

*de Schweinitz (G. E.)*

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SYMPATHETIC IRRITATION  
AND  
SYMPATHETIC SEROUS IRITIS,  
WITH  
CASES.

*A Clinical Lecture in the Jefferson College Hospital.*

BY

G. E. DE SCHWEINITZ, M.D.,

Clinical Professor of Ophthalmology in the Jefferson Medical College;  
Ophthalmic Surgeon to the Philadelphia Hospital.

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## Sympathetic Irritation and Sympathetic Serous Iritis, with Cases.

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**G**ENTLEMEN:—We are concerned this morning with the affections in which one eye is implicated as the result of disease or injury to the other; in other words, with sympathetic irritation and sympathetic ophthalmitis.

You are probably aware that it is customary—indeed, it is important and scientifically accurate—to apply these terms to two essentially different conditions; but whether we deal with sympathetic irritation or with the more serious condition of inflammation, the eye which is implicated as the result of disease or injury of its fellow is described as the “sympathizing eye,” and the one which is affected by the disease or injury which causes the implication as the “exciting eye.” Bear these two terms in mind, as I shall have occasion to use them again in the descriptions which follow.

The first patient, a man, aged thirty, was injured by the premature explosion of a dynamite cartridge, causing such extensive laceration of his right foot that amputation was necessary. At the same time his left eye sustained injuries resulting in the lesions which I shall presently demonstrate to you. He has been under the



care of Dr. William Forbes, and as the leg has entirely healed, Dr. Forbes has very kindly transferred him to the Eye Department for further treatment. You observe that there is a large scar in the lower and outer portion of the cornea of the left eye, passing through the ciliary region, to the margins of which the iris is attached, while the lens is cataractous, the aqueous humor turbid, the general eyeball coarsely injected, the tension slightly below normal, and there is marked tenderness in the upper portion of the ciliary zone. In other words, we have the lesions of traumatic irido-cyclitis and cataract. Vision is entirely obliterated, and there is not the faintest trace of light perception in any portion of the field.

Ever since the injury the eye has been painful, but in the last few weeks this pain has markedly increased, being present not only on pressure, but constantly. More than this, the other eye, while not tender to the touch, is sensitive to the light; there is increased lachrymation, impaired amplitude of accommodation, occasional shoots of pain through the brow and temporal region, and slight veiling of the margins of the optic nerve. The pupil is larger than one would expect in a patient at this age of life and with this exposure to light, although I have not been able to observe oscillation of the iris, a symptom which Mr. Gunn has stated to be present when a sympathetic irritation, which is the condition now presented to us, is about to give place to an actual inflammation.

The symptoms are sufficiently pronounced, and have been sufficiently persistent, to make enucleation of the excitor a proper surgical pro-

cedure. While it is true that a sympathetic disease of this character is a functional disturbance, and is by no means the necessary precursor of a sympathetic ophthalmitis, such an outcome is occasionally the case, and, even if it were not, the evident indication is to remove the cause which is exciting the functional disturbance which you here witness, and to relieve the pain which is occasioned by the traumatic iridocyclitis of the left eye.

As the eyeball is somewhat soft, and the conjunctiva closely adherent to it on account of the previous inflammation, I will enucleate the eye by Bonnet's method, although, as you know, by the Vienna plan the operation can be more rapidly accomplished. A stop speculum being inserted, I divide the conjunctiva with scissors in a circle close to the margin of the cornea. The tendons of the ocular muscles are now successively raised upon a strabismus-hook and severed. When the tendon of the external rectus is reached, I allow a small stump to remain, which may be utilized afterwards as a point of application for the forceps. By inserting the stop speculum somewhat more deeply, the eye, as you see, is made to start forward, the stump of the external rectus is seized with forceps, the eye drawn forward, the curved scissors introduced between it and the severed conjunctiva until the optic nerve is reached, which is cut squarely off. The attachments remaining are the oblique muscles, and these are now readily divided. Hemorrhage, you observe, is only moderate in quantity, and has practically ceased after the irrigation of the socket with a bichloride solution (1 to 8000). Iodoform is dusted over the surface of the

wound and an ordinary antiseptic dressing applied. For a few days I shall exclude the light from the right eye in order that the symptoms of irritation may more readily subside.

On opening the eyeball, you notice the following interesting lesions: The cataractous lens and iris are firmly bound together, the ciliary body is thickened, the retina detached, and the centre of the vitreous occupied with this firmly-encysted abscess. I cannot find a foreign body, although we might reasonably expect a small portion of the cap. It is possible that it has not only penetrated, but passed entirely through the coats of the eyeball; in its course, however, lodging some infecting material, which has resulted in the suppuration which is so beautifully shown here.

This is a fair example of a very constant result of injury to the ciliary region, the wound being generally found in a zone about a quarter of an inch in width, surrounding the cornea, which Mr. Nettleship has aptly called the "dangerous region." Plastic or purulent cyclitis results, in our case followed by a purulent hyalitis. The sympathizing eye presents a series of phenomena which are of the nature of a neurosis, and to which the term sympathetic irritation is applied. Under circumstances such as I have shown you to-day, the proper treatment is enucleation of the exciting eye, or, if not enucleation, one of the substitutes for this operation, particularly that one which is called evisceration. The result is almost uniformly a cure, and I doubt not that at a subsequent lecture I will be able to show you this patient, not only well in so far as the operation is con-

cerned, but relieved of the symptoms in the sympathizing eye.\*

The next case is of a much graver nature, not only on account of the lesions which have taken place, but in relation to the preservation of vision. The patient, a young man, aged twenty-nine years, eleven weeks ago was injured by a piece of steel striking the left eye. The sight was lost at the time, and, as you see, there is a large cut through the upper ciliary region, which has healed with a puckered cicatrix; the iris is inflamed and bound down to the capsule of the lens, the anterior chamber shallow, the eye slightly shrunken, soft to the touch, and very tender on pressure; in other words, a traumatic irido-cyclitis with beginning shrinking.

No symptoms of trouble in the right eye appeared until a few days ago, when he presented himself at the clinic. Then, unfortunately, not an irritation, but a true inflammation had already begun. The entire eyeball was slightly injected, while around the margin of the cornea there was a zone of fine, pinkish injection. The iris was mobile, but at the lower margin of the cornea there was a faint haze, and one spot on the iris was a little thickened. The vision was normal, the optic nerve hyperæmic, the field of vision uncontracted, but there was slight tenderness in the ciliary region. The patient was at once put upon small and frequently-repeated doses of calomel, atropine was instilled into the right eye, and the light excluded. For twenty-four hours he appeared better. At the end of that time, in spite of

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\* The symptoms of irritation rapidly subsided, and the patient is now entirely well.

treatment, the spot of infiltration in the cornea deepened, and a characteristic triangular deposit of opaque dots appeared in Descemet's membrane, and a soft synechia formed in the lower margin of the iris. He was now freely leeched from the temple, atropine was more vigorously applied, and protiodide of mercury was given in place of the calomel, together with tonic doses of quinine. These measures fortunately resulted in the tearing loose of the synechia which had formed, so that the pupil is round and widely dilated and the ciliary injection has somewhat subsided, although, as you see, the eye is red, inflamed, tender to the touch, and there is a patch of keratitis punctata.

In short, gentlemen, we have here the very serious condition of traumatic irido-cyclitis of the left eye, which, in all probability, contains a foreign body, and sympathetic serous iritis of the right eye, and we stand in the presence of a grave question for solution,—namely, whether or not to excise the excitor in the hopes that this, by relieving a source of irritation, may modify the dangerous organic disease which has already seized hold of the sympathizer.

In order to understand why there should be any hesitancy, we must revert for a moment to the probable explanation of sympathetic ophthalmitis. No doubt you will remember that formerly it was almost universally taught that this disease was due to a reflex action through the ciliary nerves, and therefore the name "sympathetic" was applied. Now, while we are not sure of the exact nature of this malady, nor thoroughly acquainted with the path of the morbid changes, the old hypothesis of transmission by the ciliary nerves has been largely

abandoned and the theory of infection has been revived and, perhaps I may say, proved. The micro-organisms from the seat of original injury find their way, probably by the sheaths of both optic nerves, to the sympathetic eye, and there set up an ophthalmitis, which may present itself in the form of an irido-cyclitis, a serous iritis, such as I show you to-day, or, more rarely, as a choroido-retinitis, while in many, if not in all, of the varieties of sympathetic inflammation the primary symptom is a low-grade neuritis or neuro-retinitis, although this symptom is not the one which first attracts the attention of the surgeon.

With these facts in mind you can readily understand that when the tissues of the sympathizer are infected, though excision of the excitor removes the original focus of infection, it does not destroy the morbid changes which have already seized upon the sheath of the optic nerve and the coats of the eye upon the opposite side. The question to be decided, therefore, is, Will the ultimate result be better if the medicinal treatment of sympathetic ophthalmitis is employed to the exclusion of operative interference upon the blind but exciting eye, or will the chances of recovery be improved by removal of the excitor? At the first blush it would seem that there is only one answer to this question,—namely, to remove the original cause,—but in certain instances the sympathetic disease has apparently been aggravated by this procedure, and a serous iritis has changed into a plastic type; at least this is the assertion of one or two very high authorities.

We must hence base our line of conduct to-day upon the teaching and experience of the

best-known ophthalmic surgeons and upon the statistical information which has been gathered to elucidate this very point. We find that Noyes, Berry, Schweigger, Swanzy, Schmidt-Rimpler, De Wecker, and many others that I might mention were I so inclined, are in practical accord that efficient help is gained in the treatment of sympathetic ophthalmitis by the removal of an exciting blind eye, provided the enucleation is performed when not more than two, or at most three, weeks have elapsed since the appearance of the sympathetic disease. Moreover, we are in possession of a great deal of statistical information. In 1886 a committee was formed in England to gather information on the subject of sympathetic ophthalmitis, and for this purpose the literature of the subject was examined and a circular containing a number of questions was sent to many prominent ophthalmologists. The very first question upon this circular is, When sympathetic inflammation has begun, does excision of the exciting eye influence its progress? And the following piece of evidence was presented in reply: Among two hundred cases, there were sixty-four in which the excitor was removed within a short time (that is, within three weeks) of the onset of the sympathetic inflammation, and of these the sympathizing eye was known to be lost in only eight. In an almost identical number (sixty-five) the excitor was either not removed at all, or not until long after the sympathetic disease had set in, and in no less than twenty-six of these the sympathizer was lost. From these data the committee concluded that whether early removal of the exciting eye be positively useful in staying the disease or no, it certainly

is not injurious, although no less an authority than Mauthner has asserted that it is when the sympathetic disease is of the serous form.

By way of recapitulation, a quotation from Noyes is *apropos*: "The removal of the cause is the only effective treatment, and that means enucleation of the exciting eye. The operation is by far more satisfactory in the irritative forms, and there rarely does it fail. When the inflammatory condition is once begun, an early operation may check its progress, but this is not to be absolutely counted on, even if done on the very first day (Hirschberg). Enucleation, when the inflammatory process has gained decided headway, has little control over it; yet it does not aggravate it, as claimed by Mauthner. Sometimes it mitigates a patient's sufferings, and cases of effective relief are recorded." The weight of opinion, therefore, being in favor of operative interference, if for no other purpose than to check what De Wecker would call the transmission of impulses, I will excise this exciting eye.

This I do in precisely the same manner as in the previous case, and need not repeat the details of the operation. While Dr. Phillips is applying the dressings, I will open the eye and demonstrate the lesions. You observe that the ball is slightly shrunken and beginning to assume a quadrate shape, the retina is detached in folds, the ciliary body thickened, the vitreous slightly purulent, and lying in the long axis of the eyeball, stretching between the posterior surface of the lens and the optic nerve entrance, and entangled in the meshes of the detached retina, is a piece of steel twelve millimetres in length and three millimetres in

width. In short, we have here conditions potent above all others to produce sympathetic ophthalmitis,—namely, traumatic irido-cyclitis and retained foreign body. The subsequent treatment of this case will consist of rest in bed, exclusion of light from the right eye, the frequent use of an atropine solution, and the internal administration of the protiodide of mercury to the point of tolerance, together with tonic doses of quinine.\*

Now, gentlemen, I beg you to understand that I have been describing to you the proper course of treatment in a case of sympathetic ophthalmitis, under the circumstances which this patient presents, provided the exciting eye is blind. A very different line of procedure is necessary if the excitor retains sight, even in very moderate degree. Then it is not justifiable to operate for its removal, because in the end it may be the eye which will retain the more useful vision, or, in other words, the treatment of the original injury may result in the preservation of vision, perhaps even useful vision, while the sympathetic disease may terminate in blindness.

Let me repeat some rules to you which cover the ground as well as it is possible to do so, with reference to the various problems that may be presented in the treatment of sympathetic ophthalmitis and your relations as surgeons to the case. Bear in mind that I speak of ophthalmitis now, not of the disease which I described in connection with the first case.

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\* The iritis steadily improved, and one month after operation there has been no relapse, the eye being white and quiet.

These rules are quoted from those which are given by Mr. Swanzy, because I think they are clear, to the point, and represent the published experiences of the best authorities.

You should perform enucleation, or one of its substitutes, on,—

(1) An eye with a wound which involves the ciliary region to such an extent that sight is immediately destroyed, or that its ultimate destruction by the process of inflammation is practically certain.

(2) An eye which has been wounded in the dangerous region, and in which severe inflammation of the iris or ciliary body has already begun, even if sight is not destroyed.

(3) An eye which contains a foreign body which judicious efforts have failed to extract, and when much iritis is present, even if sight is not destroyed.

These three rules, you will observe, apply to preventive enucleation,—that is to say, the operation is performed in order to check sympathetic disease.

Now let me quote you two which should be your guide, provided the sympathetic disease has already begun, as in the case which we have been considering.

1. You should perform enucleation, or one of its substitutes, on an eye whose sight has been destroyed, even though sympathetic inflammation has begun in the sympathizing eye, because by this means you remove a source of irritation and hope to render the treatment of the sound eye more effectual.

2. You should *not* perform enucleation, or one of its substitutes, on an eye which has been injured, but which retains some vision, when

sympathetic inflammation has begun in the sympathizing eye, because in the end it may prove to be the more useful organ.

Under the last-named circumstances you must employ the medicinal treatment suited to the excitōr, as well as that needed by the sympathizer. Generally this treatment consists in the frequent instillation of atropine, local blood-letting, and, if the patient is sufficiently robust, the use of mercury in some form, preferably, I think, protiodide by the mouth, or inunctions, to the point of tolerance, but not to that of salivation, tonic doses of quinine, and concentrated, nourishing food. The light should be excluded, if necessary with a bandage, but there is no objection to the patient having proper exercise, which usually may be given in the room to which he is almost of necessity confined. Should this not be practicable, he may be taken out with eyes properly protected with bandages.

Of course you understand it is possible to give only a general outline of the treatment; in the details you must be guided by circumstances surrounding each case. At some future lecture I will point out to you the treatment of scleral wounds and the great advances which have been made in the management of badly-injured eyes, even with penetrating wounds of a serious nature and trenching upon the ciliary region, or actually passing through it. Time does not permit me to do so to-day. I must, however, refer to one treatment of sympathetic ophthalmitis, which has, perhaps, not had sufficient trial to take its station among the best-recognized surgical procedures, and yet which has much to commend it and has been advocated by surgeons of great experience and

sound judgment. I refer to injections of anti-septic solutions into the sympathizing eye. Abadie and several other French and also Italian surgeons have published cases where marked improvement occurred by injecting two to five drops of a strong solution of the bichloride of mercury into the vitreous chamber; for example, in one recently reported case of stubborn sympathetic irido-cyclitis the strength of the solution was 1 to 500. The injection was twice repeated, and good results are recorded. Recently, in England, Mr. Berry and one of his assistants have undertaken a series of experiments to prove the tolerance of the vitreous humor to various types of injection, and their results seem to show that aqua chlorinata was the most acceptable. At present, Dr. Hare and myself are engaged in a similar series of experiments in the Laboratory of Experimental Therapeutics, because the exact therapeutic relation of these fluids, when introduced into the eye, to a microbic disease, and especially the relation of the chemical composition of the vitreous to that of the fluid injected, are points that require considerable elaboration.

Finally, gentlemen, I do not wish to close this talk without in my last sentences emphasizing one point,—namely, that while sympathetic inflammation may be preceded by symptoms more or less analogous to those which I described as a neurosis, this is by no means always, nor, indeed, is it commonly the case, and therefore a sympathetic irido-cyclitis, serous iritis, or choroido-retinitis may arise insidiously, practically without warning, and the lesions become pronounced before the gravity of the situation is appreciated. Nowhere more than in

this disease does the law of preventive surgery apply. An incubation period, varying from three to six weeks, is common, but recollect that the disease may develop sooner or may be delayed for a long time. From the day on which the conditions arise that are liable to cause sympathetic ophthalmitis until they are removed the patient is not safe from this grave malady.



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