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INTERSTITIAL KERATITIS

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The following case, with the complete family history, shows the various ways in which syphilis in a father may affect his offspring, without apparently influencing the mother, either by causing death in utero or soon after birth, or by actual transmission of the disease. The facts appear to me to throw some light on the question of syphilitic heredity, and justify their publication not only because of the completeness of the family history but on account of the following features of interest which were presented :—

1. *Small-pox was transmitted from the mother to a child in utero, although there has been no evidence of the transmission of syphilis from any of the children to the mother.*

2. *In one of the children partial atrophy of the optic disc preceded by ten years the onset of interstitial keratitis.*

3. *In the same child interstitial keratitis appeared during prolonged mercurial treatment.*

A child aged twelve years and a half was seen by me on 29th Aug., 1892; he was suffering from interstitial keratitis of the right eye. In both eyes there was well-marked horizontal nystagmus, which was most apparent on fixation. The following observations were recorded at this date: The right eye was very sensitive to light and there was a good deal of suffusion. There was congestion of the ciliary as well as of the conjunctival blood-vessels. Nearly the whole of the cornea was rendered opaque by a uniform grey cloud, leaving only a narrow transparent circular zone near the margin. By focal illumination some more opaque whitish spots were seen in the deeper layers of the cornea, especially in its upper part. The epithelium was intact. Blood-vessels could not be seen by focal illumination only, but on combining this with a strong convex glass numerous small vessels appeared, showing a broom-like arrangement. The anterior chamber was of normal depth and transparency. The pupil was fully and regularly dilated by atropine. Ophthalmoscopic examination was impossible. He counted fingers at a distance of five feet. Tension normal. As regards the left eye, the anterior parts of the globe were normal. The pupil reacted promptly to light. Ophthalmoscopic examination was difficult on account of the nystagmus. There were no opacities of either the lens or vitreous humour.

The optic disc, which was surrounded by a yellowish circle of choroidal atrophy resembling the glaucomatous halo, was of a hazy pallor with a faint pinkish tint. All the vessels were diminished in size and one of them was reduced to a mere white thread. In the periphery there was much irregularity of the choroidal pigment, and in the lower parts of the fundus there were large patches of incomplete atrophy of the choroid with pigmentation of the retina. With a convex spherical lens of + 0·5 D the vision was $\frac{4}{18} - \frac{4}{12}$. The light sense was diminished. He saw considerably worse at night.

As will be seen later, the patient was the first living child after seven confinements. In general appearance there was an evident disproportion between the size of the head and the development of the extremities. The cranium was more or less square, with a prominent protruding forehead, and the limbs, although fairly well nourished, were not such as one might expect in a boy of his age. He was an intelligent boy, talked English and German with equal ease, and his father said that he got on well at school. He had a peculiar pallid complexion ; his face was nearly expressionless and was asymmetrical, the right side being fuller than the left. When he smiled the lines of expression were more marked upon the left than upon the right side, and this was especially noticeable at the

angles of the mouth. There was no deviation of the tongue on protrusion. The bridge of the nose was broad and flattened and the right angle was lower than the left. There was no discharge from either the nose or the ear, and the hearing was normal. There was a want of symmetry in the teeth, and the two upper median incisors presented well-marked notches on the lower margin along with a transverse line on the anterior surface. The papillæ of the tongue were unusually prominent, and on the middle of the dorsum there were several linear puckered depressions. No scars were to be seen either at the angle of the mouth or on the palate. Both tonsils were swollen and red. There were no glandular swellings or any scars on the skin of the body, which was normal in colour. The limbs were symmetrical, and there was no wasting of the muscles of the extremities. There was, however, a well-marked thickening of the right tibia about its middle third, which was not painful on pressure, and the skin over it was not discoloured. There was no swelling of the knee-joint and the knee jerks were normal. The spleen was not enlarged, and the result of the examination of the other internal organs disclosed no disease.

I obtained the following *life-history of the boy* from the father, who is a very intelligent man. At the time of birth the unusual size of the head

was noticed. During the first week a weakness in the left arm was observed, the limb hanging in a flail-like manner, which the parents attributed to a fracture of the bone. The medical man who was consulted[1] stated that there was no fracture and prescribed internal treatment, which led to the disappearance of the symptoms in a few weeks. During the first month a strange expression of the eyes seemed to indicate that the child could not see properly. He slept badly, the head was retracted, and during the night it was in a continual state of movement. As far as was remembered there was no vomiting. During the fifth month an eruption of transparent blisters developed on the body, and they disappeared in a few days after bathing with warm sea-water. At the end of the first year, and during the second year, the above-mentioned head symptoms were accompanied by convulsions which were attributed by the parents to the probability of the child having fallen from the nurse's arms. All these symptoms passed off during the third year of life. The child began to walk at the age of three and remained in good health until the appearance of his present malady. He was sent to school at the

[1] I wrote to the medical man who attended the boy at this time. As no notes were taken, the information he gave was incomplete, but he remembered the case as one of cerebral disease due to congenital syphilis.

age of seven and made good progress in his lessons, but it was noticed that he could see less distinctly than other children. His sight was for the first time examined in September, 1889, when atrophy of both discs was diagnosed, following neuritis, along with a narrowing and obliteration of some of the arteries. Horizontal nystagmus was also noticed. Thirty mercurial inunctions (30 grs.) were given, followed by iodide of potassium, but without any improvement. In January, 1892, a painless swelling about the middle of the right leg was observed, unaccompanied by any redness of the skin. His father went with him to Aachen in the month of April, where he received forty mercurial inunctions (30 grs.) along with the internal administration of iodide of potassium. During this treatment the swelling in the leg disappeared and there was no salivation. On returning home the boy was decidedly weaker and paler and was easily fatigued by walking, and the father discontinued the inunctions against the advice of the medical man at Aachen. He recommenced, however, the inunctions in the beginning of July on his own responsibility, giving altogether thirty inunctions, the last one on 5th August. In the middle of July the right eye became inflamed and suffused, the vision gradually becoming impaired, and on 5th August the diagnosis of interstitial keratitis was made.

As to the *history of the father*, he was formerly healthy and strong, but contracted a hard chancre at the end of 1873, being at the time engaged to be married. He was treated for some months by mercurial pills along with iodide of potassium until the sore disappeared. He was married in April, 1874, about six months after the appearance of the sore, and shortly after marriage the first secondary symptoms were noticed--*viz.*, a sore throat and a sore place on the tongue—but he was not aware of ever having had any skin affection. The mercurial treatment was tried for some months and was again adopted after the birth of the first child, although there were no symptoms present at the time. In 1879 his hearing was impaired and gradually became worse, and he was told by his medical attendant that the left drum was perforated. About seven years ago he suffered from mental depression accompanied by hallucinations of sight. His medical attendant attributed this condition to overwork, but he himself was convinced that it was due to his former complaint. In 1887 he had an apoplectic seizure causing paralysis of the left arm and leg, with loss of speech; the saliva ran from the left angle of his mouth and he was unable to move his tongue freely. The power of speech returned after a few hours, and the other symptoms rapidly improved and disappeared completely after some weeks. Soon

afterwards he experienced sudden attacks of giddiness, which at times were so severe that he was obliged to catch hold of anything near him in order to prevent himself from falling. During the last two years he had experienced "rheumatic pains" in different parts of the body, mostly affecting the right arm and leg, and, as far as he remembered, the left side had never been affected in the same way. The attacks came on suddenly and disappeared after a short time, and his medical attendant at Aachen said they were not of rheumatic but of specific origin.

With regard to the *history of the mother* the following facts were supplied to me by the husband and were afterwards confirmed by his wife. Before and after marriage she had always enjoyed excellent health, with the exception of an attack of small-pox in 1880. She had never had symptoms of specific disease. There had been no affection of the throat or skin, and there had been no loss of hair or pains in the limbs. After the birth of her first child the medical attendant advised her and her husband to undergo mercurial treatment for some months, although neither of them then showed symptoms of syphilis. She had never nursed any of her children, who had been all bottle-fed. She had nineteen easy confinements, and her recovery after each was quite satisfactory.

Table of Confinements.

No.	Date.	Remarks.
1	End of 1874	Born at eighth month, dead, and with a syphilitic skin eruption. The diagnosis was made at the time by the medical attendant.
2	From 1874 to 1876	Three miscarriages.
3		
4		
5	End of 1876	Full term. The child was apparently healthy. The medical attendant saw no symptoms of syphilis. It died on the third day.
6	End of 1877	Full term. Healthy child. It died a few days after birth. The post-mortem examination showed no visible changes.
7	Dec., 1878	Miscarriage (twins).
8	Dec., 1879	Full term. *The patient.*
9	End of 1880	Premature. The mother was suffering from small-pox. The child was born, according to the attending practitioner, covered with a small-pox rash. It died immediately after birth.
10	1880 to 1883	Two miscarriages.
11		
12	1883	Full term. Twins; both born alive. One died a few hours, the other a few days, after birth.
13	March, 1884	Full term. A boy.
14	May, 1885	,, ,,
15	Nov., 1886	,, ,,
16	Oct., 1887	,, A girl.
17	Oct., 1888	,, ,,
18	June, 1890	,, A boy.
19	Sept., 1892	,, ,,

An analysis of the above table gives the following results: Six miscarriages—Nos. 2, 3, 4, 7 (twins), 10, 11; two premature births—Nos. 1 (still-born) and 9 (small-pox); three children born at full term but dying shortly after birth—Nos. 5

6, 12 (twins); eight living children—Nos. 8, 13, 14, 15, 16, 17, 18, and 19.

Regarding the *present condition of the father and mother* I have only to mention the following few facts: There is no consanguinity, and the heads of he father and mother present none of the peculiarities of the children. The father is forty-five years of age, and apart from his deafness and rheumatic pains he is free from any complaint and there is no trace of the paralysis of the left side. He is a pale-faced, short, thick-set man, and in spite of his deafness is very intelligent, but appears depressed and shy. The mother is aged forty, but she looks younger, is in robust health, is active in business, and, with the exception of a few small-pox pits at the side of the nose and forehead, shows no evidence of previous disease.

The *seven other living children* have enjoyed good health since birth, with the exception of some trivial complaints of childhood. I have had an opportunity of examining them all, and I have found that the same formation of head is present in the whole of them to a greater or less degree. The broadening and flattening of the nose were more or less apparent in all of them with the exception of No. 17. As regards the condition of the superior median incisors, well-marked notches were found in the teeth of Nos. 13, 14, 15, and 16, but less well-marked ones in No. 18. In Nos.

15 and 17, besides being badly developed, the superior incisors were much decayed. Deep transverse lines were observed on the dorsum of the tongue of No. 15, but in none of the others. The tonsils were enlarged, swollen and red in all the children, and adenoid growths were seen on the back of the pharynx in Nos. 13, 15, and 18. Sight was normal in all of them, and hearing was only slightly impaired in No. 13. All the children looked bright and healthy, and as far as their age would allow answered questions with intelligence.

I have been able to find only one other published case in which the syphilitic taint continued to show itself in such a large number of consecutive offspring. That case is quoted by Fournier[2] in his last book and is evidently unique even in his experience. Another interesting case, and in some respects similar to my own, has been recorded by Hirschberg,[3] but the syphilitic heredity, although probable, had not been actually proved. Fournier's case, the meagre details of which were communicated to him by Dr. Ribemont-Dessaignes, was that of a woman who contracted syphilis immediately after marriage, underwent no special treatment, had five miscarriages and gave birth to fourteen children, all of whom died within the first six months. My case differs from that one in the

[2] *L'Hérédité Syphilitique*, 1891, pp. 120 and 280.
[3] *Centralblatt für Augenheilkunde*, 1888, p. 218.

following three points—*viz.*, the number of confinements was the same, but two of them resulted in twins; the mother had never shown any signs of syphilis; the fatal influence of the syphilitic taint had gradually diminished so much in intensity, without practically any treatment, that the mother at last gave birth to seven consecutive children, who, apart from the formation of the head, nose and teeth, might be considered healthy.

The eldest living child in my case was the eighth; its birth was preceded by miscarriages and a premature birth, whilst it was followed by a premature birth and two more miscarriages. Besides inheriting the same formation of skull and teeth as the other living children it had been the victim of severe manifestations of congenital syphilis since childhood. It is impossible to attribute this gradual diminution in the intensity of the syphilitic taint to the mere nominal anti-syphilitic treatment which the mother underwent at her medical attendant's advice immediately after her first confinement, because this treatment was followed by three consecutive abortions and several more in later years. I cannot see any other explanation for this fact than the mitigating influence of time, which is strongly insisted upon by Fournier, although he is quite aware of the exceptions[4] to the follow-

[4] *L'Hérédité Syphilitique*, 1891, pp. 260-268.

ing rule laid down by him: "Le temps use, atténue et finit même par annihiler l'influence hérédo-syphilitique, quelle qu'en soit d'ailleurs la provenance". I cannot agree with Mr. Hutchinson's[5] statement that this "piece of matter-of-fact observation" is probably a mistake, and I think that his earlier views upon this subject are the more correct. It may be added that the father, when the now living children were born, was showing severe symptoms of the continuance of the disease, especially of the nervous system, of which he is exhibiting symptoms at the present day.

The form of cranium characteristic of inherited syphilis and somewhat resembling the hydrocephalic skull is present in all the living children to a greater or less degree of intensity, showing itself more particularly by a squareness of the head and prominence of the forehead. If this condition of the head is due to periostitis it must have taken place in utero, as none of the last seven children have shown any active signs of the disease since birth.

In the following remarks I wish to draw attention to a few points of interest attached to this case which have already been briefly indicated.

(1) *Small-pox was transmitted from the mother to a child in utero, although there has been no evidence*

[5] *Syphilis*, 1887, p. 70.

of the transmission of syphilis from any of the children to the mother. I did not see the child myself, but there is no reason to doubt the accuracy of the parents' statement that No. 9 was born with a skin eruption which was pronounced by the medical attendant to be small-pox and which in appearance was entirely different from the skin eruption of the first child. Many cases of this kind have been recorded, but the facts known up to now do not bear out Hutchinson's statement that "if a pregnant woman suffers from small-pox her fœtus will also be affected". I refer the reader to Schroeder's *Text-book of Midwifery*, fifth edition, page 361, in which he says: "In small-pox the fœtus is born as a rule without any eruption, but it may occasionally appear at birth and after birth". Without entering into any discussion, I only state the fact that the virus of small-pox passed from the mother to the child, whilst apparently the virus of syphilis did not pass from the child to the mother. I am aware that this immunity of the mother is generally explained by the supposition that the syphilis remained latent. Considering, however, that recent investigations seem to show that the microbes of some infectious diseases pass from mother to child, whilst others do not, and that even in the case of transmissible organisms certain conditions must be fulfilled in order that the transmission may

take place,[6] speculation on the above-mentioned fact is idle until the nature of the syphilitic virus is understood.

(2) *In one of the children partial atrophy of the optic disc preceded by ten years the onset of interstitial keratitis.* It will be noted that at the first ophthalmoscopic examination in 1889 no changes in the periphery of the fundus were found, whilst at present there exists well-marked choroido-retinitis with pigmentation of the retina. This condition was first observed by Dr. Kirch of Aachen, whom I have to thank for his notes on the case, as well as for the fields of vision which he took both before and after the mercurial treatment carried out there. It certainly is possible that the peripheral changes may have been overlooked at the first examination, as the condition of the optic disc, after a clear history of meningitis in infancy, seemed to be a sufficient explanation of the defect in vision. This is not probable, however, as the case was seen at the time by several careful observers independently. Probably partial atrophy of the optic disc, due to cerebral disturbance, was followed by choroidal changes leading to pigmentation of the retina. A

[6] The bacillus of typhoid fever has been found six times in the fœtus when the mother was affected with the disease, whilst in five other cases it could not be detected. *Vide* Ernst in *Ziegler Beiträge*, vol. viii. p. 188.

case almost identical with this one, so far as the changes in the fundus are concerned, is recorded by Hutchinson.[7] "There could be no doubt that the patient had experienced an attack of neuro-retinitis due to meningitis in infancy, whilst at the time of observation—adult life—changes were in progress in the direction of retinitis pigmentosa." In my case, after the inunction treatment the central vision was found to be a little better and the field somewhat larger than before, but I entirely agree with Dr. Kirch that it remains doubtful whether there has been any real improvement by treatment, as differences between a first and second examination are far from rare in children, the better result being due to the child becoming accustomed to the method of examination. Hirschberg[8] gives the history of a case of atrophy of the left optic nerve after neuritis due to specific meningitis during the first year, followed thirteen years later by specific retinitis in both eyes, and after the disappearance of the retinitis by double interstitial keratitis leaving changes in the periphery of the choroid. It may be mentioned that in this case, as in my own, the paralysis of the left arm was noticed by the parents seven months after birth, but it disappeared without any treatment. Cases of this kind are rare, but they seem to justify the

[7] *Syphilis*, 1887, pp. 219 and 220.

[8] *Centralblatt für Augenheilkunde*, 1889, p. 102.

prognosis which Hutchinson gave in the above-quoted case: "As yet no attack of keratitis has been experienced, but probably it is to come".

(3) *In the same child interstitial keratitis appeared during prolonged mercurial treatment.* It is a fact of frequent occurrence that the interstitial keratitis of one eye develops during the mercurial treatment adopted for the same disease in the other eye.[9] From Hutchinson's statement that interstitial keratitis caused by inherited syphilis is "in the end always symmetrical,"[10] whilst it is generally not symmetrical[11] in the acquired form of the disease, the conclusion may be drawn that even the mercurial treatment which he advocates has never succeeded in preventing the outbreak of the inflammation in the second eye. I am not aware of another published case in which the interstitial inflammation of the first eye has appeared during prolonged mercurial treatment adopted for other symptoms of hereditary syphilis in the patient, although probably the same observation has been made by others. This is easily explained by the circumstance that the other usual symptoms of late hereditary syphilis appear in the bones, such as nodes in the tibia and radius and symmetrical synovitis, especially of knee-joint,

[9] *Vide* Foerster, Wecker and others.
[10] *Syphilis*, 1887, p. 76.
[11] *Ibid.*, p. 238.

for which affections, as in the tertiary symptoms of the acquired disease, iodide of potassium is the most generally used and the most efficacious remedy. Hutchinson remarks that, although mercurial treatment previously adopted does not prevent the occurrence of iritis in infants, it is most efficacious in curing the disease when it has developed. In my case, as well as in the cases previously referred to, it is not a question of previous treatment, but of treatment carried out actually at the time of the onset of the corneal disease, and both classes of cases seem to prove that mercurial treatment is unable to check the development of interstitial keratitis. On the other hand, many cases are known in which mercurial treatment seemed to have an injurious effect on the corneal disease. This was recorded by Hutchinson in 1858 and has since been observed by many others. These two facts taken together, with the "invariable tendency of interstitial keratitis to recovery,"[12] along with another not less prominent feature, the tendency to run a very chronic and protracted course, make it appear very doubtful whether any good has ever been done by the administration of mercury in cases of interstitial keratitis. Indeed, it is very probable that in some cases mercury not only aggravates the disease, but is actually the cause of the outbreak. Small doses of mercury

[12] Hutchinson : *Syphilis*, 1887, pp. 76, 89, 232.

will certainly do less harm than large ones, but their curative effect on interstitial keratitis has not been proved by facts. I may mention here the case of a girl aged fifteen suffering from interstitial keratitis and synovitis of the knee-joint of undoubtedly specific origin, and with a peculiar idiosyncrasy which made the administration of iodide of potassium impossible, who recovered completely on a tonic treatment—consisting of iron and arsenic, cod-liver oil, milk and bracing country air—assisted by the local application of warm fomentations. Cases of this kind do not prove, as some suggest, that the cured disease was not syphilitic, but they show how much caution has to be used in attributing the success of a treatment in these cases to the effect of a special drug.

Although I have no further remarks to make as regards the case itself, I wish, before concluding this paper, to give a short sketch of the present state of our knowledge of the etiology of interstitial keratitis. Hutchinson and Panas may be quoted as the most distinguished supporters of the two extreme opinions held upon this question.

Hutchinson, 1887.[13]	Panas, 1881.[14]
1. Interstitial keratitis in its typical form is always a consequence of syphilis, and it is in itself sufficient for the diagnosis (p. 75).	1. Hereditary syphilis is only one of the numerous causes of exhaustion of constitution which lead to rickets and later on to diffuse interstitial keratitis (p. 578). Interstitial keratitis is a manifestation "de la misère organique," whatever its cause may be. Inherited syphilis may be one of its causes, but it is neither the only one nor even the most common (p. 580).
2. The transmission of the disease as well in inheritance as in acquisition is always effected by the conveyance from person to person not of a tendency to disease but of a particulate virus (p. 71). It is not the state of health which syphilis may have produced in the parent which he transmits to his offspring, but the poison itself (p. 385).	2. We flatly deny that the venereal virus acts directly on the tissue of the cornea, producing thus a keratitis really deserving the denomination of "kératite hérédo-syphilitique" (p. 579). Rachitis is most frequently associated with this affection of the cornea, and this shows that both are dependent upon a general state of imperfect nutrition (p. 580).

That M. Panas still holds the same views on the *first* point is shown by the last thesis published on this subject under his supervision by Loukaetis,[15] who merely contents himself with repeating the arguments of M. Panas without adducing any fresh evidence in favour of his assertions. His paper does not call for special notice, but I shall com-

[13] *Syphilis:* London, 1887.

[14] *Archives d'Ophtalmologie*, vol. i., 1881, pp. 577 to 586.

[15] *De la Kératite Parenchymateuse et en particulier de sa Pathogénie et de son Traitement:* Thèse, Paris, 26 Juillet, 1892.

ment briefly on M. Panas's reasons for believing in the non-specific nature of interstitial keratitis as laid down by him in his original paper, 1881. They are the following: (1) If interstitial keratitis were really dependent upon hereditary syphilis it would appear as often, if not oftener, soon after birth as later on; (2) if hereditary syphilis really shows so much affinity to the tissue of the cornea, one would also see acquired syphilis attack this membrane; (3) the dental alterations have not the significance given to them: (*a*) because in cases of undoubted interstitial keratitis the abnormality of the teeth may not exist, (*b*) a similar malformation of the teeth undistinguishable from the syphilitic is found in rickets; (4) the supposed nodes of the tibia are generally only rickety deformities; if they are veritable prominences of painful periostitis they are as much due to scrofula as to syphilis; (5) the argument taken from the mortality of children would only be of value if syphilis were the only cause of this occurrence.

It seems to me that none of the above reasons proves the non-syphilitic origin of the disease, as will be seen from the following remarks: Interstitial keratitis is not seen in infancy for the simple reason that it is a *late* symptom of inherited syphilis. The inherited syphilis of infancy is closely related to the secondary stage of the acquired form of syphilis, and the symptoms of inherited syphilis observed

later on to the tertiary stage of that disease; therefore the non-appearance of interstitial keratitis at birth does not disprove its syphilitic origin any more than the non-appearance of bone and brain disease immediately after the primary sore disproves the specific character of these symptoms. The existence of interstitial keratitis in acquired syphilis is proved beyond doubt by many of the best and most competent observers—*e.g.*, Alexander, Fournier, Fuchs, Haltenhoff, Haab, Hirschberg, Horner, Hutchinson, Michel and others. That the condition of the teeth does not always coexist with interstitial keratitis only shows that in congenital syphilis as well as in the acquired form all symptoms need not necessarily be present in the same individual. The difference between the teeth in congenital syphilis and those in rickets is too well known to require further comment. The argument taken from the mortality of infants belonging to the same family would be of value as corroborating the evidence of other symptoms if syphilis were proved to be the most frequent or even only a frequent cause of this occurrence, and this, I think, has been proved to the satisfaction of almost every clinical observer. Hutchinson himself thinks that it is quite possible that the influence of syphilis has been exaggerated in this direction,[16] but he admits that the proneness to

[16] Hutchinson: *Syphilis*, 1887, pp. 78, 79, 415.

abort in syphilitic mothers is "undoubtedly very common".

The vast majority of those who have written on this subject recognise the important part which inherited syphilis plays in the production of interstitial keratitis, as first pointed out by Hutchinson,[17] although few, if any, will agree with him that interstitial keratitis in its typical form is "always" a consequence of syphilis and "in itself" sufficient for the diagnosis. This is evident from a table of the statistics published on this question which has been put together by Gross,[18] and which I here reproduce, adding Pfister's[19] statistics published in 1890.

Name.	Number of cases.	Percentage of inherited syphilis.
Alexander	102	35·3
Ancke	100	61·0
Ayres	12	8·3
Cohn	—	6·5
Davidson	—	20·0
Despagnet	119	14·2
Dietln	18	55·2
Giraud-Teulon	30	46·6
Graefe	—	5·0
Haltenhoff	66	42·7
Horner	51	70·5
Iakowlena	63	57·1
Leplat	28	64·2

[17] Hutchinson: *Syphilis*, 1887, pp. 78, 79, 415.

[18] Dr. Emil Gross: *A Keratitis interstitialisrol Szemészet*, 1889, No. 5, p. 50.

[19] Jul. Pfister: *One Hundred and Thirty Cases of Interstitial Keratitis Diffusa. Klinische Monatsblätter für Augenheilkunde*, vol. xxviii., 1890, pp. 114 to 123.

Name.	Number of cases.	Percentage of inherited syphilis.
Michel	—	..... 55·0
Nettleship	—	..... 68·0
Parinaud	32	..... 96·7
Pfister	130	..... 64·6
Saemisch	—	..... 63·0
Sedan	34	..... 32·3
Theobald	8	..... 50·0
Trousseau	40	.... 92·5
Wecker	—	..... 66·0

Although "there are not many sceptics as to the association between interstitial keratitis and hereditary syphilis," [20] few, if any, will bear out the before-mentioned statement of Hutchinson to its full extent. It must be admitted that statistics drawn up by different observers are often based upon different principles, and therefore some care has to be taken when the results are compared. In Pfister's series of 130 cases however the existence of Hutchinson's teeth in the patient had been accepted in itself as sufficient evidence to warrant the diagnosis of inherited syphilis, and still in 35·4 per cent. nothing could be found pointing to that disease. The highest percentage was found by Parinaud, but he also admits "que la lésion cornéenne n'a rien de spécifique et peut s'observer en dehors de la syphilis". [21] A further argument against the exclusively specific nature of interstitial keratitis may be taken from the fact

[20] Hutchinson: *Syphilis*, 1887, p. 396.
[21] *Archives Générales de Médecine*, Nov., 1883.

that it has been observed in dogs—*vide* Haltenhoff and Randolph—and has been experimentally produced in rabbits by section of the ciliary vessels.[22] It therefore appears to me that in the causation of interstitial keratitis syphilis plays the most important but *not* the only part. Perhaps 60 per cent. are specific. The corneal affection is an important symptom of syphilis, but only to the same extent as are all the other symptoms of this polymorphous disease of which "not one is pathognomonic," and the diagnosis of which "is to be attained rather by careful appreciation of all the facts of the case than by placing confidence in any one symptom".[23]

As to the *second* point referred to by M. Panas and Hutchinson the mode of transmission of the disease, it is futile to argue so long as we are in perfect darkness regarding the nature of the syphilitic virus. Certainly many features of the acquired disease, as well as the similarity between most acquired and congenital symptoms, point to its being caused by a specific micro-organism. On the other hand, the frequent death of children in utero whilst symptoms at the time of birth are rare, the death of apparently healthy children after birth

[22] Wagenmann in *Graefe's Archiv*, vol. xxxvi., part 2, pp. 23, 29, 51, 52, 57 to 59.

[23] Hutchinson: *Syphilis*, 1887, pp. vii., viii.

whilst the necropsy reveals no visible disease,[24] and the malformation of the skull attributed to periostitis in utero, whilst bone symptoms as a rule only develop in later stages, seem to point to the transmission of some weakening condition or diathesis. From a merely clinical point of view this double-faced aspect of hereditary syphilis is well characterised in Fournier's saying: "La syphilis paternelle tue l'enfant plus souvent qu'elle ne se borne à lui transmettre la syphilis". Even if the microbe of syphilis should be found, further investigations will have to show in what percentage of cases it has to be considered as the cause of interstitial keratitis.

[24] As in my case No. 6, and in Hutchinson: *Syphilis*, p. 393.

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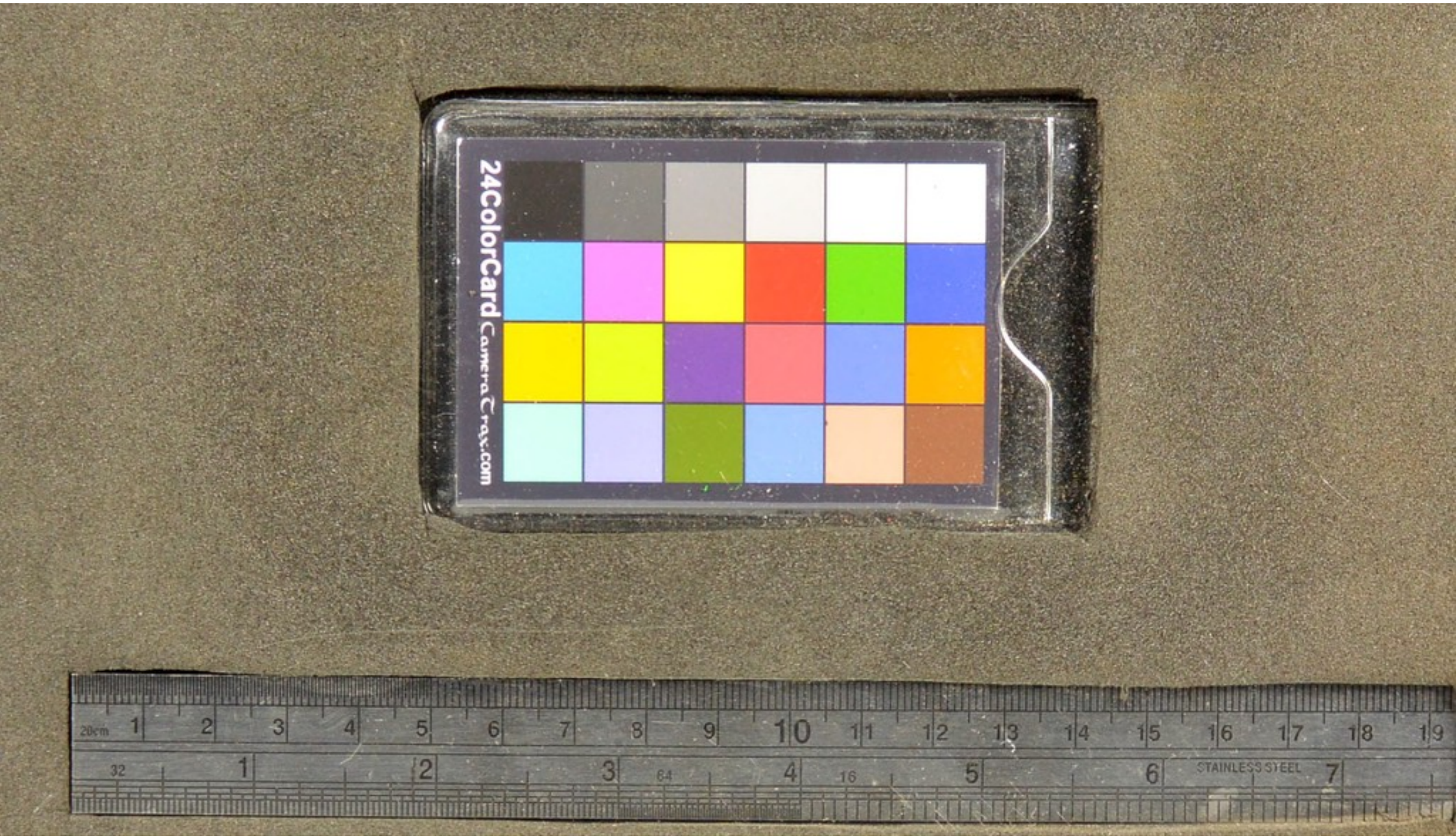
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