THE

LARYNGOSCOPE.

VOL. XVI. ST. LOUIS, MO., AUGUST, 1906. No. 8.

ORIGINAL COMMUNICATIONS.

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SYMPOSIUM OF PAPERS READ AT A SCIENTIFIC MEETING OF THE SURGICAL STAFF OF DR. WENDELL C. PHILLIPS' CLINIC, MANHATTAN EYE, EAR AND THROAT HOSPITAL, NEW YORK, APRIL, 1906.

OCULAR MANIFESTATIONS IN INTRA-CRANIAL DISEASES OF OTITIC ORIGIN.*

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Von Grafe[1] was the first to recognize the connection between optic neuritis and affections of the brain. Zanfal says that an extension of the inflammation from the middle ear into the cranial cavity may be revealed at a time when distinct violent subjective symptoms, or other symptoms, are not yet present. The influence of trepanation on the cranial conditions can be most plainly observed in the subsidence of the papillary and retinal changes. In the clinic of Prague, changes were invariably found in the fundus oculi in every case where an intracranial complication followed a disease of the middle ear.

Tenzer[2], in looking over the material in the ear clinic of the Royal Charite in Berlin, says that the literature on the subject is scanty. Tenzer[3] cites 100 cases of otitis media acuta or empyema of the mastoid which needed operating. Changes in the fundus were found in 23 cases of which 10 were uncomplicated Empyema. In

* Read at a Scientific Meeting of the Surgical Staff of Dr. Wendell C. Phillips' Clinic Manhattan Eye, Ear and Throat Hospital, New York, April, 1906.

looking over his own cases, of which he gives complete histories of 76, he found the fundus normal in 47 cases, and abnormal in 29 cases. They were divided as follows:

INTRACRANIAL CONDITION.		FUNDUS.		
Extradual abscess	normal	0	abnormal	5
Leptomeningitis	"	8	"	5
Sinus thrombosis	"	28	"	8
Cerebral abscess	"	9	"	9
Cerebella abscess	"	5	"	11

Of these cases, 47 proved fatal, and in 29 there was a favorable termination. Of the former or fatal cases there were 29 with normal fundus and in 18 the fundus was altered. Of those which recovered, there were 17 normal and 12 altered. In the fatal cases, there were 18 changes; 7 vessel changes and 11 neuritides or choked discs. In those which terminated favorably, there were 12 changes; 5 in vessels and 7 of optic neuritis or choked discs.

Koerner[4] seems to accept the presence of changes in the fundus in spite of the lack of intracranial diseases due to the extension of the diseased middle ear conditions to the optic nerve through the lymphatic vessels which run through the carotid canal.

Ucherman[6] of Christiania, says that in otitic brain abscess, an important sign is optic neuritis but as a rule it is a later development. In abscess of the brain, we may find diffuse and local effects manifested by choked discs and obstructive neuritis. There may be also paralysis of the motor and sensory nerves affecting the eye.

Von Grafe says, in choked discs from Chronic Meningitis, there may also be masses of exudate in the retina between the disk and muscuka resembling much the conditions found in Bright's disease. On acount of its involving quite a portion of the retina it may sometimes be called a neuro-retinitis.

Meningitis in various forms gives rise to a variety of ocular lesions. In basilar meningitis of the tractus by optic neuritis extension to orbits takes place generally along the veins producing chemosis and perhaps later orbital cellulitis, fixation and protrusion of the eyeball, etc., or by the production of a seroplastic or purulent choroiditis sometimes though rarely ending in panophthalmitis.

Quinke says, in meningitis, optic neuritis is not uncommon, but cannot be depended upon as a sympton of value.

Also in abscess of the brain, ocular symptoms are invariably present in the early stages, photophobia later, inequality of pupils with

dilation on the affected side, neuritis common in later stages. Very frequently lids do not close entirely and eyeballs roll upward.

McKernon says that, in Sigmoid sinus thrombosis, about 1-3 of the cases show ocular disturbances and that when puffiness of the eyelid on the side affected is present it sometimes is caused by an extension of the clot to the cavernous sinus and also by an interference with the return ophthalmic circulation.

Posey[6] says an infectious embolus or thrombosis leads to the formation of a cerebral abscess with the characteristic symptoms, while an infectious thrombosis of the cavernous sinus may, in addition to other symptms of an abscess at the base of the brain, result in orbital suppuration with its long train of disastrous effects. The eye ball is protruded and fixed by infiltration of the orbital tissues, the conjunctiva becomes chemotic, the lids swollen and there follows blindness with a widely dilated pupil. The ophthalmoscope shows distended retinal veins with the injection of the head of the nerves and retinal hemorrhages. Later as the infectious process extends, we have opacity and ulceration of cornea and finally panophthalmitis.

Wakefield[7] reports a girl of 11 years, who for the past 6 years had had occassionally slight purulent discharge from the left ear, who developed mastoiditis, and later temporo-sphenoidal abscess, in which there were slightly dilated pupils, the optic discs were hazy, and left internal strabismus was present.

Bacon[8] reports a case of a patient coming under his observation who had a chronic otitis in which an acute mastoiditis developed which was operated upon. Later a radical operation had to be done and a brain abscess also had to be evacuated. In this case there was double optic neuritis and hemorrhages in to the retina.

Pooly[9] reports a case of acute suppurative otitis and mastoiditis which was operated upon with subsequent sinus thrombosis and pyemia in which choked disc was found in each eye.

Oppenheimer[10] reports a case of chronic otorrhoea of 10 years' standing, in which mastoiditis developed and also cerebellar abscess. This case showed a beginning optic neuritis. He also saw a case in consultation in which there had been a suppurative otitis for 2 years following la grippe. The patient had been under treatment most of the time when mastoiditis developed and was operated upon. Eye grounds were normal. Later symptoms indicated cerebellar abscess. At this time the right eye was dilated, with photophobia, and the optic papilla was slightly swollen.

Oppenheimer[11] also noted Kirtland's case of a boy of 16 years having suppurative otitis for 3 years. Mastoiditis developed accompanied by left optic neuritis.

E. Gruening[12] reports a case seen at Mt. Sinai Hospital. The patient had had a discharge from both ears for 6 years. An abscess of the left temporo-sphenoidal lobe developed. Examination of eye grounds showed the papilla swollen, presenting the appearance of neuro-retinitis. The same author reports another case of cerebral abscess following an acute suppurating otitis of 5 day's standing in which the eye grounds were normal. Three weeks later when abscess developed, optic neuritis was found.

McKernon reports a case of a girl, N. G., age 11, who had chronic suppuration of several years standing, followed by an abscess of the brain in which there was double choked disc.

Jack[13] of Boston reports a case, J. W., age 25, of old suppurative otitis complicated with an abscess of the brain in which, upon the examination of the fundus of the right eye, there was observed a slight swelling of the disc and tortuosity of the veins. In the left eye there was marked swelling of the disc with a similar condition of the veins. There was paralysis of the left abducens muscle (the eye could not rotate out beyond the median line). The patient stated that the eye had always turned inward.

Arnold Knapp[14] reports J. A. age 24 male, a case of acute mastoiditis which later was complicated with an infective thrombosis of the sigmoid and lateral sinuses. On admission to the hospital 3 weeks after the first ear symptoms the eye grounds were normal. Ten days later there was a swelling of both discs which was transient as it had disappeared two days later.

He[15] reports a second case of mastoid fistula and external otitis complicated with thrombosis of the jugular bulb and severe pyemia in which there was optic neuritis.

Geo. A. Leland[16] reviews the mastoid cases operated upon in the Boston City Hospital from October 1903 to May 1904. There were 70 cases. *Case 16* was a chronic suppurative otitis of 39 years standing. There was slight choroidal atrophy with some congestion about the discs. *Case 6* was one of chronic suppurative otitis with recurrent mastoiditis and chronic superficial cerebellar abscess. On admision the eyes were normal in movements, etc. On the following day, there was slight rotary nystagmus increased by looking upward and outward, more marked to the right. Two days later, the pupils were dilated, right larger than left. This makes only two out 70 cases in which the eyes were involved.

Francis Huber reports the case of Ida B., aged 2½, who had suppuration from the right ear for more than 2 years. At the time of admission a serous meningitis had developed. There was convergent strabismus with moderate lateral nystagmus. The pupils were dilated, the right more than the left. Under light test the pupils contract slowly and to a moderate extent. Then slowly dilate again and again contract.

Thos. J. Harris[17] found, in the records of the Manhattan Eye and Ear Hospital, that during 10 years, 1895 to 1905, there were over 32,000 cases of middle ear diseases. 60 with intracranial diseases were found, divided as follows: Sinus Thrombosis, 23. Of this number 3 developed optic neuritis. Brain abscess, 7. Only one showed any ocular manifestations. The right pupil was dilated, which disappeared after an operation. Of the 30 cases of meningitis only one case was met in which there was optic atrophy.

Alice E. Wakefield[18] reports a case in which there had been a slight discharge from the left ear for 7 years, in which a latent Temporo-sphenoidal abscess developed. At the time she first saw her, there were no abnormal symptoms of the eyes apparent. Four days later the pupils were about ⅓ dilated equally; reaction to light sluggish; retinal veins, engorged and tortuous; color of discs grayish and outline hazy. At this time an abscess of the brain was opened. Three days later a second one was discovered and evacuated. At this time the pupil of the left eye was greatly dilated and did not react with strong light.

May[19] reports a case of cerebral abscess in which there had been a chronic discharge from left ear for 2 years. The fundus showed papilitis of marked severity, more especially in left eye.

Dr. Thos. Barr reports a case of a female, A. B., age 22. She had been suffering from recurrent attacks of suppurative otitis of the right ear in which a cerebral abscess developed. Eye findings were: both optic discs somewhat full with congestion of vessels, paralysis of extreme rectus of left and paralysis with slight ptosis which disappeared several days later.

Large reports a case of exophthalmos occurring the 12th day in an acute mastoiditis which disappeared the day after the operation was performed.

Barnhill[20] reports a case of Mrs. R. A., age 40, in which a large abscess occurred during the course of an acute attack of suppuration of the right ear; 3 days after operation the right pupil was very much enlarged, but no other symptoms were noted.

Guttman[21] reports a fatal case of chronic suppuration of 8 years standing complicated with cholesteatoma in drum cavity and antrum and cellulitis of almost the entire scalp, with thrombosis of the transverse sinus, cerebral abscess and softening of the cerebellum. There was choked disc in the right and optic neuritis in the left eye.

Jordan[22] reports a case of multiple otitic abscess in the temporal lobe in a patient, age 39, who had had a purulent discharge from the left ear since childhood. Upon entering the hospital the examination of the eyes was negative. A mastoid operation was undertaken and was followed by optic neuritis four days later. There was dilatation of right pupil.

Koller[23] reports a case of acute otitis media of 3 weeks standing in which the patient presented unmistakable signs of Thrombophlebitis with peribulbar abscess. Papilitis rapidly developed and this, Jansen claims, is a common occurrence in primary phlebitis of the bulb. The papilitis cleared up after several weeks.

Dench[24] reports the case of C. A., age 8, who came into the New York Eye and Ear Infirmary sufferng from acute inflammation of the right middle ear which was complicated with sinus thrombosis, mastoiditis and serous meningitis. After a few days illness, a beginning optic neuritis developed upon both sides, slightly more marked on the right side.

The same author[25] also reports a case of a young man who had a discharge for two years in which a radical operation was done. The eye grounds were negative for two weeks, then brain abscess having developed, there was a decided choking of left optic disc.

In conclusion, we find that we may have one or more of the following ocular manifestations of the external signs. We may have nystagmus, paralysis of the motor and sensory functions of the eyes and dilation of the pupils. Cellulitis occurs occasionally with protrusion of the eyeball, which may be fixed by infiltration of orbital tissues. Internally, we may have optic neuritis or choked disc of which I found 34 instances. Papilitis occurs occasionally, also neuro-retinitis and atrophy. The vessels are quite frequently changed in character. A seroplastic purulent choroiditis is noted though rarely ending in panopthalmitis.

In looking over such records as came to my hand, I found quite a number of cases of brain abscess of otitic origin in which there was no record of an examination of the eyes. Also the same is to be said of the recorded cases of meningitis which were the result of otitic diseases.

There were widely diverse reports as to the conditions found in meningitis, thrombosis and brain abscess. Some authors find very few in large numbers of cases, others find a large percentage in a comparatively small number of cases; and, until such a time as our cases receive more thorough examinations in all their aspects and careful histories of them are recorded, statistics will not tell the truth, the whole truth and nothing but the truth.

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