ON GANGRENOUS ERUPTIONS
IN
CONNECTION WITH VACCINATION AND
CHICKEN-POX.

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I HAD the honour to exhibit before the Society about two years ago, the body of an infant who had died of a severe gangrenous eruption, which had followed vaccination.

I believed that it was an example of "Vaccinia gangrenosa," *i.e.* a vaccinia eruption which had taken on a gangrenous form. I now purpose to bring before the Society the details of the case, and also to give some account of an allied and much more common malady to which for many years past I have applied the name "Varicella gangrenosa."

*Details of Case in which Death followed from a Gangrenous
Eruption after Vaccination.*

A male infant, aged about three months, and in excellent health, was vaccinated on November 11th, 1879, at a district
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office. The vaccination was from arm to arm, and the vaccinifer appeared to be in perfect health. Four others were vaccinated from the same source at the same time, and nothing unusual happened. On the eighth day after the vaccination the child was brought again to the station for examination. It had four pearly vesicles on the arm, which showed nothing unusual, but its body and limbs were covered by an eruption of a peculiar character. This eruption, which had been coming out for a day or two, was described by my informant, the vaccinator, as looking like smallpox. He said that the papules were distinctly shotty, and, believing it to be a case in which variola had been contracted prior to vaccination, he instructed the mother to take the child home and on no account to bring it to the station again. Four days later he visited the child at its home and found the pustules much developed, whilst in many of them gangrene was commencing. He now advised that the attendance of the parish medical officer should be obtained. This was not done, and between this date and that of the child's death no medical man saw it. The death occurred on November 30th, twenty days after vaccination. Under the peculiar circumstances an inquest became necessary, and an opinion having been expressed that the case was one of vaccinal syphilis, I was requested by the coroner to examine the body and make a report.

The state of the child's skin after death may be realised with tolerable accuracy by the portrait (see Plate I). The vaccination spots were covered with scabs, and there was a certain amount of congestion around them, but none of them were in the least indurated.

On the scalp and face there were spots and patches ranging in size from a shot to a shilling, some of them simply congested or scabbed, but others showing a central area of gangrenous skin. On the trunk, both back and front, there were similar spots with some also much larger. All the larger ones showed a rim of deep ulceration which surrounded a central slough of black skin. From a few

the slough had separated, a deep ulcer remaining. But few of the ulcers were quite round, and in many instances the shape was irregular, as if several spots had coalesced. The eruption occurred on both sides of the body alike, but as regards the larger eschars, it was by no means arranged in exact symmetry. The back was very severely affected, and the lower part of the abdomen and upper parts of the thighs. There were some large eschars near the knees, but the lower halves of the legs and the feet, and the whole of both upper extremities below the elbows, were almost wholly free.

A post-mortem examination of the body was made for me by Dr. Barlow, who reported that the viscera were free from disease and that the child appeared to have been in a state of good nutrition.

So far as I am aware this is the first case of gangrenous eruption after vaccination which has been recorded, but that a general exanthematous rash does sometimes follow at the end of the first week after vaccination has long been well known. To this eruption the term vaccinia exanthem has been given. Several somewhat different forms of eruption have been recognised in this connection. Sometimes the rash is simply erythematous, at others papular, and in a few it closely resembles varicella. It has been described in detail by Mr. Ceely and others. I believe that the case just narrated was an example of vaccinia which became gangrenous, and it is of interest to note that the primary lesion of the skin was a hard papule with an umbilicus, and so closely resembling variola that it was taken for that disease by the surgeon who saw the case.

In a paper written some years ago, I attempted to draw attention to the fact that a peculiar form of prurigo, which is a common consequence of varicella, occurs also sometimes after vaccination, and probably in connection with the vaccinia rash. Thus it would appear that there are certain features of similarity as regards the pathological possibilities of vaccinia and varicella, and to these

I wish now to add the fact that they are both liable to become gangrenous and to end fatally.

Before I pass to the subject of *varicella gangrenosa*, I wish to mention another case of gangrenous vaccinia which has occurred in Dublin since my communication to this Society in November, 1879. The case occurred under the care of Mr. William Stokes of the Richmond Hospital, and I am indebted to him not only for particulars of the case, and permission to make use of them, but also for being able to bring before the Society an excellent portrait of the patient. In Mr. Stokes' case the gangrenous patches were much larger than any which occurred in mine. Those on the buttocks were several inches in length. As in my case they are irregular in shape, and evidently produced by the confluence of groups of papules. It is unfortunate that in this case there is uncertainty as to the date of vaccination and consequently as to the length of the interval before the appearance of the eruption.

Neither in this case nor in my own were the vaccination sores themselves attacked by gangrene; it was the general eruption only which was so affected. The full details of Mr. Stokes' case have been published by him in the 'Dublin Journal of Medical Science' for June, 1880.

Varicella Gangrenosa.

The earlier cases which came under my notice were mostly in the late stages of the disease, and none were so characteristic as in a later one of which the portrait is produced. In this case the patient was under the care of Dr. David Lees at the Children's Hospital, Great Ormond Street, who kindly procured me an opportunity for seeing it.

In my own cases the patients usually came under observation in the surgical practice at the London Hospital, on account of deep gangrenous ulcers in the flexures, and with a few scattered spots on the skin. It was by the history only that I was enabled to connect such cases with chicken-pox.

I am sure that I have seen five or six of this kind, but

I regret that I have not preserved notes of any in a form which would justify my producing them to this Society. I recorded in the 'Ophthalmic Hospital Reports,' vol. vi, 146, a case in which a young child after an eruption much like chicken-pox had a double irido-choroiditis, and lost both eyes. A few years later a case similar to this came under my care at Moorfields, the child being brought there on account of double iritis. The child had several scattered spots of gangrene where the vesicles had been. I suggested gangrenous varicella, but was unable to carry the proof further as there was no evidence to show that the child had been exposed to contagion.

In a lecture on some of the peculiarities of varicella, delivered many years ago, I mentioned "a form of ulcerating chicken-pox which in syphilis finds its homologue in *rupia*." I then quoted a passage from Trousseau, who long before had described an epidemic of chicken-pox, in which the eruption had been protracted for six weeks or two months, and had produced ulcerations like those of pemphigus.

There are in Guy's Hospital Museum excellent wax casts from two cases which I should diagnose as gangrenous varicella. They are classed under the name of *rupia escharotica*.¹ In the description of one of the models it is said "the earliest stage of the affection is seen in certain vesicles ranging in size from a pin's head to a split pea. Some of them are flattened and have red areola round them. Subsequently the vesicles became larger and ulcerated." It is stated in this case that the child recovered in a fortnight without having taken any medicine, a fact strongly at variance with the usual history of pemphigus. No one who has examined these models and read Dr. Fagge's descriptions, and who is acquainted with Dr. Whitley Stokes' description seventy years ago of what he called "*Pemphigus gangrenosus*," can doubt for a moment that the "*Rupia escharotica*" of Guy's and the pemphigus gangrenosus of Irish observers are one and the same malady. I hope to make it scarcely less clear that they are both of them really forms of varicella.

¹ Models 206 to 209.

Dr. Whitley Stokes, in 1807, wrote in the 'Dublin Medical and Physical Essays' a paper on "An Eruptive Disease of Children." He proposed for it the name of "Pemphigus gangrenosus" or "White blisters." He described it as very severe and frequently fatal, and said that it was well known in many parts of Ireland. It is not improbable that several different maladies contributed to his description, but that his attention had been attracted to cases of gangrenous chicken-pox is, I think, almost certain. He said that the eruption usually developed itself during perfect health, and that it occurred by preference to strong children. "One or more vesicles appear, mostly larger than the most distinct smallpox; these increase for two or three days, burst, and discharge a thin fluid and a disagreeable smell." The febrile disturbance which accompanies it he believed to be induced by the irritation of the eruption. Death usually occurred about the tenth or twelfth day, and in those who recovered relapses were common. Most of the patients were between the ages of three months and four years, but it had been observed as late as nine years. The flexures of the joints and behind the ears were frequently affected by gangrenous ulcers, and gangrenous spots were the characteristic of the disease.

Dr. Whitley Stokes distinguished the disease from chicken-pox, but he evidently came very near to the recognition of what I believe to have been its true character. In speaking of diagnosis, he wrote: "On the other hand, the swine-pox (varicella) resembles this disease in its first stage; but the fever rarely precedes the eruption in 'white blisters,' and the pustules of varicella dry quickly."

If we put aside the assumption that in all cases the vesicles of varicella dry quickly, we have no point left for differential diagnosis except the occurrence in varicella of fever before the eruption, and it is now well known that this is often, if not usually, so slight as to be easily overlooked.

Dr. Stokes mentioned that in some cases the eye

is inflamed, a fact which, as already mentioned, has fallen under my own notice. His observation as to the occurrence of spreading gangrene in the flexures is one which I can also quite confirm.

The evidence upon which I rely in support of the belief that this eruption is no other than a modified varicella is the following. It occurs to children in good health at the age at which chicken-pox is common, and it affects the parts usually the sites of that eruption. It disappears spontaneously after a short time, though on account of its local severity it is always protracted longer than ordinary chicken-pox. The eruption in most instances comes out in a single crop, all the vesicles or sores being at the same time in the same stage. In the early stage it usually closely resembles chicken-pox, and is often taken for it by the child's parents. The names which it has received in Ireland of "white blisters" and "eating hives" are very suggestive. Lastly, and I think conclusively, I have seen it in case after case in which one child in a family had this gangrenous eruption, whilst the brothers and sisters had chicken-pox in the ordinary form. Dr. John Abercrombie, of the Children's Hospital, in February, 1880, brought before the Pathological Society the dead body of a child which offered a good example of the malady, and mentioned that after the child's admission at the hospital one of its brothers developed ordinary varicella.

The constitutional disturbance which attends this form of eruption frequently runs high. Dr. Whitley Stokes spoke of the disease as being often fatal, and I have myself known of several deaths. The cure, however, when healing commences, is usually rapid; all the sores, as a rule, cicatrising simultaneously.

In explanation of such exceptional severity of a disease, so common and usually so insignificant, it is impossible to do more than fall back on the suggestion of individual idiosyncrasy. The severe form does not happen to delicate children more frequently than to the robust, indeed, in

several instances in which three or four brothers and sisters had varicella at the same time, whilst in only one did the eruption become gangrenous, the subject of this latter form was by no means in more feeble health than the others. I have never seen more than one child in the same family affected by the gangrenous form.

In conclusion, I should attempt a summary of the statements which I wish to offer for the consideration of this Society.

I have tried to prove that it is possible for the eruption of varicella in isolated cases and in connection with idiosyncrasy on the part of the patient, to assume a very severe type, becoming bullous, petechial, or even gangrenous. In these gangrenous forms there is much constitutional disturbance, and death may result. Now and then very dangerous forms of iritis or of panophthalmitis are witnessed. Next to the assertion that there is such a malady as gangrenous varicella and in part based upon it, comes a second proposition to the effect that the *vaccinia* eruption may also assume the same type and with similar danger to life. That there does occasionally occur after vaccination a general eruption all observers admit. I have adduced only two examples of the gangrenous form of this eruption.

Respecting my own case I do not think that there can be any reasonable doubt. The child was in excellent health, was successfully vaccinated, and was affected seven days afterwards by a general eruption which was taken for small-pox. This eruption became gangrenous, and the child died of exhaustion on the twenty-first day. The eruption may have been variola, varicella, or vaccinia; that it was one of these three is almost certain. In Mr. Stokes' case the facts are similar, with the exception that it is impossible to assign the period of incubation correctly. That the vaccination sores themselves remained in both cases free from gangrene has been alleged by some critics of Mr. Stokes' case as a reason for doubting whether there was any connection between them and the eruption. But

such doubt is, I submit, not reasonable. It is the exanthem, and not the site of inoculation, which is attacked by gangrene, and surely there is no *à priori* reason for expecting that the latter should suffer.

In syphilis a very severe form of rupial eruption may follow in cases in which the original chancre was a mild one. In my own case the death of the patient deprived us of an opportunity of observing the healing of the sores, but it is to be noted that they had all at the same time advanced to pretty much the same stage. In Mr. Stokes' case the healing of the sores simultaneously gave support to the belief that they were of the nature of an exanthem, and not in any sense accidental results.

APPENDIX.

The following are descriptions of some cases not mentioned in the paper and of drawings which were exhibited at the meeting.

1. A portrait lent me by Dr. Barlow, from the collection in the Children's Hospital. The infant died with an eruption consisting of gangrenous patches exactly like those shown in the previous and following portraits. No history as to varicella has been preserved.

2. A portrait lent me by Mr. Waren Tay, showing the character of the eruption in the chest of a young child. Two round sores are seen, each with a central eschar of gangrene, as if punched out. In the first instance the child presented an eruption of varicella, which was seen and diagnosed by Dr. Sansom, of the North Eastern Hospital for Children. A considerable number of the spots subsequently became gangrenous, and passed into the stage shown in the portrait. Mr. Tay was kind enough to give me an opportunity of seeing the child just before the portrait was taken. I am not able to state with positiveness any facts as to family history, but I believe that varicella had occurred in the family.

3. A portrait lent me by Dr. Barlow from the collection in the Children's Hospital, showing varicella as an ulcerating, bullous eruption, not absolutely gangrenous. This portrait is of great interest as illustrating a lesser degree of severity in the inflammatory process. It shows well how large irregular sores have been formed by the coalescence of groups of bullæ. The shapes of these sores are exactly like those seen in gangrenous cases. The severity of the eruption on the trunk and head, and the comparative exemption of the extremities, is also well seen. This probably well illustrates the eruption described by Trousseau as pemphigoid varicella.

4. Portrait of an infant aged eight months, named Sawyer, who came under my own observation in August, 1880, in the condition shown in the sketch. There was a history of gangrenous varicella six weeks previously. The portrait was taken in order to show the kind of scars which are left by this eruption, and to show that they might easily be mistaken for those of syphilitic disease.

The following are some particulars respecting other cases not mentioned in my paper.

Dr. David Lees gives me the particulars of a case of the child, George Watson, aged fourteen months, who was under his care as an out-patient in January, 1880. Varicella had appeared twelve days before, and four other children in the same house had it. In this child the spots had developed into deep sores, and in some on the parietal region there were black eschars appearing. One on the left cheek was so deep as almost to involve the mucous membrane. A subcutaneous abscess was formed in the neck.

Dr. Lees also gives me the notes of a child aged a year and a half, named Sarah Ann Reed, who in December, 1879, had a vesicular eruption, from which resulted a number of punched-out sores on the lower part of the back.

Also a third case, in which a female child, aged nine months, under Dr. Dickinson's care, had undoubted

varicella, had subsequently deep ulcers on the upper and inner parts of the thighs. There were no actual sloughs, but foul ulcers as large as sixpences resulted.

DESCRIPTION OF PLATE I.

(Gangrenous Eruptions in connection with Chicken-pox and Vaccination. JONATHAN HUTCHINSON, F.R.S.).

A portrait of the back of the child whose body was shown to the Society in November, 1879, and in whom eruption resembling variola appeared on the sixth day after vaccination. The drawing was taken after death, which had occurred from exhaustion on the 20th day. It will be seen that the vaccination spots, four in number, are somewhat inflamed, and show pus scabs, but they are not gangrenous. The trunk and upper parts of limbs are covered with gangrenous patches.