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JUL 14 1909

Glaucoma and Mastoid Inflammation as Sequelae of Epidemic of Influenza (La Grippe.)

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My grandfather, Lyman Spalding, M. D., practicing in Portsmouth, N. H., from 1798 to 1811, reported in 1807, two epidemics of influenza in that town, one in January and one in August. In his papers he mentioned as amongst the sequelæ of those epidemics, troubles with the eyes and ears, not specifying the symptoms precisely, but stating in general terms that after the epidemic there was an unusual number of cases of inflammation of the eye, with loss of sight, and of the ear, with pain, suppuration and death. As physicians then did not know the difference between iritis and glaucoma, or even cataract, and as mastoid complications have been a discovery of modern times, it would be presuming too much to assert positively that the epidemics of 1807 were followed by glaucoma and mastoid inflammation, but judging from the symptoms, the similarity of the sequelæ of both the former and the present epidemics of influenza can hardly be denied.

Stimulated by these notes from the pen of my grandfather, who was a great man in his day, as a teacher and practitioner, I have been studying my note books, and having discovered several instances in which the eye or the ear have become affected subsequent to epidemics of influenza, I wish to call your attention to the most typical ones that have fallen under my observation.

Leaving aside inflammations of the cornea, iris and retina,

and innumerable cases of inflammation of the external ear, meatus and drum-head, after the influenza, let us look at two typical affections, one each of the eye and ear, as the sequelæ of epidemic influenza: I mean GLAUCOMA and MASTOID INFLAMMATION.

Mrs. A. first consulted me, nine years ago, for total loss of the sight of her right eye from glaucoma, which had begun some months before, and despite all available treatment, except an iridectomy, had terminated as above stated. For a few weeks before consulting me, the former pain, which had for some time been very slight, began once more with extreme intensity. Relief being unattainable by morphia, the patient welcomed the suggestion to remove the eye. I advised, her, however, that an iridectomy might be tried, and had been known to relieve the pain, but that occasionally it failed, and in such an event removal of the eye would be imperative, and thus two operations, instead of one, would be the case. As she lived at a great distance from Portland, enucleation was strongly urged and accepted, and done to the patient's great relief.

At this time the left eye was normal, although at times, when wearied, the patient would suffer from obscurations of the sight, and a halo around a flame. An iridectomy in such an eye is not permissible because the sight may be worse after than before the operation, and if it should so happen, it takes a good deal of argument to make the patient understand that more sight would have been lost by waiting than had been lost by the iridectomy.

For that reason the use of eserine was advised, and from that time forward the patient instilled into her only remaining eye from one to three drops of a four grain solution of eserine sulphate, at least once a day. The result of the treatment was unusually good, the sight and the visual field remaining as nearly normal as possible for eight years. Examinations with the ophthalmoscope and otherwise, about once a year, showed good motion of the pupil, with slight contraction from the use of the eserine, absolutely normal vision (in the last two years

with a weak convex lens) and no noticeable contraction of the visual field. If at times the eserine were missed, or as happened at one time when the bottle was broken, and no fresh eserine could be procured, then a haziness or smokiness of the sight would come on, and fail to be removed by pilocarpine, even in greater strength. But within fifteen minutes after using the eserine again, all would be well. In all those years there was no trace of inflammation of the iris, which, according to some authors, occurs after prolonged use of eserine.

For eight years, then, here was a patient with one eye lost from glaucoma and the other saved by eserine, and retaining good and useful sight, when suddenly she was attacked with a severe type of influenza, with the result of destroying the sight within a week, despite the use of the remedy as of old, during the influenza affection. As she improved, the sight improved, but was never one-third as good as before the influenza, and despite an early iridectomy, which I soon did, it is now slowly deteriorating.

The second case of glaucoma, following the influenza, was of the malignant type, the so-called hæmorrhagic glaucoma. This patient, often watching at night with invalids, and when only artificial light was available, overtasked her eyes and asked me to fit her to proper lenses. At that time there was no trace of glaucoma in either eye, but three months later, after the new lenses had been used with satisfaction, an influenza set in and prostrated the patient. After a slow recovery of a month, pain began in the left eye, with a halo around a light and rapid loss of vision, so that in four days the eye was blind. When I saw her the cornea was so hazy that an ophthalmoscopic examination was impossible, but taking all the symptoms together, glaucoma was diagnosticated and an iridectomy urgently advised. This was done at once, and well done too, but the pain did not cease, the anterior chamber filled with blood, and after ten days of ineffectual endeavors to save the eye, it was enucleated. Examination made at the time, showed why the operation had failed. The retina was mottled with hæmorrhages, and the

case was one of hæmorrhagic glaucoma, a *noli me tangere* so far as success from any operation is to be looked for. This disease is, in my opinion, when seen after influenza, analogous to those minute hæmorrhages seen in the drum-head only after similar influenza epidemics, and now well known as the leopard-skin drum-head, for, after a short time, the minute hæmorrhages fade out, and the drum-head resembles a leopard's skin.

A third case of glaucoma varies but slightly from those just reported. Mrs. C., aged 60, after a very brief attack of influenza, experienced loss of sight with haziness and a halo, but without pain in the eyes. I had fitted the patient to glasses a year before, and during my test I examined the eyes and found them normal. A month after recovery from the influenza the patient came for advice about her failing sight. Glaucoma was diagnosticated, and as she refused an operation, eserine was directed. This, however, disagreed so much with the eyes (pain, iritis,) that it had to be discontinued and pilocarpine substituted, with reasonably good results. After a while the right eye lost so much vision that iridectomy was accepted.

Here let me add, that when the operation is done on one eye glaucoma often breaks forth in the other, but this occurrence is rarer than of old, because in eserine instilled into the unoperated eye for a few days after the operation on the other, we have a powerful preventive. Although eserine could not be used in this patient's eyes, owing to some idiosyncracy, pilocarpine acted perfectly, and so far the left eye remains intact, or but slightly involved.

This case is only interesting in bringing out the occasional value of pilocarpine whenever eserine cannot be borne.

We need not here discuss any more cases of glaucoma as sequelæ of influenza, but permit me to remind you that as general practitioners you can rely in such cases on eserine and pilocarpine until a specialist can attend to the very delicate operation of removal of a piece of the iris. Iridectomy may not have done all that was originally claimed for it, and in some instances vision is less after its performance, but it is well agreed by all,

that it has saved the sight of innumerable patients who otherwise would have been blind for life.

One other point: glaucoma is a disease that must be treated *at once*, in one way or the other. It can hardly be confounded with any other disease, for the halo, pain, a wide pupil, a hazy cornea, a greenish look to the pupil, loss of part of the field of vision toward the temples, all suggest glaucoma, and no other disease. It occurs in the feeble, in the nervous, or after great nervous excitement. Cataract with which it so often confounded, has no pain, has no halo, has no hazy cornea, has no enlarged pupil, has no green pupil, comes on slowly, is shown by gradual loss of sight for distance and then for reading; the patient likes to sit back to the light to see better to read and sew; it is a disease affecting the robust, as well as the nervous or feeble, and only chronic glaucoma can be possibly mistaken for it.

I might add, that the influenza has been followed by other diseases of the eyes, but glaucoma is the most important of them all, and I urge, so far as my experience goes, that recent epidemics of influenza have been followed by more cases of glaucoma than I ever knew of before in a similar number of years; the years from 1873 to 1883 showing very few cases, whilst those from 1883 onward showed an immense proportional increase amongst all the diseases of the eye that I happened to see.

The enormous number of mastoid inflammations in recent years cannot be referred to ordinary extension of middle ear disease, for if so, we should have seen the same proportion years before epidemic influenza appeared. In some way or other influenza increases the secretions of the mucous membranes of the entire body, and in this increase the mucosa of the middle ear takes part; the tympanum cannot contain all of the fluid exuded, the drum-head ruptures, and even then the superabundant pus makes its way into the mastoid cells and demands removal.

At this point let me mention a few typical mastoid cases following la grippe.

Mr. C. was seen shortly after a severe attack of influenza, but without much pain in the ears except for one day, when he suffered a great deal in the left side, though it was promptly relieved by morphia. On the next day the drum-head ruptured and a small but constant discharge ensued. I saw him not long afterward and treated the suppuration with finely pulverized acetanilid. Here let me say that in the vast majority of such cases, the so-called DRY treatment has long since driven out any other. This consists in filling the meatus with powdered acetanilid (or boric acid) daily, or even twice daily, keeping the passage full and dry. The syringe is not to be used at all unless the powder cakes in the passage and causes pain. This I have never met with but once. Then the syringe is to be used, and, after cleansing the ear and drying it, the powder is renewed daily until there seems to be no more discharge, when we omit it on trial, and if suppuration ceases, as is generally the rule in a few weeks, we stop its use altogether.

This patient was thus treated with a favorable result, so much so that ceasing the powder I was almost ready to discharge him as cured, when one day he returned with a fresh suppuration. In a day or two that suddenly ceased, without the use of the powder, but on the next day he complained of pain behind the ear and feverishness. His temperature showing over 100°, and his pulse 120, and there being marked tenderness low down on the mastoid, I advised an immediate operation. The cause of stoppage of the suppuration was found to be the rapid formation of a polypus, blocking up the perforations in the drum-head meatus. At the time of the operation on the next day, this was removed and then I cut down on the mastoid, probed about until I should find any sinus, and, opening a small one quite a distance behind the auricle, I found the entire mastoid carious. In other words, without any mastoid symptoms, necrosis and caries had been going on for weeks, the latter being a curious symptom of influenza mastoiditis, namely, insidious disease, with slight, if any, symptoms calling attention to the mastoid bone until the suppuration is in some way blocked up and its

exit prevented. The patient made a very rapid recovery and has had no relapse.

The second case was one of long-continued suppuration, with violent pain following the influenza. The pus was very abundant, pain was constant, but there was no rise in temperature above 99°, although taken many times a day for over three weeks, during which time I in vain attempted to get the patient's consent to open the mastoid. Another important symptom was well marked pain on pressing against the tip of the mastoid, absent in the previous case.

When I cut down on the mastoid, the bone seemed so healthy that I feared I had made a mistake, but after prolonged chiseling through dense, healthy tissue, pus was at length reached and in due time this patient recovered.

The third case of which I will speak was one of acute influenza of two weeks' duration, followed by abundant suppuration from the left ear but no pain. After seeing the patient a few times he was discharged, but advised, on return of any symptoms, to use leeches and ice-bags, and to come at once for examination and operation. Six weeks later only, he came back with an enormous pus-pocket, extending from the auricle down over the occipital bone. On cutting down on the bone, close to the auricle as usual, I found abundant offensive pus but no sinus, until I had dissected off the soft parts, at least three inches behind the meatus. This I enlarged forward until I entered the antrum and curetted it thoroughly. This patient soon disappeared from view, and when I saw him three months later there had been no relapse. His objection to an operation, which ought to have been done a week after he left me for the first time, was that his sister had only recently died from a similar operation elsewhere.

The last typical case to which I shall refer was in an aged man who had had a severe attack of la grippe, followed by abundant discharge from the left ear, and violent pain extending from the ear down into the occipital region. The pulse was very rapid, but there was absolutely no rise in temperature, no pain on pressure over the mastoid, but a curious pain

when a cotton tipped probe was passed into the meatus. The latter symptom led me to think, in the absence of any other cause, that the posterior wall of the meatus was bulged forward by pus in the antrum, and therefore exquisitely tender. For that reason alone, I opened the mastoid but found no pus. The result, however, was favorable, in that after two weeks all symptoms ceased, and so too the suppuration from the ear.

There was some suggestion that I should open the cerebellum for an otitic abscess, but in the absence of all symptoms except slight uncertainty of walking, such a step did not seem advisable.

The most recent text books give ten indications for opening the mastoid, but finally they all agree that you can never be sure that there is pus in the mastoid-antrum until you discover it during the operation.

As to the details of the mastoid operation, I cannot here afford to take up your time or the space needed to describe them, but I withhold them for a later paper, in which I shall tabulate many cases operated on from time to time.

So far as the influenza is concerned, it seems to me that to no other cause can we attribute so many cases of mastoid infection in comparison with the percentage of such complications in ordinary aural suppuration, before epidemics of influenza came upon us. Our most recent authorities ascribe more deaths after influenza to otitic complications than to any other sequel except pneumonia. Therefore, it behooves us, in such otitic complications, to advise an early operation on the mastoid bone.

I conclude as I began, by saying that my grandfather saw similar complications in the eyes and ears a hundred years ago, but hardly knew how to diagnosticate or to manage them. In our days we see the same affections, and we relieve the vast majority by treatment or by operation. Glaucoma by pilocarpine, or eserine and iridectomy. Mastoiditis by leeches, ice-bags or the operation, which in skilled hands gives a large percentage of recoveries, the fatal cases being almost invariably those which postponed the operation until the brain had been invaded and death was inevitable.