PURULENT CATARRH OF THE EAR.¹

BY JAMES A. SPALDING, M. D. HARV.

ACUTE purulent catarrh of the ear in adults may arise from a variety of causes, during the course of a chronic catarrh, or from exposure of the ears in various ways to the action of cold. In children, it occurs more frequently during the course of, or as one of the sequelæ to, the exanthematous diseases. Some authors have considered its presence as the cause of infantile convulsions. I have been unable to find much attention drawn to this point in any of the more recent works on the diseases of children, and even the well-known presence of purulent catarrh, during and after exanthematous diseases, is for the most part passed over slurringly. Von Tröltsch, one of the greatest German authorities on diseases of the ear, mentions the result of a large number of pathological examinations of the ears of infants under one year of age, where he found in the tympanum and its neighborhood varying amounts of degenerated, cheesy, purulent deposits, which could have resulted in no other way than from an acute purulent catarrh of the ear. My idea in bringing this subject before you, especially in infantile cases, is to speak a few words as to the diagnosis. The great diagnostic symptom in infants suffering from an acute purulent catarrh of the ear in which there has been no flow of purulent matter from the external meatus, owing to the shortness of the Eustachian tube, which lets the pus flow off more easily than in adults, is the cry, which is distinguished from that present in diseases of the lungs, pleura, or larynx, in that in these latter affections the child can hardly ever cry aloud, and still less keep up a continuous cry. In acute purulent catarrh of the ear, in infants, this cry is continuous, loud, piercing, increasing with every motion and shaking of the body, and especially of the head, by every change of position, at every effort to swallow, and above all, at all attempts at nursing.

If in this way the attention of the physician is drawn to the ear, an objective examination may be now made, and if the diagnosis is confirmed, appropriate treatment may be resorted to.

In acute purulent catarrh in children and adults, the symptoms are more or less the same: intense and deep-seated pain in the ear, increasing with every motion of the body or head; deafness is present in greater or less degree; during the exanthematous diseases the pain is usually less than in an idiopathic case. There may be sooner or later a discharge from the ear.

The treatment is usually simple, and should be energetically employed, to prevent if possible either permanent deafness, from thicken-

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ing or perforation of the membrana tympani, or the bad results of a chronic purulent catarrh, with all its possible dangers and disagreeableness, as well as to relieve the patient as soon as possible from the agonizing pain.

The patient should be kept as quiet as possible, warm water should be frequently syringed or dropped gently into the meatus, warm poultices may be laid behind the ear, and one or two leeches may be placed in front of the tragus or below the ear, as from the relations of the vessels they will there sooner be able to relieve the congestion of the inflamed parts. It is sometimes advisable to plug the meatus with wool, to prevent the blood running in, or the accident of the leech itself crawling in. Morphia is often borne in large doses; but it should be remembered that it only quiets the pain, and does not remove the cause, nor bring speedier relief. If in the course of a few hours relief is not obtained, then there remain, as further steps of treatment, scarification, or even perforation of the membrana tympani; and this latter step is advisable if the presence of pus be detected behind the membrane. These operations can be performed with a common needle such as is used for paracentesis of the cornea, but still better with a needle made for the purpose, with a bend in the shank, which does not prevent the surgeon's seeing what he is doing. The object in scarification is to relieve the over-loaded blood-vessels, while in perforation we endeavor to hasten the removal of pus already seeking its way out from the tympanum. As a result of such treatment, many a case of acute purulent catarrh can be speedily relieved, and great damage prevented.

It is an indisputable fact that in no other part of the body would such a state of things as accompanies a chronic purulent discharge from the ears be allowed to remain for years untouched. It is a well-founded surgical rule that all deposits of pus elsewhere in the body should at once be removed, or attempts made in that direction. But in the ear, which lies as it were in contact with the brain, an accumulation of pus, or muco-pus, is allowed to remain for years, without any determined effort being made toward its removal, or to heal the causes which lead to it, and keep it a permanent drain upon the system.

Brief mention may be here made of the anatomy of the tympanum within or near which this pus is allowed to remain. Its floor lies just over the jugular vein, separated from it by an oftentimes transparent layer of bone; near by lies the internal carotid artery. Its ceiling, which also is not seldom thinned or even sieve-like, touches the dura mater, and the superior petrosal sinus. The inner or labyrinthine wall, offers but slight resistance to the encroachment of any inflammatory process, first upon the facial nerve, and second on the inner ear. Last of all we find, lying close to the tympanic cavity, the mastoid process of the temporal bone, with its net-work of cells, and the sinus transversus which lies directly behind it.

A chronic purulent catarrh of the ear is easily enough recognized by the continual presence of a discharge from the meatus, often offensive to the patient and those around him. Deafness is also present to a greater or less extent. The most common cause is a neglected case of acute purulent catarrh, either idiopathic, or, as is more frequent, as a sequel to various exanthematous diseases.

The first thing to be done, when such a case presents itself, is to cleanse thoroughly the meatus with warm water, so that the condition of the parts, which is often greatly altered by the presence of a long-standing discharge, can be accurately made out. The most common objective symptom is a perforation of the membrana tympani, which may vary from an almost invisible slit to entire absence of the membrane. The deafness will vary according to the size of the perforation, there being usually much better hearing with a large than with a small perforation, provided of course that some part of the membrane is still left standing, holding the bones of the ear *in situ*. Beyond the perforation, if it be large enough, can be seen the red and swollen mucous membrane of the promontorium, sometimes marked with raspberry-like granulations.

It is of prime importance to bring the mucous membrane to a healthy condition, if we would afterward heal the perforated membrane. Having carefully cleansed the meatus with warm water, it is then to be dried with cotton wool rolled round the end of the probe, always looking where the cleansing is being done, so that the bones of the ear, if still present, may not be broken or dislocated, thus causing oftentimes incurable deafness. This wad of wool should be very small, so as not to interfere with the view. Solutions, of varying strength, of nitrate of silver, from ten grains to the ounce of water to thirty grains, or even to a saturated solution if granulations be present, are then to be thoroughly applied with the same cotton pointed probe as during cleansing. Oftentimes the discharge is kept up by one small granulation, while the rest of the mucous membrane is in a comparatively healthy state. In such a case it can be easily seen how bad it would be to apply a strong solution of silver all over the mucous surface, and this is why I advise that we should always see what we are doing and not apply strong solutions indiscriminately. There is also another plan for bringing the mucous membrane to a healthy state, and this is to force warm astringent or alkaline solutions through the ear and Eustachian tube from without, by means of a syringe with a nozzle which fits air-tight into the external meatus. The patient holding his head down and to one side, the fluid runs out of the nostril. We must, of course, before using this method, first assure ourselves that the Eustachian tube is open. This procedure sometimes causes dizziness, which however lasts but a short time; still it is well worthy of trial in obstinate cases, as the seat of the discharge may be in a part of the tympanum inaccessible to touch.

During the intervals of treatment by the surgeon, the patient is to use as an ear lotion a solution of sulpho-carbolate of zinc, ten grains to the ounce of water, or sulphate of zinc, of the same strength, with a few drops of a solution of carbolic acid or liquor opii added. Various other astringents may be tried. It is well that all lotions should be made of double strength, so that when used they can be diluted with one half warm water, which makes them more agreeable to the patient and less dangerous.

The edges of the perforation in the membrana tympani may also be cautiously touched with solid nitrate of silver, applied with a fine probe; but I think it will be usually found that the edges of the perforation show tendency to heal when the mucous membrane of the tympanum becomes more healthy under careful treatment.

Let us suppose that as a result of such treatment as has been suggested, the discharge has at last stopped, and the edges of the perforation have reached a pretty healthy state. Considerable deafness may still be present. With the decrease of the discharge, there may be at first a decrease in hearing, but this will gradually disappear. But if we wish to try to increase the hearing at once, we may resort to the artificial drum, or to the plug of cotton wool, or we may try the effect of a piece of common note paper, cut out to the required shape, and gently placed over the perforation. With the first two methods, the patient is usually the best operator, for he can adjust the artificial drum or plug of cotton wool to best suit his hearing, while with the paper, the surgeon can best succeed. Either of these three methods may often bring about a marked increase of hearing, but it is well to be cautious about promising too much for the patient.

As was remarked before, the mastoid cells lie directly in contact with the tympanum, and it may happen that pus finds its way into them, especially when its passage outward is prevented by polypi in the meatus, or downward by occlusion of the Eustachian tube. If pus makes its way into the cells, it makes its presence known by redness, swelling, and tenderness over the mastoid region. It may make its own way outward and have a fistula, often obstinate to treatment, as the pus may burrow in all directions. If the presence of pus be suspected, a free incision, about an inch behind where the auricle joins the bone, should be made at once down through the periosteum, and from below upward, so that the knife if it slip may not wound the large vessels of the neck; and in very acute cases the bone itself should be carefully broken into by a gouge or chisel, or especially invented trepan. By keeping the incision well open, and now and then forcing warm alkaline or astringent solutions through the meatus, a greater portion of which will make its way outward through the broken-down cells, we may succeed after long and careful treatment in bringing about a healthy state of the parts involved.

The death-record and autopsy list of many a hospital show a large number of fatal cases due to the presence of pus in the mastoid cells, and its extension to the brain and its membranes. Passing by any detailed list of all the various cerebral troubles, as abscess, meningitis, and so on, which have thus been caused, brief mention may be made of facial paralysis, caused by a lesion of the facial nerve, as it passes through the Fallopian aqueduct, separated by a very thin plate of bone from the tympanum, in which there is a deposit of pus. Facial paralysis thus caused is more likely to be lasting than when due to other causes. The surgeon may here find himself at fault in his prognosis if he has overlooked the fact that a purulent deposit in the tympanum may be the cause of the lesion. We in such cases resort to constitutional treatment, but any purulent discharge from the ears must be especially treated before we can hope for lasting benefit.

Finally, we come to the most common accompaniment of a chronic, purulent discharge from the ear, one which is as it were at the same time effect and cause,—polypus of the meatus. On examining the meatus, its passage is seen to be more or less blocked up by a fleshy growth, which may be diagnosed from inflamed mucous membrane, by being movable by the probe. A polypus may be large or small, superficial or deep-seated. From its surface there is ever extending purulent matter, and the very presence of the growth not only keeps up the discharge from the meatus, but may lead to dangerous results by preventing its exit. If a polypus has a small base, or is pedunculated, also if it be superficially seated, it may be removed bit by bit, or even *en masse*, by snares, which we may do successfully if the meatus be large and roomy; but if the meatus be narrow, or if the polypus be deep-seated and with a broad base, then we must resort to the slower process of cauterization. Good success in this direction is attainable with solid nitrate of silver, but other caustics may in turn be tried. Whatever caustic is used, it is to be applied freely all over the exposed surface of the polypus, avoiding as much as possible any cauterization of the dermoid layer of the meatus. The caustic may be applied every other or every third day. Under its action a polypus often seems to melt away. If much pain ensue, it may be relieved by warm water. After the polypus has been entirely removed, its base must still be thoroughly cauterized, especially as in some cases there is a tendency to recur. There is no positive certainty, as to our prognosis, either as to the perfect removal of a polypus, or as to increase of hearing. A majority of cases, however, yield to careful treatment, and the hearing is oftentimes greatly improved.

In summing up the whole subject which we have now under consideration, it can be truly said that by energetic treatment of acute purulent catarrh of the ear we may often succeed in preventing any con-

siderable lesion of the parts concerned in hearing, as well as the possibility of a future chronic catarrh; that the discharge due to chronic purulent catarrh can be rendered much less in amount or even entirely removed; that deafness due to such discharge can be much diminished; and that the stoppage of the discharge not only has not, as is almost universally supposed, a harmful effect on the system, but that on the contrary the general health of the patient can be and is thereby greatly improved.

I am informed that some of the more conservative life assurance companies, not only in England, but in this country, refuse to consider an applicant with a chronic purulent discharge from the ear as a safe risk.

RECENT PROGRESS IN THE TREATMENT OF CHILDREN'S DISEASES.

BY D. H. HAYDEN, M. D.

Diphtheria.¹—The author² reports the results of his experience during an epidemic of this disease in Tunis. He classifies the disease into a mild form, a form with abortive infection, a severe form, and finally a hypertoxic form; *i. e.*, when the general infection is so rapid that one is led to the conclusion that the general infection is the primary stage, and the disease of the pharynx the secondary, while the author, however, for all cases asserts the opposite. A very important guide for determining the severity of the disease is the amount of albumen in the urine, and the condition of the glands of the neck as to swelling. Of the sixty-four cases treated by the author, only two had paralysis as a sequel.

The author does not use any prophylactic treatment. He advises the parents only to examine daily the pharynxes of their children, in order, if necessary, to obtain the immediate attendance of their physician. The use of caustics is condemned, and locally and internally, partly carbolic acid, partly salts of sulphurous acid are used.

Of late the author has used with satisfactory results chloral hydrate dissolved in glycerine.

G. Calimani,³ since 1873, has had under treatment two hundred cases of diphtheria, and notwithstanding the employment of old and new remedies, amongst others salicylic acid, has lost one hundred and fifteen cases. Twice consecutive paralysis was observed, which rapidly recovered. In five cases, young girls, there was gangrene of the vulva, and in one case purpura hæmorrhagica. A complication never before

¹ Centralblatt für Chirurgie, No. 14, 1876. G. Ferrini. G. Calimani.

² Annali univ. di Medic. e Chir. Maggio, 1875.

³ Gazz. Medica Ital. Lombardia, No. 52, 1875.