Webster (D.)

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[REPRINTED FROM "ARCHIVES OF MEDICINE," APRIL, 1879]

NEW YORK
G. P PUTNAM'S SONS
182 FIFTH AVENUE
1879

IS GLAUCOMA EVER OF SYMPATHETIC ORIGIN?*

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Whether glaucoma is ever sympathetic in its origin seems, as yet, to be an unsettled question among Ophthalmologists. Some would answer the question in the affirmative, others declare such a thing to be quite impossible, while others again prudently reserve their decision for further evidence.

Stellwag seems to have met with cases of sympathetic glaucoma, and, although he does not call them by that name, he clearly indicates their sympathetic origin. He says, under the head of Sympathetic Diseases of the Eye, (Stellwag, as translated by Drs. Roosa, Bull and Hackley, Fourth Edition, page 297), "Cases also occur in which a rapidly increasing amblyopia is matured by development of a glaucomatous excavation of the optic disc. The last named condition is found relatively most frequently in older individuals, and is always connected with a marked increase of hardness of the globe. We might almost believe that it is the rigidity of the sclera that has forced the process into a simple glaucoma."

Now, if Stellwag does not mean glaucoma by the above

(* Read before the Medical Society of the State of New York at its seventy-third annual meeting, February 4th, 1879.)

description, I confess I am unable to tell what he does mean. But he finds it necessary to apologize for its occurrence in such cases, by intimating that the disease would be something else were it not for the "rigidity of the sclera," pertaining to old age, which forces the process into a "simple glaucoma." If the disease is a simple glaucoma, and is caused sympathetically, by an inflammation of the fellow eye, I do not see why we should hesitate to call it *sympathetic glaucoma*, regardless of any secondary circumstances, which caused it to take on that form.

Horner commits himself frankly and unmistakably to the opinion that there is such a disease. In the discussion of a paper on Sympathetic Ophthalmia, by Critchett, at Heidelberg, 1863, he stated that he believed that "besides the forms of sympathetic affection quoted by Critchett, Graefe, and Donders, an amblyopia may also occur in the second eye through pressure excavation, a so-to-speak *sympathetic glaucoma*." (*Zehender's Monatsblätter*, 1863, p. 450). He evidently had met with the same kind of cases spoken of by Stellwag.

Schmidt of Marburg, who writes the article on glaucoma in *Graefe und Saemisch's Handbuch der Augenheilkunde*, seems to be in a state of uncertainty on the *sympathetic* question. He has seen (Vol. V, part 1, page 41), "chronic, inflammatory *secondary* glaucoma supervene upon sympathetic irido-cyclitis," and quotes Pagenstecher as having "observed a perfect picture of acute glaucoma after a sympathetic ophthalmia." Again he says, (page 71), "Finally, we have yet to say, whether, through another kind of inflammation, as irido-cyclitis in one eye, a glaucomatous process can be excited in the other eye in a *sympathetic* way. If we, according to our views of the origin of glaucoma, do not dispute the possibility of this occurrence, no unequivocal observations exists at present which offer a better explana-

tion. This, at all events, is certain, that through chronic internal inflammations of the one eye, existing glaucomatous disease in the other eye may be increased."

Mauthner must be ranked with those who positively disbelieve in the possible sympathetic origin of glaucoma. He says, "The question is *not*, do we see eyes affected by sympathetic inflammation finally lost with glaucomatous symptoms, but whether primary glaucoma occurs as a *sympathetic inflammation* in the sound eye." This he answers very decidedly in the negative.

He goes on to say, "It not infrequently happens after an operation upon an eye affected by glaucoma, that within a very short time the otherwise healthy fellow-eye becomes glaucomatous. The question arises, "Is the outbreak of glaucoma in the second eye due to sympathy similar to the sympathetic inflammation that follows an operation on an eye, the disease *not* being glaucoma, and the operation being various?" This important question he also decides in the negative. He tells us that sympathetic glaucoma was first mentioned by von Graefe in 1857. He says that Drs. Horner, Mooren, Coccius, Carter, H. Müller, Pomeroy, and many others have seen cases, and have accepted von Graefe's theory in regard to them. He states that "Maats does not concede, and Brecht doubts the accuracy of von Graefe's diagnosis in the case in question." Mauthner formulates the following as his *leaning*. "Acute glaucoma, that is, primary glaucoma, with the same peculiar, acute, inflammatory symptoms as are expressive of sympathetic inflammation is very doubtful, and *not proven*."

Schweigger is also among the unbelievers. He says, (third edition, Farley's translation, page 351). "The only disease which can positively be said to cause sympathetic inflammation is irido-cyclitis. All other statements on the subject, as, for instance, that after operation for glaucoma in one eye

sympathetic glaucomatous inflammation may occur in the other, must be regarded as based upon little more than assumptions. If a few days after iridectomy in one eye an acute, glaucomatous inflammation appear in the other, this accident certainly may be a very unpleasant surprise; but the circumstance that the operation in the first eye and the inflammation in the second eye occur only a few days apart, argues against the suspicion of a sympathetic connection. For in ocular inflammations whose sympathetic origin is demonstrated, it is not *days* but *weeks*, before the inflammatory process proceeding from one eye and following the course of the ciliary nerves reaches the second."

Now, whether the outbreak of acute glaucoma in the fellow eye, after an iridectomy upon one eye for glaucoma is sympathetic or not, nothing is more certain than that it very frequently occurs. It has happened one or more times in the practice of almost every Ophthalmologist with whom I am acquainted. It has occurred in the practice of Dr. C. R. Agnew, in *seven* out of *twenty-seven* possible cases, or in more than twenty-five per cent., within three days after the iridectomy upon the first eye. In two of these cases it occurred within twelve hours. Four of the eyes operated upon *first* had acute glaucoma, one had chronic glaucoma, and the other two had glaucoma absolutum. The fellow eye in five of the cases had more or less of the symptoms of chronic glaucoma. In *two* cases, however, one eye was operated upon for acute glaucoma, while the fellow eye was, objectively and subjectively, *perfectly normal*, if we except errors of refraction. In six out of the seven cases the eye secondarily attacked was operated upon with little or no delay, and in each case the recovery was rapid and the vision became as good as before the attack. In the seventh case iced cloths and atropia were applied, and by the time we were ready to operate, the eye was so much improved that we decided to

defer the operation, and the attack passed off without operation in a few days, with recovery of vision. In this class of cases much may be due to the excitement attendant upon an operation, to mental anxiety, to loss of sleep, to the hyperæmia of the eye induced by the anæsthetic employed, to the shutting up of both eyes with bandages, and, possibly, to the ophthalmoscopic examination previous to the operation, but I doubt very much whether, if all these causes were in operation, and the iridectomy upon one eye were left unperformed, we should have the outbreak of glaucoma in the fellow eye in anything like so large a proportion of cases.

But it is with sympathetic glaucoma of another kind that I wish more especially to deal in this paper, namely, a glaucoma occurring under circumstances where we should have expected a sympathetic iritis, or irido-cyclitis. In a very large number of cases of glaucoma observed by me at the Brooklyn Eye and Ear Hospital, the Manhattan Eye and Ear Hospital, and in the private practice of Dr. C. R. Agnew, I have met with but two such cases, and both of these having occurred in the private practice of Dr. Agnew, he has kindly consented to my reporting them to this Society in full.

They are as follows:

CASE 1. *Foreign body in right eye; severe inflammation in both eyes six months later; simple glaucoma in left nearly three years later; enucleation of right eye, and iridectomy upon left; the disease arrested.*

April 17, 1874.—J. McG., æt. 56, engineer, states that three years ago, while examining the valves of the *Colorado*, he was struck in the right eye by a piece of steel. This was removed, and he enjoyed good vision until about six months later, when he observed a spider-like appearance in the air, and his daughter noticed a discoloration of the iris of the injured eye. Soon after that he had an attack of what his physician called "erysipelas" in both eyes, and after a severe illness he recovered, with total loss of sight in his right eye. The vision of the left eye was as good as ever, and

remained so until two or three weeks ago, since which the sight has gradually failed, without pain or inflammatory symptoms.

Present Condition.—Right eye has cataract, total synechia posterior, discoloration of iris, and no perception of light; the tension normal. Left eye has vision $\frac{5}{200}$ without a glass, and with $-\frac{1}{10}$, vision $\frac{20}{30}$. The pupil is dilated and sluggish, but there is no bulging forwards of the iris nor apparent increase of tension. The visual field is contracted. The ophthalmoscope shows a narrow ring of choroidal atrophy around the optic nerve, and there is typical glaucomatous cupping of the disc 1.09 mm. in depth. No other marked deviation of the fundus from the normal. In the afternoon of the same day the patient was placed under ether, the right eye enucleated, and an iridectomy upwards performed upon the left. There was some bleeding into the pupil. The eyes were dressed with charpie and a flannel bandage. The next day the wound was healed, the aqueous regenerated, and the blood absorbed from the anterior chamber. On the third day catarrhal conjunctivitis set in. The bandage was removed and a shade substituted, and directions given to wash the eye frequently with tepid water. On the fourth day there was considerable chemosis and decided tension. Iced cloths were ordered, and two leeches were applied to the temple. A drop of four-grain solution of sulphate of atropia was also applied, and the pupil became very widely dilated. On the sixth day there was less increase of tension and less swelling of the ocular conjunctiva. From this time the inflammatory symptoms gradually abated, and on the fourteenth day the chemosis had entirely passed away and only the region of the wound remained vascular, a number of blood-vessels radiating from the cut. He was then furnished with colored coquille glasses and ordered to go out for a walk every day.

The patient presented himself at Dr. Agnew's office April 27, 1877, or three years after the operation, when the following note was made. Vision=$\frac{20}{200}$ with $-\frac{1}{11}s-\frac{1}{24}c$, ax 90°. Tension normal; beautiful, broad, peripheral iridectomy; no pain or other inflammatory symptoms since recovery from the operation. The ophthalmoscope shows the same appearances of the fundus as before the operation, some delicate floating bodies in the vitreous, and a few small, dot-like corneal opacities.

When the enucleated eye was cut open, a small foreign body was found embedded in a hardened lymphoid mass lying in contact with the ciliary region, and there was total detachment of the retina.

CASE II.—*Traumatic injury of left eye followed by atrophy and bony plate; Acute Glaucoma of right eye one year after injury of left. Enucleation of left eye and iridectomy upon right. Vision unchanged.*

April 11th, 1876.—J. Van H., æt. 64, salt inspector, fourteen months ago, had his left eye struck by a piece of steel which flew off from a chisel, while trying to get the cover off a tin freezer. This fragment of steel remained in the eyeball thirty-seven days, and then worked its way out on a poultice. A wash of sugar of lead and opium was used the first ten days, and then, up to the end of the fifth week, the eye was constantly poulticed with slippery elm and flax-seed. After the sixth week nitrate of silver was applied to the eye, and each application caused severe pain.

The patient resumed his work of inspecting salt about three months after the accident, and continued it up to two months ago, when he was obliged to give it up on account of his other eye. The right eye was somewhat weak and a little red occasionally through the summer, but was not very troublesome until three months ago when he caught cold, and the eye became red and slightly painful and the sight very foggy. Belladonna was dropped into the eye two or three times, but has not been used since. The eye got better, but soon got worse again. The cloudiness has grown much worse during the last two weeks, but still clears up occasionally so that he sees very well. At this juncture he came for the first time under our observation.

Present condition. V=$\frac{1}{100}$. No improvement with glasses. Tension much increased. Pupil dilated and fixed. Much deep ciliary injection. Anterior chamber has a turbid look. There is so much diffuse opacity of the dioptric media that the retinal vessels and optic disc cannot be seen, there being only a faint reddish reflex from the bottom of the eye.

Left eyeball atrophied.

In the afternoon of the same day the patient was placed under ether, and the shrunken left eyeball enucleated.

The patient was unwilling to have a simultaneous iridectomy done upon the right.

April 17th.—There being no improvement in the condition of the right eye, the patient was again placed under ether, and a broad iridectomy upwards performed. The iridectomy knife was so withdrawn as to allow the aqueous to escape very slowly in order to avoid too sudden a lessening of the intra-ocular pressure.

A slight prolapse of the iris was produced by making delicate pressure on the scleral margin of the wound, and the introduction of iris forceps into the anterior chamber was thus avoided. Dressed with charpie and flannel bandage.

April 21st.—Had no pain in the eye since the operation until last night; it is now a little more red; counts fingers. Applied two leeches to temple.

April 24th.—Has had no pain since last date. Anterior chamber a little too deep. Counts fingers at six feet.

April 29th.—No atropine has been used in this case. There is still some ciliary injection, and considerable diffuse opacity of the cornea. V=$\frac{2}{200}$. Patient allowed to go home.

Dr. William Cheatham, who examined the enucleated eye in Dr. C. Heitzmann's laboratory some months later, makes the following report:

"Eyeball reduced to one-third its normal size; hard, irregular in shape. The corneal region shows deep depressions produced by irregular cicatrices. The lens is absent, and very little iris remains. The hyaloid body is changed into a myxomatous tissue. The choroid is thickened, and almost entirely changed into a dense connective tissue in which there are embedded irregular pigment granules and trabeculæ of bone. In a mass of cicatricial tissue in the anterior part of the eye is the folded capsule of the lens, and connected with it the retina, scarcely recognizable as such. Optic nerve small; nerve fibres almost all changed into connective tissue.

Now it may be that in neither of the cases, so-called sympathy had anything to with the causation of glaucoma in the fellow eye. It must be conceded that, possibly, each of the eyes might have been attacked by glaucoma at the same time and in the same manner that they were, and that the disease would have pursued the same course in every respect, that it did pursue, had the other eye in each case been perfectly sound. We are, in medicine, constantly in danger of confounding the *post hoc* with the *propter hoc*, and the wisest among us is often unable to discriminate with certainty betwixt the two. But it seems to me that in both cases the indications that glaucoma in the fellow eye was

the direct consequence of the condition of the injured eye, are about as clear as we could well have them in such cases. At any rate, nothing could be more certain than that *if the disease in the secondarily affected eye* had, in *either case, been irido-cyclitis instead of glaucoma, no one versed in Ophthalmology would have entertained any doubt, for a moment, that the disease was sympathetic in its origin.*

ARCHIVES OF MEDICINE

A BI-MONTHLY JOURNAL

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