

Kipp. (C. J.)

AFFECTIONS OF THE EYE

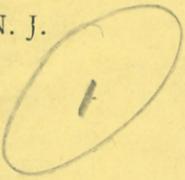
FROM

SMALL-POX,

BY CHARLES J. KIPP, M. D.,

OF

NEWARK, N. J.



Reprinted from Transactions of Medical Society of New Jersey, 1874.

NEWARK, N. J.:
Jennings & Hardham, Steam Printers and Bookbinders, 153 & 155 Market Street.

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AFFECTIONS OF THE EYE FROM SMALL-POX.

The parts of the eye most frequently affected in Small-pox are the lids, the conjunctiva, and the cornea. The lachrymal passages, the vascular tunic, and the retina are comparatively seldom involved in Variola. For the sake of convenience, I shall treat, first, of the disease of the lids; second, of the lachrymal passages; third, of the conjunctiva; fourth, of the cornea; fifth, of the uveal tract and the retina.

The formation of pustules on the upper surface of the lids is always attended by more or less œdema, but is never followed by unpleasant consequences, unless a number of the pustules coalesce. In this case, the subsequent contraction of the cicatrix may produce a slight ectropion. If pustules are developed at the free edge of the lid, or in the intermarginal space, they not unfrequently cause disease or total destruction of the hair-bulbs. Distichiasis, trichiasis and permanent loss of the eye-lashes may be thus produced. The cicatrices left by pustules in this situation are very unsightly, and a constant source of irritation to the eye.

Hirschberg* is of opinion that true pustules are never seen at the intermarginal portion of the lid, and that the infiltrations observed there are of a diphtheritic nature, similar to those occurring in the mouth and nares in this disease.

Various means have, at different times, been employed

* Berliner Klinische Wochenschrift, No. 24, 1871.

with a view to prevent the development of pustules on the lids, but as they all failed to accomplish this object, it would be useless to give a detailed description of the same. If pustules have formed in this situation, it is best to open them and to evacuate their contents. The edges of the lids should be bathed with warm water, so as to remove the crusts from the lashes, and some simple ointment may be applied to prevent the new formation of crusts. If the ulcers are slow in healing, they should be painted over with a weak solution of nitrate of silver, every day, and, in very obstinate cases, they may be touched with a finely-pointed crayon of the sulphate of copper, or the mitigated nitrate of silver.

The tear-conducting apparatus is only seldom affected in small-pox. The disease most frequently produced under these circumstances is *Blennorrhœa* of the lachrymal sac. The only case of this affection that has come under my observation, occurred in a boy three years of age, whom I first saw about three months after he had had an attack of *variola*. His parents were positive that his eyes had been perfectly healthy previous to the attack, and that his present disease first manifested itself during convalescence from the *variola*. There can be no doubt that in this case the *blennorrhœa* supervened upon a severe inflammation of the lining membrane of the respiratory tract, from which he suffered during this attack. The symptoms differed in no respect from those observed in cases of lachrymal *blennorrhœa* produced by other causes. The usual treatment of slitting up the upper canaliculus, followed by the daily introduction of Bowman's probes and frequent syringing of the nasal cavity with warm salt water, caused the disappearance of the disease in about three months.

Hyperæmia of the conjunctiva, or conjunctivitis, more or less severe, occurs in nearly all cases of small-pox. The conjunctivitis usually commences during the first days of the

eruption, and may assume either a catarrhal, blennorrhic or phlyctenular character. In the majority of the cases it presents itself in the phlyctenular form. The symptoms of this affection are so well known that I shall not describe them here. Previously healthy eyes are very seldom seriously injured by the conjunctivitis of variola, but if the conjunctivitis occurs in eyes already suffering from an affection of the conjunctiva or cornea, it usually greatly aggravates such affections, and not unfrequently causes loss of vision.

A man, thirty years of age, who had for some months been under my care for chronic blennorrhic conjunctivitis and ulcer of cornea of left eye, and who was slowly recovering, was attacked by small-pox, for which he was treated in a hospital. The attack was quite a severe one. Immediately after his dismissal from the hospital, he returned to me for further treatment, and I then found the cornea of the left eye nearly destroyed, and the conjunctival disease much worse than at any time before the attack. His right eye was now also affected with the same disease as the left. The man is still under treatment, and there is some prospect that he will at least retain useful vision in his right eye.

Beer, Conradi, and most of the older writers on diseases of the eye, were of the opinion that the diseases of the conjunctiva and cornea, seen in small-pox, were caused by the formation of pustules on the conjunctiva and cornea. More recent observations have, however, shown that variolous pustules are only very rarely developed in these structures. Dr. I. T. Marson,* who has had exceptional opportunities for studying this subject, says: "Out of 1,500 cases, no instance had then or for some time afterwards come under his notice in which the pustules of small-pox formed on the eye. It does, however, happen now and then. In nearly thirty years the number

* Reynolds's System of Medicine, vol. 1, page 443.

of cases of small-pox admitted into the hospital has exceeded 15,000. Out of this number, twenty-six instances have been noticed in which the primary pustule has formed on the eye. It has not, however, in any one of these instances injured the eye in any way."

Of the more recent writers on this subject, Prof. Horner* is the only one who believes that the corneal affections occurring in variola are caused by the formation of pustules on the eye-ball.

In nearly all of the cases in which a pustule was developed on the eye, it was situated in the inner or outer quadrant of the ocular conjunctiva. It has never been seen on the cornea.

My own experience with regard to this point is limited to the following case: On the 30th of June, 1873, I was requested by Dr. Lehmacher to see a man, thirty years of age, who was suffering from a very mild attack of variola complicated with disease of right eye. The man had been vaccinated in infancy, but had not been re-vaccinated. There were but few pustules visible. I examined his eye on the fourth day of the eruption and found great œdema of the lids, severe congestion and considerable swelling of the ocular conjunctiva, and in this membrane, nearly midway between the cornea and outer canthus, was seen a round white infiltration of about the size of a split pea. The infiltration was in every respect like the so-called pustules present in the mouth and pharynx of the same man. The cornea was perfectly transparent. Under the use of cold applications to the eyelids, the infiltration was soon thrown off, and the ulcer left by it healed without further treatment. Subsequently, after all the dried scabs had fallen off, an extensive and deep

* Nagel, Jahresbericht ueber die Leistungen und Fortschritte im Gebiete der Ophthalmologie. 2 Jahrgang, Seite 197.

central infiltration was developed in the cornea of the same eye; of this I shall speak hereafter.

Variolous conjunctivitis usually passes away with the eruption, and in most instances requires no treatment. Cold applications to the eyelids are, however, of service in relieving the burning and smarting, and should be used in every case in which the inflammation is at all marked. If the conjunctivitis continues after the primary disease has passed off, it will be necessary to make topical applications of solutions of nitrate of silver or sulphate of zinc, to the conjunctiva.

The affection of the cornea may be said to be the most dangerous, so far as the sight is concerned, of all the various diseases of the eye, seen in small-pox. The lesion most frequently observed under these circumstances, is a circumscribed infiltration in the substance of the cornea. It rarely manifests itself before the tenth day of the eruption, and is most commonly seen about the fourteenth day. In some cases it does not, however, commence till some weeks after all scabs have fallen off. To the latter form some authors have applied the name of Post-Variolous Keratitis.

The number of cases of circumscribed corneal infiltration from variola that has lately been under my care, and of which I have notes, is twelve. In three of these the infiltrations were situated in the superficial layers, and in the remaining nine, in the middle and posterior layers of the cornea. Of the superficial infiltrations, two were located in the centre, and one was situated in the periphery of the cornea. The peripheric infiltration was formed during the suppurative fever, the central infiltrations during convalescence. In each of the three cases, the infiltration presented itself as a round, flat, greyish-white spot, of about the size of a lentil. The infiltration was soon thrown off, leaving an open ulcer which spread in circumference but not much in depth. In the case

in which the infiltration was situated at the margin, the ulcer extended over the entire lower half of the cornea, and involved about one-half of its thickness. The subjective symptoms consisted of pain in and around the eye, photophobia and lachrymation. More or less congestion of the episcleral vessels was present in each of the cases. They all did well, the sight being now nearly as good as before the attack.

Infiltrations in the deeper layers of the cornea were observed in nine cases. In two of these, several infiltrations appeared at the opposite margins of the cornea, during the secondary fever. At the time these patients came under my charge the entire corneæ were yellow and shriveled, and were shortly afterwards exfoliated. Total staphyloma was the result in both cases. In the remaining seven cases the infiltrations were situated in the centre of the cornea, and were developed either during the stage of desiccation or during convalescence. The symptoms of irritation were well marked in all of these cases. The infiltration which at first presented itself as a bluish-white cloud in the posterior layers, soon increased in size and assumed a yellowish tinge. The layers immediately in front of the infiltration, were at first lustrous and transparent, but soon became dull and opaque, and were afterward exfoliated. In three of the cases hypopion was developed, and spontaneous perforation would, in all probability, have occurred in these same cases if this accident had not been averted by paracentesis of the cornea. Two of the cases were of more than ordinary interest. The first derives its interest from the fact that both eyes became affected,—an occurrence which is but seldom observed. In the left eye, deep-seated marginal infiltrations were developed during the suppurative fever, and caused destruction of the entire cornea and the formation of a total staphyloma. The cornea of the right eye showed no signs of disease till the primary disease

had passed off, when a deep-seated central infiltration formed which, fortunately, left but a faint macula. The second is the case already mentioned, in which a pustule was seen in the ocular conjunctiva, on the fourth day of the eruption. On the eleventh day, the skin being at the time free from scabs, and the ulcer left by the pustule on the conjunctiva having healed, a deep-seated infiltration made its appearance in the centre of the cornea. Extensive ulceration of the cornea and hypopion threatened destruction of the eye, but, after a very protracted convalescence, he was discharged, with a dense central leucoma of moderate size.

The results obtained in the nine cases of deep-seated infiltration were as follows: In five a moderate central opacity remains; in two the sight is much impaired by a dense central leucoma, but may be greatly improved by the formation of an artificial pupil; and in the remaining two, total staphyloma of the cornea followed the destruction of this structure.

A feature common to all the cases above referred to, was the extreme slowness of the process of repair, the length of time required for the complete cicatrization of the ulcer being in most of the cases from four to six months, and in a few, more than a year.

An examination of my notes, with reference to the severity of the primary disease in the above cases, shows that the gravity of the corneal affection by no means corresponded to the quantity or character of the eruption. Both mild and severe corneal diseases were observed in bad cases of variola, and one of the worst of the cases of eye disease above mentioned occurred in a patient who had only a few pustules on his face and neck. Ten of my patients had never been vaccinated. Total destruction of the cornea occurred in two of these; in one the disease left a dense leucoma, and in the remaining seven, a slight macula. Two had been vaccinated in infancy, but had not been re-vaccinated. Both were over

fifteen years of age. In one a dense central leucoma remains, and in the other the disease left a macula in lower half of cornea.

With regard to the causes of this disease of the cornea, we have as yet no positive knowledge. It is generally supposed to be due to a lowered vitality, resulting from the small-pox poison, but that such is not always the case, is apparent, I think, from the fact, that one of the largest corneal infiltrations observed by me occurred in a person who did not feel sufficiently sick to remain in his room till the eruption had disappeared.

The treatment pursued in these cases varied somewhat, according to the degree of the irritation present in each case. Instillations of a solution of the Sulphate of Atropine were used in all. The strength of the solution ranged from two to four grains of the alkaloid to the ounce of water, and the instillations were made three to six times daily. In cases in which there was a marked congestion of the episcleral and conjunctival vessels, tepid water fomentations were applied to the eye for half an hour to an hour at the time, three or four times daily; but if the symptoms of irritation were not very pronounced, warm water was substituted for the tepid. The fomentations were continued till the process of repair was well under way. In all cases the eye was protected by a bandage in the intervals between the fomentations, and for some time after their use had been stopped. The pressure bandage was applied only in cases in which the ulcer threatened to perforate. In two of the cases it became necessary to puncture repeatedly the bulged-out floor of the ulcer to prevent spontaneous perforation with all its serious consequences. To relieve the ciliary neuralgia, subcutaneous injections of sulphate of morphia were made in the temple. The swelling of the conjunctiva, especially of the retrotarsal fold, which was developed in several of the cases after the

protracted use of the bandage, required for its removal daily applications of a solution of the nitrate of silver (five grains to the ounce of water). To expedite the clearing-up of the opacities of the cornea, finely powdered calomel, or a weak salve of the yellow oxide of mercury (one grain to the drachm of lard) was applied to the conjunctival sac. In addition to a nutritious diet, some preparation of iron or sulphate of quinia was prescribed in every case.

Besides the circumscribed infiltrations of the cornea, other observers have met in small-pox with cases of parenchymatous keratitis, and neuro-paralytic ulceration of the cornea. As the symptoms of these affections are so well known, and the treatment is the same whether they are a complication of small-pox or not, it will be unnecessary to make further reference to either.

Of the diseases of the uveal tract which occasionally complicate small-pox, Iritis has been most frequently observed. v. Graefe* says that it is mostly of a mixed sero-plastic character, and that it appears to be always combined with serous choroiditis. Such, at least, was the case in more than thirty cases of variolous iritis which came under his observation. From this it would seem that simple iritis is never or, at all events, very rarely seen in the course of small-pox. The accompanying affection of the vitreous body may also induce posterior polar and cortical cataract, which will remain after the complete disappearance of the other anomalies.

Nagel† has also met with several cases of post-variolous iritis, in each of which the iritis was of a serous character, and accompanied by opacities of the vitreous. The course of the disease was favorable, although somewhat protracted.

According to Bouchard‡ the variolous iritis commonly

* Archiv f. Ophthalmologie, xv. 3, p. 194.

† † Nagel op. cit. p. 250.

attacks but one eye, and commences during the stage of desiccation. It is not preceded by an eruption of pustules on the lids or on the conjunctiva, nor by keratitis. Its symptoms are pain in and around the eye, impairment of sight, injection of episcleral vessels, and sometimes discoloration of iris and sluggishness of pupil. Its course is on the whole favorable, and atropine produces speedy relief. Bouchard compares post-variolous iritis to the inflammation of the iris, which is sometimes observed simultaneously with rheumatism in gonorrhœa.

The iritis of small-pox rarely manifests itself till after the scabs have fallen off, and is therefore not inappropriately called post-variolous iritis.

Leeches to the temple, frequent instillations of a strong solution of sulphate of atropine, and application of cold to the eye, are the means usually employed in this disease. Hypodermic injections of sulphate of morphine are sometimes needed to relieve the pain, and in severe cases it may become necessary to administer some form of mercury.

Von Graefe* makes mention also of a case of glaucoma supervening upon hemorrhagic choroiditis, occurring in a patient suffering from hemorrhagic small-pox.

Variolous Retinitis is apparently very seldom met with, as I can find the record of only two cases of this disease† in the literature of this subject at my disposal. As nothing to the contrary appears in the record, it is to be presumed that the symptoms and the treatment of this form of retinitis do not differ materially from those of idiopathic retinitis.

* Archiv. f. Ophthalmologie, xv. 3, 193.

† Nagel, Op. Cit. page 180.

