CASE REPORTS ILLUSTRATING OCULAR AFFECTIONS DUE TO INTRA-NASAL AND ACCESSORY SINUS DISEASE.*

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So much has been written in the past few years on the relation of eye disease to diseases of the nose and its accessory sinuses as to make a general discussion unnecessary, as well as probably bore-some and ill-timed.

All here, I am sure, are familiar with the writings of Ziem, Onodi, Birch-Hersfeld, Posey Holmes Loeb, et al. Many interesting and instructive histories have been written, and yet from conversation with men working in both fields one comes to the conclusion that even to-day there are many who fail to recognize the dependent relationship.

The following histories are offered in the hope that they may help to convince the unbelieving, as well as emphasize some of the points made by the above-mentioned writers.

Many cases of pain in the head and eye, as well as cases showing visual defects or pathological changes in the eye or its adnexa, have been promised relief by the oculist but were doomed to disappointment, because the trouble was not in the eye, but in the nose or some one or more of its accessory sinuses. The converted oculist now recognizes the fact that many of these cases are not to be helped or cured without the aid of the rhinologist, and not infrequently before making the attempt at relief by glasses asks the rhinologist if sinus disease can be eliminated.

On the other hand we, as rhinologists, know that many obscure cases, difficult of diagnosis, notwithstanding all our aids, not infrequently present themselves. In many of these cases the ophthalmologist may help us to a mere positive diagnosis by the description of what he finds in the fundus of the eye and the study of the visual fields.

I am in the habit in most of my sinus cases of having the eyes examined. But, as I have said, this is to be but a presentation of histories, I have selected four cases, every one of whom first sought the advice and aid of the ophthalmologist, and some of them were for a considerable time under the care of the ophthalmologist before being referred for a rhinoscopic examination.

*Read before the Meeting of the American Laryngological Association, Washington, D. C., May 4, 1910.

Mrs. L., aged 27, married, came under my care in the summer of 1908, giving a history of having been under the care of one of New York's leading ophthalmologists for one year, on account of pain in and about the left eye.

Having failed to relieve the pain with glasses, she had been referred to one of our leading neurologists, under whom she had been for several months when she came under my care by "Hobson's choice," I being the only physician in the summer colony where we found ourselves. She was at that time almost a nervous wreck.

On examination the only thing I found which might point to disease of the accessory sinuses was the pain and tenderness on pressure at almost any point where you could bring pressure to bear on the walls of the orbit. There was no nasal discharge nor history of one. I diagnosed disease of some or all of the accessory sinuses, but advised waiting until our return to the city, where an X-ray could be had, as well as better facilities for operation.

The X-ray negative, taken by Dr. E. W. Caldwell, showed distinct cloudiness of all the sinuses, but much more marked on the left side. She was referred to Dr. Frank J. Parker for examination of the eyes. From his history, dated October 1, I take these notes:

"Pain on use of eye. Unable to read but for a short time. Rotation painful in all directions. Left eye painful on pressure. Has had present glasses one year. On examination, fundus normal. Vision, right 20/20, left 20/50. Hypermetropic right eye, compound hyperopic astigmatism left eye."

On October 21, having promised that there should be no depression in the forehead, I did a partially radical operation on the frontal and ethmoids and a radical in the antrum of the left side. Symptoms for a time only partially relieved. After two months they were as bad as ever, and to add to the trouble there was a considerable discharge from the nose. The patient became absolutely discouraged, and really to my relief she ceased coming to my office, until one day near the middle of March, 1909, she presented herself with the left eye closed. She was immediately sent to the hospital and told that no promises as to scar depression, etc., would be given. It is enough to say that after a radical Killian the symptoms were entirely relieved. There is practically no deformity or scar, and the little lady says she feels so much better on the left side of her head than on the right that she is sure there must be disease of the sinuses of the right side and is willing on my say-so

to have the right side operated. In fact, it is my influence only which so far has prevented operation. On January 13, 1910, she was again referred to Dr. Parker for examination of the eye. He reports as follows: "Right vision same as on November 19. On examination left vision showed 20-30 with plus 1 plus 1.50 axis 150 degrees, an improvement of one line on Snellens' test card at 20 feet."

The two following cases were referred to my clinic by Dr. W. N. Carhart, of Dr. David Webster's clinic at the Manhattan Eye, Ear and Throat Hospital. With the first, a girl of twelve years of age, Dr. Carhart furnished me the following notes:

"When she came to the hospital she complained that for three months there had been pain deep down in the socket of the right eye. Previous to this she had had headache and twitching of the lids of that eye.

"On examination some protrusion of globe was noted. There was no limitation of motion, no tension, and exophthalmus was not reduced on pressure. Vision right 12-20, left 20-50. Transillumination showed possible sinus involvement and she was referred to Dr. Coffin. The greater hypermetropia of the right eye may be due to pressure. Field of vision of the right eye restricted."

This case presented no marked symptoms of sinus disease, and I said to Dr. Webster, from whose clinic she came, that I would enter her frontal and ethmoid cavities only at his request that I do so for further diagnosis and possible help. Dr. Webster so requesting, operation was done on March 9, 1908. The frontal sinus was opened and explored and found to be normal. Most of the anterior ethmoid cells were normal, but about the middle of the ethmoid tract was found what seemed to be one or two cells containing pus and inflammatory granulation tissue. Healing was uneventful and all symptoms relieved. A somewhat better history of her previous condition is found on the hospital records, as follows:

"Trouble began four months ago, cause unknown. Mother first noticed that the child's right eye twitched, especially after she had been reading and after school. About the same time she began to complain of severe pain in the frontal region and in the right eye. Headache most severe in the morning. About the same time the mother first noticed exophthalmus of the right eye. Patient has poor vision, but no diplopia. About the same time the child began to have a thick, yellow discharge from the anterior nares," which gradually became less and was nil when she came to the clinic.

These cases emphasize the point that nasal findings may be absolutely negative.

With the second case Dr. Carhart furnished the following notes: "Annie B., aged sixteen, factory worker. Iridectomy performed on right eye some years ago which left a large leucoma of the cornea due to an old injury. When seen she complained of having had pain in the right eye at intervals for some months; also frontal headache. Right eye somewhat prominent. No tension. Fundus not well seen on account of leucoma. Advised second iridectomy to enlarge the coloboma of the iris. Operation successfully done. Also given correction for slight hypermetropia of left eye. Right eye unimproved by glasses.

"September, 1908, has been using dionin for some weeks with some effect in clearing opacity. Right eye more prominent than one year ago. Pain and headache recurring.

"November 25, 1908, some tension in right eye, which is distinctly larger. Suspect frontal sinus involvement. Referred to Dr. Coffin."

This case showed evidence of sinus disease in the pain, tenderness on pressure in the walls of the orbit, and nasal discharge, Trans-illumination and X-ray. Operated about December 1, 1908. For a time pain was relieved. The exophthalmus has been entirely relieved, except for a very short time once or twice since the operation the eye has seemed to protrude a little.

One month after the operation most of the symptoms returned and I again opened the frontal and ethmoid sinuses. I found a necrosing area in the posterior wall of the frontal sinus. Cured to a considerable depth, but did not uncover the dura. Broke through the septum between the two frontal sinuses at its top. Did not in any other way open the left frontal sinus. Healing uneventful. Considerable depression over the site of the right frontal sinus.

This patient never has ceased to have more or less of a purulent discharge from the right nostril, and from time to time granulation tissue springs up about the opening into the sphenoid. The patient is seldom free from pain on one or the other side of the head. She gives me the impression of liking to be worked over, even to major operations, so that I am afraid that, do as much as I will, she always will have trouble. This is the most troublesome case I ever have had, and the only case that to-day I do not consider satisfactorily cured.

The fourth case is that of a young Sicilian girl, fourteen years of age, referred to me by Dr. Crigler, of Drs. Hepburn's and Oatman's clinic. She was referred to me about the first of December, 1909. Dr. Creigler sent me the following notes:

"Said Fortune, aged 14, a native of Sicily, presented herself at the Manhattan Eye, Ear and Throat Hospital on November 12, 1909, for the relief of what she thought to be an inflammatory condition of the left eye. No accurate history could be obtained, owing to her ignorance and peculiar dialect, except that six months previously, pain, photophobia, increased lacrimation, swelling of upper and lower lid with marked redness of the ocular and palpebral conjunctiva developed, together with a muco-purulent discharge from both nostrils, which excoriated the nasal passages as well as the upper lip. The nasal discharge, however, did not develop for one month after the eye symptoms appeared.

"In the course of a few weeks the above symptoms subsided and the patient did not seek aid until a recurrence of the same symptoms in a more aggravated form. When she presented herself at the hospital the following condition was noted: moderate inflammatory edema of both lids of the left eye, but more pronounced in the upper.

"Palpebral conjunctiva very markedly injected and thickened; ocular conjunctiva likewise very much congested. There was a cellulo-vascular infiltration of the outer layers of the cornea in the upper quadrant. Lacrimation was very profuse and the eye very sensitive to light. There was no involvement of the iris or other deep structures of the eye so far as could be made out. The discharge, though not abundant, was of muco-purulent character with a preponderance of the mucoid element. There was no involvement of the lacrimal apparatus.

"Pressure over the antrum and over the frontal sinus did not elicit pain, but the irritating nasal discharge gave evidence of some disturbance in that region. A smear taken from the superior fornix was examined by Dr. Zabriskie and a negative report rendered. No cultures were made.

"As the eye symptoms in this case so closely resembled those of acute trachoma, the patient was kept under observation until November 24, at which time there was no change in the eye symptoms, and although there was no pronounced tenderness over the antrum or frontal sinus, there was a slight puffiness of the left side of the face."

The case was referred to me for an opinion as to the condition of the sinuses. I found the conditions as described by Dr. Creigler except that there was considerable tenderness on pressure on the roof of the orbit. The child said she had never suffered from headache. The lid was red and excoriated and the discharge had piled up in clay-colored flakes on the upper lip. She was referred to Dr. Caldwell for a radiograph. Dr. Caldwell asked me to come to his studio to view the picture as to him it was rather peculiar and unsatisfactory. It was not a convincing picture and she was sent for another exposure. But meantime I had decided to operate anyway, and did so without waiting to see the second negative.

A radical exenteration of the ethmoids was done through a curved incision about the inner canthus of the eye and the entire floor of the frontal removed. There was a large supra-orbital ethmoid cell containing a partially filled muco-cyst—a cyst that was draining into the nose. The bones of the region were soft and the floor of the frontal was partially absorbed so that there was communication between the frontal and ethmoid cell. The entire lining of the frontal was picked out of the sinus as easily as it could have been from water. In fact, it seemed to be bathed in a peculiar watery fluid.

Abundant granulation tissue was found throughout the ethmoid tract and in the sphenoid. The antrum was not opened at this time. Specimens from the various operated regions were sent to the laboratory and Dr. Jonathan Wright reported as follows:

1. (Taken from the anterior ethmoids). "Edematous mucosa, containing some products of chronic inflammation."
2. (Taken from the sphenoid). "Edematous granulation-tissue."
3. "Lining of frontal sinus edematous, but otherwise fairly healthy mucosa, except that it contains some structureless bodies of unknown nature."

After this operation the patient ran a temperature for several days ranging from 100° to 102°, after which it subsided to from 99° to 100°. On December 27, I opened the antrum. It was full of pus, the lining membrane edematous and polypoid.

This patient after discharge from the hospital, returned once or twice to the clinic much improved, but ceased coming before the edematous swelling of the lids had entirely disappeared. The conjunctiva, however, was normal and photophobia relieved.

The following case was referred to me by an oculist for a radical operation on the antrum, as he said he had washed it out daily

for some time without apparent benefit. I suspected disease of all the sinuses of the right side and sent her to Dr. Caldwell for a radiograph, which showed my suspicion to be well founded. She was admitted to the hospital for a Killian operation on January 31.

Figure 1.

Figure 2.

Her catarrhal symptoms and headache had been of three and one-half years' duration, during which time she had noticed that type became blurred after reading but a few minutes, and at times she saw double.

Dr. Parker examined the eyes on January 28 and reported as follows: Optic nerves of both sides very pale on temporal side and slightly woolly on the nasal side. The color fields were as shown in Chart I, which shows all fields contracted—the right more than the left.

On February 23, twenty-three days after operation, the fundus showed marked improvement in the nerve, and the fields were less contracted as shown in Chart II, the fields for white remaining the same, the fields for red and green considerably larger.

This case interested me, not only on account of the apparent dependent relationship of the eye and sinus disease, but it showed to

Figure 0.

me that possibly in a study of the visual fields we might find another aid in diagnosis.

Dr. F. J. Parker kindly offered to chart the fields of any patients whom I might send him. The time has been too short to allow me to draw conclusions, but certainly there is much of interest in the study, and I feel that in many cases at least we may receive positive help in diagnosis.

Dr. Ziem *a*, in 1892, reported concentric contractions of the visual fields due to collateral stasis originating in the swollen mucous membrane, which, he adds, is easily understood when one recalls the extensive anastomosis between the vessels of the orbit and bulbus on the one side and those of the nose on the other.

Hajek *b*, in a paper published March, 1910, asks: "How do we explain the inflammation of the optic nerve in simple empyema or

hydrops of the sphenoid with no direct progress of the disease itself," saying that in his own case a direct extension is excluded, as the inner wall of the sphenoid showed no inflammatory changes, and further than an inflammatory process would not subside in half an hour, and explains it as a release of the circulatory disturbance. He also states: "In cases of empyema of the sphenoid with optic neuritis, upon opening of the cavity and release of the pus there is almost immediate retrogression of the neuritis."

I question this being a proper use of the word neuritis.

Prof. Dr. Albert Rosenberg *c* (Berlin) and Dr. F. L. Braun report the ophthalmoscopic examination of 40 cases of accessory sinus diseases and record: 20 cases of circulatory disturbances; 16 cases venous engorgement; 1 case choked disc; 5 cases hyperemia; 3 cases in which edges of disc were blurred; 8 cases of pallor of disc. They

Figure 3.

report the frequent concentric contraction of the visual fields, especially in the field for red; this they found in 14 cases; in only 3 were the fields for white contracted.

Dr. Ernst Huber *d* reported in 1907 a case operated in December, 1906, for the relief of an empyema of the ethmoid and sphenoid sinus in which were evidences of optic neuritis and fields for color contracted. In March, 1907, three months after operation, the fundus and fields were normal.

There probably are psychological variations in the normal fields of vision. Again, they will vary taken under varying conditions,

such as light, fatigue, etc. I shall show you the field charts and radiographic pictures of eight patients, with few remarks and no conclusions, but as we propose to continue the work we shall hope to offer some deductions at a future time. In the meantime I shall be gratified if others will investigate along similar lines.

Charts I and II have been shown in connection with the history of last case.

Chart III shows the fields of a young man 21 years of age, who presented himself at my clinic at the Manhattan, Eye, Ear and Throat Hospital on March 27, 1910, on account of pain in the head and nasal discharge. Diagnosis of pan-sinusitis was made, and he was referred to Dr. Caldwell for radiograph, and to Dr. Parker for

Figure 4.

the charting of the fields. Dr. Parker reported the retina and nerve normal. The fields, as you see, are concentrically contracted, and the X-ray negative shows a pan-sinusitis with the possible exception of the right antrum. The case was referred to Dr. Samuel McCullagh, who is still working on him.

Chart IV shows the fields of a young woman 23 years of age who came to the hospital on February 26, 1910. Always catarrhal; adenoids and tonsils removed six years ago; left middle turbinate removed three years ago. Has constant and severe headaches and always feels as though she has cold in the head, but very little discharge. Referred to Dr. Roof, who, on examination brought her at once to me to ask if I thought the tumor-like body on the

left side of the septum was the middle turbinate in adhesion with the septum. I thought it was. Dr. Roof removed a portion of the lower edge when the middle turbinal was seen behind. I did a sub-mucous resection of the septum and found the tumor to be due

Figure 5.

Figure 6.

to an osseous metamorphosis of the cartilage so thick and dense that I was unable to cut through it with a Jansen forceps.

Dr. Parker, to whom she had been referred, reported that she complained of fatigue of one eye and occasional blurring on use.

Retina was normal, except for enlarged veins. The fields had already been taken by a house doctor. They showed such marked contraction that Dr. Parker took them himself. They were the same as reported by the house officer and as shown in the chart before you.

Fearing that the eye-symptoms were due to the intra-nasal conditions, I referred to Dr. Caldwell for proof, which was not forthcoming. As you see from her negative, there is a considerable involvement of the sinuses, especially on the left side. She said she felt entirely relieved after the intra-nasal work and ceased coming to the clinic; I have failed to find her.

Chart V shows the fields of a young girl 17 years of age. Com-

Figure 7.

plaints of headache and vertigo every day for two years. Four changes of glasses without relief. General health good. The patient had no discharge from the nose when she came to the clinic. Dr. Parker reported retina and vision normal, except for the exceedingly large veins, which he said were the most distended he ever had seen. On February 23 removed a very large cystic middle turbinate from the left side. On March 15, headaches gone. Veins of retina normal; fields the same. Since this have exenterated ethmoids with Ballenger's knife. Patient feels perfectly well as to head, but fields remain as before. Negative shows involvement of ethmoids and septum of left side.

Chart VI are the fields of a young domestic 23 years of age. They show concentric contraction of color fields of right eye with

white normal, while the left shows concentric contraction of all fields. Vision in right eye 20-40, and in left eye 20-30, which shows the greater contraction in the better eye. She came to the clinic on account of headache and discharge from the nose. Her negative shows but one frontal, the left fairly clear, but shows involvement of all the other sinuses, showing more marked involvement of the sphenoid on the right side. The patient probably got tired while we were getting ready to treat her and disappeared.

Chart VII shows the fields of a young man 19 years of age, having the most extensively diseased ethmoid and sphenoid I have ever seen. The fields are interesting on account of the extreme amount of red, causing it to look like an inverted field. Inverted

Figure 8.

fields are generally regarded as due to brain tumors or hysteria. This young man has no symptoms of brain tumor, and he certainly does not impress one as being hysterical. The fields have been taken both by Dr. Oatman and Dr. Parker, Dr. Parker having taken them several times. I have done a radical Killian on both sides, as well as a radical antrum operation. His first operation on the left side was on April 1, and the second on the right side on April 2. His fields of right eye on April 26 were the same as before April, but he felt too weak to stand the strain of a long examination and the work was not thoroughly done. His X-ray negative will speak for itself.

Chart VIII shows the visual fields for a man of particularly good vision at 53 years of age, who for the past year has suffered greatly

from headache, so much as to be obliged to give up his work. I have known him for years as a patient and friend, and had suspected intra-nasal or sinus disease. Under advice he left the city for several weeks on account of his headache, but returned no better. I asked Dr. Parker to take his fields, and on this showing sent him to Dr. Caldwell. Dr. Caldwell thought he had involvement of several of the sinuses, especially of his left antrum. Dr. Coakley saw him with me and we agreed that probably any cloudiness of the plate might be due to the very thick, bony walls of the sinuses. All sinuses dark on trans-illumination. We thought some relief might come from removal of the left middle turbinate, which was in contact with the septum. On a further study of the X-ray vization, there appeared to me to be undoubted involvement of some of the ethmoids of the left side, especially those about the orbit, as you will see by looking at the plate. I have removed the turbinate and broken down some of the ethmoidal cells. The patient is much improved and improving.

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Some Remarks on the Position of Laryngology and Rhinology in Medicine. FULLERTON. *Glasgow Med. Jour.*, Feb., 1911.

This paper represents a presidential address delivered to the Greenock Faculty of Medicine. It consists of a brief historical survey with special reference to those departments of laryngology and rhinology in which so much development has taken place of recent years.

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