

## A CLINICAL HISTORY.

CASE OF SCARLET FEVER, COMPLICATED WITH NASAL AND PHARYNGEAL DIPHTHERIA; ACUTE SUPPURATION OF BOTH MIDDLE EARS; RAPID DESTRUCTION OF TYMPANIC MEMBRANES; SERIOUS LOSS OF HEARING; FACIAL PARALYSIS; AND ABSCESS OF LACRYMAL SAC; RECOVERY.

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B. M—, a girl, aged four years, of healthy constitution, was attacked by scarlet fever on Nov. 29th, 1883. She contracted it from her brother, fifteen months older, who had been suffering for a fortnight from a somewhat mild form of the disease. The boy took ill in the country, and the girl was removed to Glasgow as soon as it was seen that her brother had fever. Twelve days intervened from the time of separation before she was seized with the malady, the infection having apparently been carried by a third person; and within fifteen hours of her seizure she was reconveyed to the country, where her little brother lay ill, and placed under the care of Dr. Hay of Maryhill. During the first week the disease pursued a course more severe than in the case of the boy, although presenting no alarming symptoms. The rash was abundant, the throat affection moderate, and there was but slight swelling of the cervical glands. There was, however, very considerable delirious excitement at night. The treatment during this period consisted mainly of frequent sponging with tepid water, and the administration internally of chlorate of potash and diluted muriatic acid. At the end of the first week the temperature fell very decidedly, and the crisis of the fever seemed to have been satisfactorily passed.

This improvement was, however, of but short duration, for, at the beginning of the second week, the temperature again rose as high as  $105^{\circ}$ . Coincident with this rise of temperature, there were marked symptoms of nasal catarrh, the nasal passages becoming much obstructed, and a thin irritating discharge began to exude from the nose. The child also complained of the throat, and the glands of the neck were seen to be more enlarged. However, as examination of the throat revealed at first no more than some increased swelling and redness, it was hoped for a time that this marked aggravation of the condition was due to nothing worse than a simple nasal and pharyngeal catarrh.

In a few days, however, Dr. Hay suspected the real nature of the complication to be nasal diphtheria. This view was confirmed by Dr. Finlayson, who was called in consultation at this stage, and soon it was made only too manifest by the appearance of distinct diphtheritic patches on the soft palate, tonsils, and posterior wall of the pharynx, extending evidently into the naso-pharynx and nasal passages. The nasal obstruction and the increasing swelling of the throat caused great distress in breathing. Large quantities of stringy, viscid, and dark-coloured mucus also constantly collected in the mouth and throat. Tincture of steel and chlorate of potash were now prescribed. The nasal passages were regularly syringed with a solution of chlorate of potash. The stringy viscid mucus was also frequently washed out of the mouth and throat by means of syringing with a warm solution of chlorate of potash. Efforts were also made, though not very successfully, to spray the nasal passages and throat with a solution of lactic acid. A strong solution of nitrate of silver was on several occasions applied with a brush to the patches in the throat. Minute attention was also devoted to the nutrition and stimulation of the child.

Towards the end of the third week her condition was in the highest degree critical, chiefly by reason of the determined resistance which she now offered to the taking of nourishment either in the solid or in the liquid form. The teeth were so tightly clenched that it was necessary to force open the jaws with the handle of a spoon. As a consequence medicines had pretty much to be abandoned, while it was possible to introduce nourishment only by injecting it in the liquid form through an ivory tube inserted between the teeth. After continuing this method of giving nourishment for a few days it had to be abandoned, not only on account of the terrible struggles which the efforts to separate the teeth involved, but because it was found that

although the liquid was injected into the throat it was not swallowed, either passing out by the nose or returning by the mouth. It was remarkable that although the child was in a state of great prostration she showed extraordinary power in resisting the separation of the teeth. Nutrient and stimulating enemata were now resorted to, and no further efforts in the meantime made to feed by the mouth. For two days or thereabouts the bowel retained the nutrient enemata, but after that they came away immediately after being injected.

At this time—towards the beginning of the fourth week—the child's condition seemed so critical that the friends and medical attendant regarded a fatal issue as almost inevitable. At this crisis Dr. Finlayson, who had already seen the child thrice in consultation, suggested that while we should refrain from forcible efforts to give nourishment or medicine, we should, as the child lay prostrate on her back, pour a few drops of cold water on the clenched teeth, so that the water might gradually permeate through between the teeth, and from its grateful coolness induce the child to swallow. This was done, and it was noticed that when the cold water reached the mouth through the teeth she swallowed it. This operation was frequently repeated and always with the same result. A half-cupful of milk with the addition of a teaspoonful of whisky was now prepared and administered in the same way, though it took half an hour to dispose of that quantity. This course seemed to inaugurate a distinct change for the better. Several cups of milk containing whisky were swallowed during the next twenty-four hours, and the child began to open its jaws and willingly to receive nourishment. Gradually various other forms of nourishment were taken, such as Brand's essence of beef, and, as might have been expected, improvement in the general condition soon followed.

While the disease was at its worst, about the end of the third week, there appeared a purulent discharge from both ears. I had previous to this occasionally examined the interior of the ears, one of these examinations having been made two days before the discharge appeared, without anything abnormal being found in the appearance of the tympanic membranes. The condition of the child at this stage, however, forbade the satisfactory examination of the ears. Two days after the first appearance of the discharge, inspection of the interior of the ears showed that both drum membranes were in great part destroyed, and that granular excrescences had already begun to sprout up. The walls also of the deep parts of the external auditory canals seemed to have a diphtheritic coating.

Efficient treatment of the ears was rendered difficult on account of the prostrate state of the child, but at least once a day, sometimes oftener, both ears were gently syringed with a warm solution of boracic acid, then carefully dried with absorbent cotton, and a small quantity of the acid, finely powdered, insufflated into the interior. As the child began to improve in its general condition this method of treatment was repeated every eight hours. The discharge nevertheless continued very profuse.

Though the general improvement was maintained, at the end of the fourth week another complication arose. The skin of the right cheek became intensely inflamed and over the lacrymal sac the tissues became much indurated. This was attended by a fresh elevation of temperature and increased restlessness. In the course of a few days an abscess formed, evidently in connexion with the lacrymal sac. This was opened and a quantity of pus evacuated, after which the inflammatory swelling gradually subsided without any operative interference. The parts did not, however, return to their natural condition for fully six weeks afterwards.

About the middle of the fifth week, as the swelling of the right cheek, due to the lacrymal abscess, was subsiding, it was noticed that that side of the face was less mobile than the opposite side, and also that the right eyelids did not perfectly close. At first it was hoped that the inflammatory swelling of the cheek explained these peculiarities, but soon it became evident that there was really paralysis of the right side of the face. In the course of a few days the paralysis was very pronounced. It was clear that the facial nerve was in some way involved in the mischief which had so rapidly and destructively attacked the middle ear, and it was feared that we had now to deal with some affection of the bone involving the walls of the Fallopian canal. The testing of the electrical reaction was purposely omitted in case of again exciting the resistance of the child, and par-

ticularly as no practical question of treatment by electricity required to be raised till after the lapse of a few weeks. Profuse purulent discharge still continued to come from both ears, in spite of the most careful application of the boracic acid treatment. Although every six hours the ears were syringed with a solution of boracic acid, then dried, and the powder insufflated, exuberant granulation tissue sprouted up from the walls of the external auditory canal and from the tympanic cavity.

Now that the child's general condition rendered it possible to ascertain the state of the hearing power, it was found that very great deafness existed, and that very loud speaking near to the head was essential in order that she might understand what was said. Her general condition continued to improve; nourishment was freely taken, and the strength gradually increased. At this stage she was conveyed back to town in order that the ears might receive the best attention, with the hope that their successful treatment might favour the disappearance of the facial paralysis. The boracic acid treatment, which is so frequently successful in purulent disease of the middle ear, having received a fair trial without apparent effect, I now employed, in addition, a solution of nitrate of silver (forty grains to the ounce of water) every day, using it in the manner first suggested by Schwartze—namely, dropping the solution into the ear, and then, after two or three minutes, neutralising it with a weak solution of common salt injected into the ear. After a week's trial, no good effect being apparent, the treatment by nitrate of silver was abandoned. Noticing that Burckhardt-Merian strongly recommended an alcoholic solution of salicylic acid for purulent ear disease associated with diphtheria, I next tried this remedy, but found the pain and irritation to be so great that it had to be given up.

Diluted rectified spirit was next employed in the strength of one-third of spirit and two-thirds of water. The following process was carried out every eight hours: (1) Careful syringing with a warm solution of boracic acid; (2) removal of all the moisture in the interior of the ear with absorbent cotton on a cotton holder; (3) instilling into the ear fifteen drops (warm) of the diluted spirit; (4) allowing it to remain in the ear, while the child lay on the opposite side, for fifteen minutes; (5) drying the canal with cotton, and then placing a plug of salicylated cotton in the orifice of the ear. This treatment was, of course, applied to both ears. In addition, and in order to ensure still more thoroughly the complete expulsion of the purulent secretion, Politzer's method of inflating the middle ear was performed once a day after the syringing. The nasal passages were also syringed daily with a tepid solution of chlorate of potash. The strength of the spirit was gradually increased to equal parts of water and rectified spirit, but when employed stronger than this the pain excited by it compelled us to return to the weaker form. This method of treatment very soon proved itself to be the most efficient. The discharge perceptibly diminished; the granulation tissue began to shrink and the hearing power became more acute. For five weeks after its first appearance the facial paralysis remained unaffected. Then the child showed more power of closing the eyelids, but probably another fortnight elapsed before the muscles of the cheek showed signs of mobility. First the naso-labial furrow deepened, and almost day by day some progress was observed in the recovery of the muscular power of the face. In about nine weeks from the time the paralysis was first observed it had completely passed off. There is no doubt that the returning power to the muscles of the face was co-incidental with the improvement in the ear due to the spirit treatment. This improvement went steadily on, and in the course of four weeks from the beginning of the spirit treatment the granulation tissue had disappeared and the discharge reduced to a trace. When this was achieved very little of the tympanic membrane on either side was found to exist. The hearing was notwithstanding surprisingly good. In four months from the first attack of the fever the girl seemed almost as healthy as she had been before, though still somewhat dull of hearing. Her return to the country had no doubt contributed to this satisfactory result.

On May 15th, 1885, about eighteen months after the attack of scarlet fever, the condition of the hearing was as follows: Right ear—hearing distance for watch,  $\frac{5}{8}$  ft.; for Politzer's Hörmesser, 8 ft. Left ear—hearing distance for watch,  $\frac{3}{8}$  ft.; for Politzer's Hörmesser, 9 ft. The whispered voice was heard in a quiet room at a distance of about 12 ft. with the eyes closed. The bone conduction of sound was

on both sides better than the aerial. In each ear the only part of the tympanic membrane remaining was a piece of thickened membrana flaccida attached to the short process of the malleus. The handle of the malleus was not visible, but having lost the support of the tympanic membrane, it was probably drawn up by the tensor tympani muscle into the upper tympanic cavity. The inner wall of the tympanum was, owing to the loss of the tympanic membrane, clearly visible, and was seen to be lined by slightly thickened mucous membrane. The secreting process in the middle ear had long ago ceased. The throat still presented marks of the severity of the original disease. The base of the uvula was deeply indented, and the posterior edge of the soft palate somewhat serrated. The mucous lining of the posterior wall of the pharynx was also irregularly thickened. With the exception of some tendency to nasal catarrh, the child seemed to be in a condition of robust health.

*Remarks.*—1. This case bears out what Burckhardt-Merian has especially drawn attention to<sup>1</sup>—namely, that scarlet fever, when complicated with or followed by diphtheria, is apt to give rise to a most destructive type of disease of the ear. It is probable that in such cases there is a real propagation of the diphtheritic membrane along the Eustachian tube to the tympanic cavity, and even to the external auditory canal. We have not simply to deal with an ordinary collection of purulent secretion in the tympanic cavity, with rupture of the membrane and evacuation of the pus; we have rather to do with a rapidly destructive ulcerative process which, as is shown by this case, denudes the organ of the tympanic membrane in a very short time. There is reason to believe that scarlet fever alone does not produce such havoc; the addition of the diphtheritic poison seems to impart that destructive tendency to the ear complication which may terminate in deaf-mutism, or even lead to a fatal issue.

2. From the favourable course of the facial paralysis in this case, we need not despair of recovery from this complication of purulent disease of the ear. In children, not only is the facial nerve, as it lies in its osseous canal on the inner wall of the tympanum, in close juxtaposition to the mucous membrane of the tympanic cavity, but the bony walls of this canal are very frequently defective when the neurilemma of the nerve is in actual contact with the mucous membrane. It is easy to understand how, with such an anatomical arrangement, the pressure of granulation tissue, swollen mucous membrane, or even of secretion, may produce paralysis of the facial nerve without ulcerative disease of the bone, and therefore without the same gloomy prognosis.

3. The recovery of fair hearing also illustrates a fact which is not unfrequently observed—namely, that fair hearing may exist even when the tympanic membrane is almost quite destroyed. What is of more importance than the presence of the tympanic membrane is a normal mobility of the fenestral structures. If these structures, with the stapes, are not thickened, bound down by adhesions, or subjected to pressure, fair hearing power may be enjoyed, although the membrane, with even the malleus and incus, should have been swept away.

4. This case also shows in a striking way the value of treatment by rectified spirit in purulent disease of the middle ear associated with granular excrescences.

## ON THE COMBINED ACTION OF COCAINE AND ATROPINE IN IRITIS.

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In a paper on the Cocainised Eye, before the Ophthalmological Society on Jan. 8th, 1885, I mentioned the use of the combination of cocaine and atropine in producing a very large dilatation of the pupil, and showed how this could be utilised in cases of iritis. Since then I have been trying how best to use such a combination, but the expense of the drug till lately has restricted me in the number of my cases. I first tried using cocaine at the hospital after the patient

<sup>1</sup> See "Ueber den Scharlach in seinen Beziehungen zum Gehörorgan," von Alb. Burckhardt-Merian, in Volkmann's Sammlung, No. 182.