to go up and down many flights of stairs. In spring, however, signs of asthma reappeared, which made him return to Mösseberg. It was then discovered that a small part of the turbinated still pressed on the septum. After this had received treatment once the signs of asthma fully disappeared, and he remained away the following two winters. Only a slight night cough remains; no signs, besides this, remain of difficulty of breathing, nor can any disease of the lungs be found.

The difference between these two forms of asthma is that no fever and very little bronchial exudation accompany the latter. The lungs are generally quite free an hour after the attack. Whilst the former kind of asthma is, in a subject liable to it, produced by a cold accompanied by acute nasal catarrh, the latter is caused by local irritants, such as the fumes of sulphurous acid, or of ammonia, or much dust,—yes, and even the pollen of plants can cause it, wherefore this kind of asthma often comes on during a stay in the country. It is also apt to be caused when the action of the heart is increased by walking fast, or when anything causes congestion of blood to the head.

The third and least troublesome form of asthma is that which shows itself by a feeling of oppression and wheezing at night, and immediately on waking in the morning. This appears to be the case when the back of the superior turbinated bodies are most swollen, and when a catarrh in the pharynx associated with destruction of the mucous gland in the neighbourhood of the "palato-pharyngeal folds" exists. I have had under my care several patients suffering from this form of asthma, who, when their noses and throats had been well cleared out in the mornings, were quite free of asthma afterwards, only suffering from violent and prolonged attacks of coughing with much expectoration of phlegm resembling white of egg.

I have had under my care cases of asthma from age of 5 to 60.

I have found that the illness does not show preference for either sex except in the last mentioned form, where the males have been found to be greatly in excess of the females. It was formerly thought that asthma and consumption were diseases which could not occur simultaneously. This appears, however, by no means to be the case. I have had under my care several cases of typical nasal asthma, in which numerous bacilli have been discovered in the expectoration. During last summer alone five such cases were under my treatment at Mösseberg.

With regard to the effect of other diseases of the nose on asthma, I may mention that I have occasionally seen a fibrous polypus arising from the upper turbinated bodies cause asthma. On the other hand, I have often found both sides of the nasal cavities filled with gelatinous polypi without asthma resulting at the time. Strange to say, however, after these have been removed asthma has several times appeared. The reason must be, that though the upper turbinateds were diseased, they were by the polypi protected from increasing in volume sufficiently to produce asthma which would otherwise have been caused by dust, vapours, cold air, etc., reaching them, whereas when the polypi were removed they lost this protection.

I have also had under my care cases of asthma where the superior turbinated bodies have been very little enlarged, but the cavity of the nose has been much contracted by the septum having become attached to the remains of the lower turbinated after the latter had been burned with the galvano-cautery, owing to which, by the least congestion of blood to or irritation of the superior turbinated, pressure on the upper region of the septum has been produced. By loosening the adhesions and by suitable dilatation of the lower part of the nose the complaint has been removed.

Lastly, I wish it to be understood that I do not at all mean to say that the cases I have mentioned are the only ones which produce bronchial asthma, more especially as the central parts of the vagus can receive irritation from other parts besides the upper region of the septum; but on this I will lay stress, that among the 400 cases of asthma which I have seen and treated, not one case was seen which I did not find had been caused by pressure on or mechanical irritation of this region.

As I now believed that I had found the cause of the disease, the indications as to how it should be removed were very simple, viz., *by removing the pressure on and irritation of the nerves.* To do this I at first used the galvano-caustic apparatus for diminishing the hypertrophied turbinated bodies, making a scar along the lower side of the middle or superior turbinated, which is visible at the back of the nasal cavity. But when the latter was narrow, or the patient restless, it happened to me as well as to others, that the heated wire touched other parts than the turbinated bodies, and the patients, although I had anæsthetized the interior of their noses

with cocaine, dreaded the burning. I soon began to use chromic acid,—an acid I had often used some twenty or thirty years ago in the treatment of ulcerations of the “cervix uteri.” As I found that the method hitherto used in applying this was not practicable for the purpose, viz., by fixing heated crystals to the point of the probe, as bits of the acid easily fell off, and its power of cauterizing was reduced by too great heat, I ordered an instrument-maker to construct for me probes of silver with hollow balls at the end, into which the chromic acid is inserted. I have since used such probes of different sizes, and have always found them highly satisfactory. The chromic acid causes a well-defined burnt crust to form, which drops off after three or four days, after which another cauterization of the diseased part can take place until the turbinated has become sufficiently diminished. After the cauterization has been performed, the superfluous loosely-lying chromic acid is removed with a little cotton-wool, after which the nose is tamponed with the same for several hours. Between the cauterizations the interior of the nose is kept in a healthy state by the use of antiseptic sprays.

I have not found that chromic acid produces bleeding or other inconvenience, only now and then vomiting has supervened when much cauterization has been necessary, or after the first application in very sensitive persons. At one time I used tri-chlor-acetic acid in place of chromic acid, but I found this more difficult to fasten on the head of the probe; and as it was in no way to be preferred, I returned to the use of chromic acid. I have generally found it sufficient to cauterize five or six times in order to effect a cure. Very often after the first cauterization has taken place an attack of asthma follows, which is caused by the reactionary swelling after the burning of the turbinated bodies, which consequently presses on the septum.

In order to make the nerves of the nose less irritable, I have always combined with the local treatment a sedative and nerve-strengthening one, as well as hydropathic treatment of the skin, in order to make it more active. Small quantities of iodide of potassium have also been given internally. A hand-spray has also been used for the nose, containing a solution of aceto-tartras aluminicus and resorcin. As the skin and nerves are most readily strengthened by the use of a methodical water-cure, I always advise my asthma patients to come to me at Mösseberg, and I have distinctly observed that those who have received treatment there are better guaranteed against returns of asthma than those who had been treated in my private practice.

Before closing I wish to say, that where there is oppression of the chest, which I have described as coming on at night and connected with loud wheezing in the trachea, and with a severe cough much resembling whooping-cough, and generally combined with swelling of the sides and the back wall of the pharynx, these have

required to be pencilled with a solution of nitrate of silver, whilst the turbinates received the treatment already mentioned, in order that all the symptoms should be removed.

To allay the attacks of asthma I have used the treatment ordinarily employed in asthma therapeutics, viz., in severe attacks an injection of morphia, otherwise iodide of potassium with chloral hydrate taken internally. The smoking of stramonium and burning of nitrate paper have also been made use of. Cocaine and pencilling of the nose with menthol have also been employed. Besides these, I have experimented with all kinds of new medicines recommended in journals for asthma, but without any satisfactory results.

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#### VIII.—HÆMORRHAGE FROM THE ALVEOLI CHECKED BY PUFF-BALL (*Lycoperdon giganteum*).

By W. RAMSAY SMITH, M.B., C.M., B.Sc. Edinburgh.

A MAN, 72 years old, suffering from lymphadenoma associated with hæmorrhage from the alveoli, came under my care in August last. The hæmorrhage had occurred periodically at intervals of three weeks or a month, and had, on four or five occasions, been very profuse, lasting sometimes for eight days, and weakening the patient excessively. Ordinary styptics had proved useless. Having read Whitla's experiences of puff-ball (*Lycoperdon giganteum*) as a hæmostatic, I procured some of this material, and determined to use it should bleeding occur when the case was under my care. While waiting, I thought it might be useful to experiment in other cases of bleeding in order to gain experience in the manner of employing the substance, and this I did. One case tested it fairly well. After removal of a crushed nail of a great toe there was great hæmorrhage. I took a thin slice of puff-ball, and with it I covered the nail-bed and the point and sides of the toe. The result was that no blood came through the dressing. Other cases proved just as satisfactory—one was a case of severe epistaxis—and after waiting for a week or two I had my opportunity of trying puff-ball in the case I have mentioned at the beginning of this note.

The case, as I have said, was one of lymphadenoma with several complications, one of which was great and periodical hæmorrhage from the alveoli and gums. The teeth were bad, at least their necks and fangs were, and the gums had receded a great deal from them. Add to this that the patient was an inveterate smoker, and used a considerable amount of suction in this, his favourite occupation, and any one conversant with hæmorrhage from the jaws will readily grant that the case was an eminently favourable one for testing the powers and properties of a new hæmostatic. Bleeding had been going on for some hours before