OCULAR MANIFESTATIONS IN ENCEPHALITIS LETHARGICA.

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This paper reports the frequency of the disease recently in Wisconsin. It gives the usual eye symptoms and the histories of four cases. Read before the Wisconsin Surgical Association, May, 1921.

This most interesting disease has been named Encephalitis Ophthalmoplegia; Encephalitis Lethargica; Epidemic Encephalitis and sleeping sickness. It must not be confused with the sleeping sickness of Africa.

The record of the deaths reported in this state during the year 1920 was 26. This year in January there were 4 deaths, in February 13, and an incomplete report for March with 14 deaths recorded.

In Milwaukee twenty cases have been reported since January 1, 1921, with eight deaths. In New York City during the first four months of this year two hundred and eighteen cases were reported.

The ocular manifestations appear early in nearly all instances and are frequently the earliest symptoms complained of by the patient. The ophthalmologist must not overlook the causal factor when the patient complains of double vision or drooping of the eye lids. I believe there are a large number of these cases with us, but the symptoms are so mild and transient that they are not attributed to the encephalitis. Every case should be reported in order to obtain accurate statistics.

The eye symptoms in order of frequency are as follows: diplopia, ptosis, impaired accommodation, nystagmus, sluggish pupils, optic neuritis, papilledema. It is the tendency for the ocular symptoms to result in recovery and therefore the prognosis of eye disturbances is good if the patient survives.

The diplopia, due to motor paresis or paralysis, is of central origin and is usually transient. The nerve involvement in order of frequency is the 6th, 3rd and rarely the 4th. The latter is easily overlooked because it is not seen when ptosis appears or when the pa-

tient is in a stage of lethargy. The diplopia is noted in the distance and in every direction but I have never seen one that complained of this disturbance while reading. The vision is usually normal in the distance as well as for the near. The motility is also preserved in most cases. This symptom is usually the first to disappear, but may recur and affect the opposite eye. The pathology is unknown.

The ptosis is bilateral usually and may be complete but is frequently partial. In the state of lethargy, the lids may be closed and opened with great difficulty. A tremor of the lids is frequently observed in this disease. The ptosis is due to weakness of the levators. Ptosis combined with ocular paresis is rarely met with in any other disease and is pathognomonic of encephalitis lethargica.

Impaired accommodation is manifested by quick fatigue and the emmetrope cannot read even at arms length. This symptom is the last to leave, persisting sometimes for many months. The pupils are frequently sluggish in action and there may be irregularity and inequality, bilateral usually. The pupils in some cases remain dilated and fail to react to light.

The nystagmus may be slight or pronounced. Sometimes merely nystagmoid twitching is seen. The facial nerve is sometimes involved and this usually unilaterally. There is rarely lagophthalmus.

Optic neuritis is manifested by a blurring of the optic disc, probably due to dilatation of the capillaries with resultant congestion of the retinal veins.

Papilledema is a rare condition. I can find only two cases on record and I wish to add an interesting case with particular symptoms in my report of cases. There is probably a subcortical hemorrhage or edema cerebri, or both,

responsible for this symptom. This condition, in every case reported, was unilateral and the same holds good in the case under observation.

The causative organism has been isolated by Drs. Loewe and Strauss of New York, and recently confirmed by Dr. Thalheimer of Milwaukee.

Differential diagnosis must be made between this disease and brain tumor, extradural abscess, meningitis, T. B. or serous, uremia of diabetic coma, lues, cerebrospinal, hysteria.

CASE I. Miss M. W., aged 24. Family history and previous history negative. General condition good. Glasses, worn for myopic astigmatism, bring her vision up to normal. Onset July 7, 1920, with left facial palsy, vertigo and double vision. No fever. Headache slight at rare intervals.

Eye symptoms: Ptosis slight, bilateral; diplopia beyond 15 inches from the eyes, and in every direction. Paresis left 6th nerve, marked from July 7, 1920, to December 23, 1920; when, after an interval of two days, there was a noted paresis of the right external rectus. The facial on the right was also attacked at the same time. Nystagmus horizontal and bilateral to a marked degree. Pupils sluggish and dilated bilaterally. Accommodation decidedly weak. Papilledema was noted on February 1, 1921, in the left eye. The patient complained of pain and a decided fog before the eye. A definite choked disc, amounting to three diopters, was observed by the writer and verified by Dr. Koch. This condition gradually declined until on April 12th, when no edema of papilla existed, and the patient's only complaint today is a blurring of the print in the near.

The neurologic examination was negative. Spinal fluid negative and pressure normal.

CASE II. J. L. Age 16. Three weeks previous to entrance to Hospital (Feb. 15, 1921) patient became dizzy especially on change of position of head, very restless, garrulous and did not sleep at night. Physicians had to prescribe powder to produce sleep. Following this early period of 2 weeks of

excitement, patient became depressed and then later lethargic.

On entrance to hospital patient showed the "indifferent" attitude answering only at time when spoken to. Two days after entrance to hospital when patient was asked a question, response was a series of unintelligible sounds. Patient gradually became worse, lethargy deepened, later passing into coma. Fever was slight on entrance, but gradually increased about 0.3 of a degree each day and suddenly taking a jump from 103 to 106 two days before death and reaching 108.4 just before death. Patient had no headaches, the first symptom being marked dizziness, especially on change of posture. There was some weakness of left side of face.

Eye Symptoms: No diplopia could be elicited. Bilateral ptosis present. Lack of synergic action of eyeballs but no strabismus present. Slight vacillatory movement of eyes, especially to right. Right pupil larger than left. Left somewhat irregular but reacts sluggishly to light. Accommodation unobtainable. Both fundi normal.

Spinal fluid; Wassermann negative; globulin, plus; cultures, negative; cell count 15 on entrance, 180 three days before death; fluid under great pressure, about 180 drops to a minute; fluid always crystal clear.

Family history, negative. Patient lived in Missouri and had malaria. Otherwise past history negative. Extradural abscess was the diagnosis by one of the consultants.

Post Mortem Record, made by Dr. Margot.

No abnormal external appearances of note were found. The scalp and tissues over the calvarium appear normal. The dura was not adherent and was white and glistening. The superior longitudinal sinus was empty. The pia was quite cloudy and opalescent due to marked edema of the left meninges. There were no gross hemorrhages, except very fine pin point in ventricles.

Microscopic examination: Perivas-

cular infiltration of the vessels of the white matter, especially of the caudate and lenticular nuclei, optic thalamus, pons and posterior horns of the cord, edema and miliary hemorrhage of surrounding parts.

CASE III. Mr. C. U. O., aged 24. General condition poor. Family, as well as personal previous history negative. Onset present illness December 24, 1920, with history of blurring of vision and double vision. No fever or headache at any time. Lethargy began Jan. 1, 1921, but not marked, and persisted for about two months. The left facial and also the left arm were paretic.

No history of influenza. The spinal fluid and blood upon examination were found negative.

The *eye symptoms* were: Ptosis bilateral and partial; the left more marked than the right lid. Diplopia

from December 24th, 1920 to January 8, 1921. Paresis of the 3rd, 4th and 6th nerves, of left eye. Nystagmus lateral, bilateral and rhythmic. Pupils sluggish to light and accommodation.

CASE IV. Mr. J. C. N., aged 39. General condition good. Family, personal and previous history negative. Onset present illness December 27, 1920, with nausea and vomiting, at the same time a parotitis with excessive salivation was present. No fever or headache. Lethargy not present. The man was able to keep up his work. No history of influenza. The spinal fluid and blood were negative.

The *eye symptoms* were as follows: Ptosis partial, left lid especially. Diplopia due to pareses 4th and 6th nerves left side. Nystagmus, horizontal and bilateral. Pupils irregular and somewhat sluggish to light and accommodation.