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THE
PROPHYLAXIS OF OPHTHALMIA
NEONATORUM.

BY

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THE

PROPHYLAXIS OF OPHTHALMIA NEONATORUM.

THE prevention of conjunctivitis in new-born children has not been the subject of much discussion among British authors. On the Continent, however, it has engaged the attention both of ophthalmologists and obstetricians for some years past, and has already become the theme of a pretty extensive literature. I have read the following:—

CRÉDÉ.—“Die Verhütung der Augenentzündung der Neugeborenen,” in *Archiv für Gynækologie*, xvii. 50, and xviii. 367, 1881.

ALFRED GRAEFE.—“Ueber caustische und antiseptische Behandlung der Conjunctivalentzündungen mit besonderer Berücksichtigung der Blenorrhœa neonatorum,” in *Volkmann's Sammlung Klinischer Vorträge*, No. 192, 1881.

ABEGG.—“Zur Verhütung der Augenentzündung Neugeborener,” in *Archiv für Gynækologie*, xvii. 502, 1881.

OLSHAUSEN.—“Zur Prophylaxe der Conjunctivalblenorrhœa Neugeborener,” in *Centralblatt für Gynækologie*, v. 33, 1881.

HAUSSMANN.—“Zur prophylactischen Behandlung der während der Geburt eintretenden Infektion der Augen des Kindes,” in *Centralblatt für Gynækologie*, v. 76, 1881.

HAUSSMANN.—“Zur Entstehung und Verhütung der Ophthalmia neonatorum,” in *Centralblatt für Gynækologie*, v. 204, 1881.

HAUSSMANN.—*Die Bindehautinfection der Neugeborenen*, Stuttgart, 1882.

BAYER.—“Ueber Crédé's Verfahren zur Verhütung der Augenentzündungen bei Neugeborenen,” in *Archiv für Gynækologie*, xix. 258, 1882.

FELSENREICH.—“Die Anwendung des Crédé'schen prophylactischen Verfahrens gegen Ophthalmia neonatorum,” in *Archiv für Gynækologie*, xix. 495, 1882.

- V. HECKER.—“Ueber Blepharoblenorrhœa neonatorum,” in *Archiv für Gynækologie*, xx. 386, 1882.
- GALEZOWSKI.—“Des Moyens de conjurer les dangers d’ophthalmie des nouveau-nés,” in *Annales de Gynécologie*, xv. 174, 1881.
- C. STEDMAN BULL.—“Purulent, Croupous, or Membranous and Diphtheritic Conjunctivitis in Infants,” in *New York Medical Journal and Obstetrical Review*, xxxiv. 45, 1881.

The importance of the subject may be gathered from the circumstance recorded by Horner,¹ that at a gathering of the superintendents of blind asylums in Germany and Austria, held in 1876, it was ascertained that, on an average, 33 per cent. of the children admitted into their asylums had become blind from ophthalmia, or, as it is called, blenorrhœa neonatorum. The highest proportion of cases of blindness from this disease was 79 per cent., the lowest 20 per cent. Galezowski states that in 507 cases of this disease in infants he has met with 111 where grave results followed, ending in weakening or in complete loss of vision.

The recent attempts to prevent the occurrence of this mischievous inflammation in the eyes of infants have been founded on the conviction that the disease is due to the introduction of a poison from the genital canals of the mother during the process of parturition. The poison is supposed by Crédé to be of gonorrhœal origin. Professor Alfred Graefe, who calls it an undoubted fact that blenorrhœa neonatorum is exclusively due to contact of the infantile conjunctiva with secretions from the genital mucosæ, alleges even that in the case of healthy women the mucous secretions of the generative tract may take on infective qualities during parturition. In the valuable contribution to the subject, however, of the lamented Professor Hecker, some strong grounds are given for doubting the universal application of this doctrine, to which he might have added this, that when the preventive measures were restricted to the use of vaginal injections to cleanse and disinfect the passages the disease was not fully averted; and it was only when direct applications were made to the eyes of the new-born infants that altogether satisfactory results were obtained.

Apparently the earliest systematic attempt to prevent the occurrence of ophthalmia in a lying-in hospital was made by Dr Abegg in Danzig. His plan consisted simply in washing out the eyes of all the children, immediately after their birth, with pure water, without previous injections into the vagina. Unfortunately, his statistics do not afford us an idea of the frequency with which the mischief showed itself before this measure was adopted; but in the ten years, from 1871 to 1880, during which it was carried out, the ophthalmia attacked only 66 out of 2266 infants, giving a proportion of 3 per cent. He states that since these simple washings were attended to no severe cases, ulcers of cornea or such like, occurred.

¹ In Gerhardt's *Handbuch der Kinderkrankheiten*, Band v. Abth. 2, 262.

According to Horner (*l. c.*, 263) Bischoff of Basle was the first to institute systematic carbolic injections into the vagina, and salicylic washings of the eyes of the infant, with a view of protecting them from onsets of ophthalmia. Up till the year 1873 blenorrhœa occurred in 5·6 per cent. In 1873 and 1874, by strict attention to cleanliness, the percentage was reduced to 3·5 per cent., and in 1875-76, when the disinfection was carried out, to 2·6 per cent. Alfred Graefe thinks that another Swiss was the first in the field when he states that Schiess, in the year 1876 (*Correspond. Bl. für Schweizer Aerzt*, p. 673), recommended the use of $\frac{1}{2}$ per cent. solution of carbolic acid, or 1-10th per cent. solution of thymol, for the antiseptic prophylaxis of ophthalmia neonatorum. He himself suggested to his colleague, Professor Olshausen of Halle, without knowing the experiment had been made elsewhere, the desirability of trying to prevent the occurrence of ophthalmia by washing the eyes of new-born children with 1 per cent. carbolic lotion. The result of the experiment was that the percentage of ophthalmias was reduced from 12·5 to 6.

The most striking and satisfactory results, however, have been obtained by Dr Crédé of Leipzig and those who have followed his plan. The following table shows the relative frequency of the ophthalmias before and after his systematic treatment was instituted:—

Year.	No. of Births.	No. of Eye Disease Cases.	Per Cent.
1874	323	45	13·6
1875	287	37	12·9
1876	367	29	9·1
1877	360	30	8·3
1878	353	35	9·8
1879	389	36	9·2
1880 till May 31	187	14	7·6
1880 June to Decr.	200	1 ¹	0·5

For a time he tried to protect the children by frequent carbolic or salicylic injections into the vagina of all the pregnant and parturient women admitted into the lying-in hospital. This lessened the frequency of the attacks, but did not banish the mischief, which in some cases proved obstinate and vicious.

In the first half of the year 1880 he began to effect a more decided reduction in the number of infants attacked with disease by washing their eyes in solutions of borax or nitrate of silver.

In the second half of the same year, as is shown by the table, he succeeded in banishing the disease completely. His plan of procedure consists first of all in washing the eyes of the child with pure water, and then with a glass rod applying a 2 per cent. solution of nitrate of silver, afterwards applying for twenty-four

¹ This was a case in which the eyes were not disinfected, so that properly speaking the percentage is 0·0 per cent.

hours lint soaked in 2 per cent. salicylic solution. In his second paper he states that he has left off the salicylated compresses, and simply puts a drop of the nitrate of silver solution into the eyes of each child after it has been washed; and of 300 children thus treated not one had shown a trace of the disease.

The method so successfully practised by Cr  d   in Leipzig has been carried out elsewhere with equally striking results. In the Stuttgart Maternity, under the guidance of Dr Fehling, the practice was introduced in 1881, as recorded in Bayer's paper on the subject. In the previous ten years the proportion of cases of infantile ophthalmia varied from 1.1 per cent. to 14.3 per cent., the great variation being partly due, as Bayer suggests, to the record being kept by different observers. But the use of the nitrate of silver applications to the eyes led to the complete abolition of the disease. The after-application of the salicylate compresses was done away with, and Bayer might well say, "In efficacy and simplicity the procedure is alike sovereign."

Felsenreich's contribution gives the results of experiments made in the great lying-in hospital at Vienna, in the wards of Professors Carl and Gustav Braun, where also the salicylated compresses were omitted, and the eyes of the infants simply had the nitrate of silver solution dropped into them. Of the first 500 cases so treated, only two children were affected with a slight blenorrh  a. There were nine attacks in the following 2500 cases; but of more than 3000 children thus treated, only 58, or 1.93 per cent., were affected with the disease,—a valuable result, as Felsenreich indicates when he adds that among 1887 children born at the same time, but not similarly treated, 82, or 4.34 per cent., became affected with blenorrh  a more or less grave. This author, as Bayer also does, intones the importance of lessening the numbers and diminishing the intensity of a disease in the infant that sometimes necessitates the prolongation of its mother's residence in the hospital; and he concludes by remarking that "henceforward the test of success in the management of a Maternity will depend as much on the proportion of cases of infantile blenorrh  a as on the maternal morbidity and mortality."

Hausmann, whose interesting work gives a very elaborate and exhaustive exposition of the whole subject, and who vindicates for himself priority in the suggestion of the possibility of extirpating the disease by a proper prophylaxis, closes his monograph by saying, "The origin of the conjunctival inflammation in infants is now completely established; its prevention lies fully within our power: may the development of our knowledge, represented in these pages, assist in making that knowledge the common property of all those through whose co-operation alone success can be attained in relegating ophthalmia neonatorum to the category of diseases that have been happily extinguished and remain only historically memorable."

It was time, therefore, that the procedure should be tried in our Maternity. I am afraid that, although Dr Macdonald, in his last report, stated that he had had recourse to carbolized washings of the eyes of some of the infants with partial success, the subject has never sufficiently attracted the attention of the medical officers; and I am not by any means sure that correct statistics are attainable of the proportion of children attacked with the disease. I know that in former sessions I have never failed to meet with a series of cases to furnish a theme for clinical demonstration; whilst this session I only once had an opportunity of seeing the disease, and that in a very mild form. Searching the records of my two preceding quarters, Nov. to Jan. 1880-81 and 1881-82, I find that among 85 living children 10 were noted as having been attacked with ophthalmia, or 11·76 per cent. During the quarter just passed, Nov. to Jan. 1882-83, I asked the house-surgeons to carry out Cr  d  's prophylaxis, using, however, a weaker solution of nitrate of silver, and omitting the salicylated compresses. The result has been that only 3 out of 57 infants showed any trace of the disease, and, as I have already hinted, the mischief showed itself in a very mild and modified form. There was only slight swelling of the eyelids, the secretion did not assume a puriform aspect, and the mischief was over in all in a few days. I have to express my conviction that in the cases affected it is extremely probable that there was some carelessness on the part of the nurses, to whom sometimes the application of the eye-wash was entrusted.

To obtain the best results it is necessary that the eyes of the infant should be washed immediately after its birth—perhaps just after the escape of the head, if there be sufficient delay between the birth of the head and the expulsion of the trunk. In any case, before there has been time for much opening and shutting of the eyes, they should be carefully washed with pure water. Then the eyelids should be pulled apart, and a drop of the solution dropped into the interior with a glass rod. The best results have been attained where a solution of the strength of two per cent. of the nitrate of silver has been used, as proposed by Cr  d  ; and on another occasion I should myself follow his plan. It is right, however, to add that A. Graefe and others have expressed doubts as to the safety of using such a strong solution in every case, and it is quite possible that a weaker solution may prove as efficacious. Or a lotion of another kind may be found as useful, such, for example, as the liquor chlori, which Dr Argyll Robertson has been in the habit for many years past of recommending to his students as a prophylactic for this ophthalmia neonatorum.

