REMARKABLE CASE
OF
D R Y G A N G R E N E,
OCCURRING IN A CHILD THREE YEARS AND SEVEN
MONTHS OLD.

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I HAVE ventured to bring the following extraordinary case before the notice of the Society, thinking that every pathological fact which can tend, even in the remotest degree, to elucidate the peculiar and special influence which the blood exerts when circulating through the capillaries of each various tissue of the body, is of the deepest interest to the medical practitioner. Have we not all reflected on the extraordinary fact, that the same fluid should produce such different effects in different organs? Are we not justified in regarding the attempts which the vessels of a sphacelated limb make to arrest the destructive course of the disease, and save the life of the rest of the organism, at the expense of only a small portion

of it, as a proof that there are other forces connected with the vascular system, in addition to those by which the nutritive particles are separated from the blood and deposited in the organism? Again, is it not indeed wonderful that immaterial mental phenomena should be as dependent for their development on the presence of arterial blood in the brain, as the continuation of the vitality of the organism of the limbs on the due and normal state of their circulation? This direct and indisputable relation between the intellectual faculties, and the presence of arterial blood in the capillaries of the brain, has induced me to observe and consider carefully every pathological or physiological fact which seemed capable of throwing any light on the real nature of the connection existing between the proper function of each individual organ, and the circulation of blood through its vessels.

For although isolated facts regarding the pathology of the circulation, of themselves, prove nothing, it will only be by generalizing with philosophic caution on a multitude of facts thus accumulated, and comparing them with those yielded by comparative anatomy, that these important problems can be solved.

But I must not be tempted, on the present occasion, to enlarge further on this deeply interesting subject.

For a knowledge of the following case I was indebted to my friend, Mr. Bury, of Farnham, under whose notice it came accidentally, and by whom its deep physiological importance was most fully appreciated.

The patient had been under the care of Mr. Bayley, of Odiham, to whom I am indebted for some particulars regarding its condition previous to my first visit.

On the 29th January 1839 I visited, in company with Mr. Bury, William Chandler, aged three years and seven months, then living with his parents at Crookham, near Farnham, in Surrey.

His father is a bargeman, earning about a pound a-week. His mother was a healthy-looking woman, but delicate; she has had four children, the eldest seven years old, perfectly well; the second died at two months; the third, William Chandler, is the subject of the case; the youngest was weakly, and since dead. The general food of the family has been bread and potatoes, with meat two or three times a-week. William Chandler was described to me as having been weakly from birth, but free from any evident disease, and that he ran alone at about two years old.

When I first saw him he was asleep in a cradle before the fire, and I was much struck with the placid expression of his countenance, the plumpness of his cheeks, which, though without colour, did not look unhealthy.

But no words can pourtray the extraordinary spectacle which he exhibited when his mother removed the bandages from his mutilated limbs.* His cheeks became rather purple from the excitement to

* The state of the child at this visit is represented by Plate III. fig. 1.

the circulation occasioned by his wakening, and a dark spot of a livid colour became apparent on his nose, which I was informed was the scar of a former slough, but it appeared the precursor of a second gangrenous spot. His right fore-arm was gone, having been partially amputated by nature at the elbow-joint by the disarticulation of the radius, though the ulna had been divided lower down, opposite a point which might be seen in the detached radius, as at that place the bone was thinner, a portion of its surface having been removed by absorption, where the line of separation had first commenced. The slough had extended above the elbow-joint, where nature appeared to be making a second attempt at amputation, from the distinct though comparatively pale line of ulceration between the living and dead portions of the limb.

The whole of the left fore arm, and about half the upper arm, was in a state of dry gangrene ; but there was a distinct line of separation in the upper arm.

The foot of the left leg was completely removed just above the ankle-joint, between the epiphysis and the shaft of the tibia and fibula, leaving the extremities of the bone exposed, the soft parts presenting a surface healthy and granulating in one part, but sloughy in another.

On the right foot the phalanges of the second and third toes had been removed by the same unsparing hand, the stumps having a healthy cicatrix ; but on the calf and knee of the leg there were livid spots.

Such was the extraordinary appearance of this poor little child the first time I saw it. The pulse in the carotids was 140, feeble, easily arrested, but distinct to the eye.

The action of the heart more feeble than natural, but unaccompanied by any unnatural or irregular sound. The mother observed that, when every thing was quiet, at night, it sounded as loud as the ticking of a watch.

The intellects were perfect, and the child, on the whole, wonderfully quiet and tranquil, but complains much of feeling cold unless close to the fire. From the mother's account I learned that the disease commenced at the latter end of last August, both his feet becoming of a blackish purple colour; that hot flannels relieved them only for a short time; sloughs, called by the woman *set-fasts*, began about the beginning of September, on the right leg first, above the heel. These sloughs separated. The sore healed in about a month; that on the left leg never healing, but gradually extending over the foot, and a line of demarcation was ultimately set up. Amputation gradually took place, and the limb was entirely removed by December the 30th.

The disease commenced in the left upper arm, about the middle of November, on the dorsal surface of the wrist. It followed on the right about a fortnight afterwards, commencing below the elbow, and the ulna was divided on the 18th of January; but nature, apparently not being able to effect the amputation perfectly in that spot, recommenced

above it. And the radius, together with the hand, was separated at the elbow joint on the 26th January. I could not ascertain the date of the amputation of the two toes on the right foot.

The following account, which I have since received from Mr. Bayley, under whose care, as parish surgeon, the child was placed, I give in his own words: "I believe it was about the beginning of September last when our little patient was first brought to me, with large vesicles on the right foot and fore arm, containing a dark livid-coloured fluid. These had not been preceded by pain, or any inflammatory appearances of the hand. The countenance was pale, the lips blanched, the pulse exceedingly quick and feeble; indeed, it gave more the sensation of fluttering than of pulsating. The abdomen seemed large; but the bowels were acting well, and the evacuations perfectly healthy.

"From a supposition that the disease was the consequence of debility of the heart's action, I ordered the parts to be fomented with warm cloths; the diet to be nutritive, with an allowance of port wine, brandy, &c., &c., in arrow-root and sago, and prescribed three powders, to be taken daily, each containing: Quin. Disulph. gr. ss. Pulv. Zingiberis gr. j; but, from inattention of the mother, no medicines were given regularly.

"About ten days after this I again saw the child; and found that the fluid, contained in the vesicles, had been discharged, leaving a dry concave surface, which had already begun to assume a gangrenous

appearance. Ordered the warm turnip poultices (turnips being procured without cost) to the limb, and the strengthening diet, as before ; and which has been properly adhered to. From this time, the disease has been gradually increasing, and has assumed the character which you have witnessed.

“ I have now written from memory, for my time is so occupied.”

From Mr. Bury I have received the following :—

“ February 7th, 1839.—Since Mr. Solly and myself visited this child on the 30th ult., the disease has advanced considerably in all four extremities, or, more properly, I should say, disease in the lower, the process of separation (curative) in the upper, limbs. The black patch of gangrene which occupied the left calf on that day, proceeding from the stump upwards, now reaches to within an inch of the flexure of the knee-joint posteriorly ; and the death of the whole circumference of this part of the limb is nearly complete. There is a circular line of demarcation apparently being formed, or commencing, about an inch below the knee, as though natural amputation would ensue here. The toes of the right foot are black, and rather swollen, up to a level with the ball of the great toe ; mortification evidently coming on, and threatening this leg.

“ The left arm separated on the first of this month, (February,) about midway between the shoulder and elbow, in the situation delineated in Mr. Solly’s sketch ; the soft parts below this to the elbow, together with the entire fore-arm, hand, and their

bones, dropping off in one loathsome mass, and leaving a stump of most singular appearance. Below the site of nature's amputation of the soft parts, the feeble granulating stump of which gradually slopes downwards upon the bone, the shaft of the os humeri projects, uncovered, as far as its distal extremity.

“The soft parts of the right arm, below the corresponding point of separation in that of the opposite side, as seen in the sketch, came away on the 5th instant, along with the superior portion of the ulna ; which latter has detached itself at the elbow. A stump is thus exhibited, similar to that of the opposite member, with the lower half of the bone of the humerus also similarly denuded. Thus, if I may venture so to speak, nature has divided both ossa humeri in her amputations of these arms, at the articulations of the elbow, whilst she has made her incisions of the softer textures three or four inches higher up. Though, perhaps, unequal in our eyes to our present art, yet how beautiful is the ingenuity of her work.

“The gangrene has returned, I am sorry to say, on the nose, and seems disposed to spread there ; the entire apex being involved. Some swelling and redness are visible beyond the gangrenous portion.

“There continues the same brightness and tonic expression of the eyes which has been so remarkable hitherto ; and, to-day, there is a slight general suffusion of both cheeks, scarcely amounting to a flush. The child having lately had

a better supply of nutriment, with ammonia, quinine, &c., may account for this last symptom, as well as probably for the separation of the upper extremities having taken place more rapidly during the past week than this extraordinary process, in this most extraordinary case, would seem to have done heretofore.

“February 12th.—During the last five days, the progress of the mortification has been arrested in the lower extremities, and in the nose also. The great toe and two middle toes of the right side are black, dry, and shrivelled ; and it is uncertain where the death of the parts will stop, there being no line of boundary. The disease of the left leg, or rather stump, is quite at a stand still, the line of demarcation still existing, as on the 7th ; but there is no ulceration here, nor discharge, the whole gangrenous portion below being contracted and shrunken into a dry, black crust. The granulating surfaces on both stumps of the arms, however, discharge freely a tolerably thick and healthy pus, and look as before. Within the last few days, the patient has lost his appetite, having partaken of nothing but dry bread, with a little weak wine-and-water. There is, nevertheless, very little change in the countenance, or in the condition of the pulse ; which latter, in truth, would barely admit of reduction in tone or power. The bowels continue to act with regularity ; nights as sleepless as formerly. Notwithstanding the diminished action in the parts, as stated in to-

day's report, the little sufferer is just as solicitous as ever to have the adjoining skin rubbed by his mother's hand at each time of exposure ; and relief of the pain is evidently derived from her so doing. I this day examined the state of the arteries of the lower limbs, as carefully as the crying and restlessness of the poor child would allow me ; but was unable to detect, by the touch, pulsation in either the inguinal or popliteal spaces. He screamed so piteously, at the approach of the stethoscope to his chest, that I was obliged to abandon the attempt of listening to the heart's action.

“ Two years ago, two front teeth of the upper jaw decayed and fell out ; but the others are now remarkably sound, and the child has the full complement for its years.

“ The chief pain has been felt throughout in the lower extremities ; little or none in the upper.

“ February 18.—The dead parts on the left leg are nearly cast off, both the tibia and fibula being denuded about three inches below the knee, by the progress of ulceration, through the line of demarcation. The granulations here are filled, as the others elsewhere have been, but secrete a healthy pus in abundance. They descend obliquely downwards, from the sound integument, nearly two inches, and terminate over the naked bones more abruptly than those in the upper extremities. These latter are gradually healing, and continue to discharge. On the right one a small black spot ap-

peared three days ago, which threatened to spread in the manner recently observed in the left leg ; but happily it has at present terminated in a superficial dry crust or scab, such as the tip of the nose also presents at this time. Both phalanges of the right toe have dropped off ; and the granulated surface exposed looks well, and is inclined to discharge. The two central toes are black and dry up to the first phalanx, and will probably separate at this point. There is no improvement in the child's appetite, and he gets no more sleep at night. He dozes off for a few minutes together in his mother's lap by day. The countenance is certainly paler, and less indicative of vital power. So, likewise, I judge from the visible action of the carotid arteries ; which, as well as that of the temporals, is too feeble to bear the pressure of the finger. The only solid food taken is plain bread ; but he drinks beer plentifully, which has been always preferred to wine, or wine and water. Motions from the bowels, and urine, natural.

“ February 23.—The dead parts attached to the left leg were thrown off on the 18th ; the granulating surfaces, both here and on the upper extremities, have a healthy appearance ; a copious discharge of good pus ; and are gradually contracting. The two distal phalanges of each affected toe have separated, and left discharging and pretty healthy wounds. Those bones that are stripped of their coverings, and project beyond their respective stumps, namely, the ossa humeri, and left tibia, and

fibula, are becoming dryer, and apparently lighter in weight as well as in colour, and present a spongy appearance; but they are none the less sensitive, each dressing (with poultices still) giving rise to sad cries from the little creature, the bones of the leg more especially. Some amendment is to be reported in the appetite, meat and broth having been resumed.

“March 1st.—The child’s appetite is as voracious as ever. Both arms continue cicatrizing; the left leg and right toes are much the same. Immediately below the granulations of the stumps, the bones look white and shrivelled, and exhibit minute perforations, as though nature were endeavouring to cut through them at these parts.

“March 29.—Since my last visit, the reparation of the three extremities, that have undergone amputation, has been progressive, and remarkably good stumps are now nearly completed. There are on each healthy granulations, which are reduced to mere points, and discharge proportionably little of good pus. The projecting bones respectively belonging to each stump have become detached at the situations, most favourably corresponding to the previous division of the soft parts, that is to say, just above the line of the granulating surfaces; by the healing of which, so far as it has hitherto proceeded, their divided ends are nicely covered over. The right os humeri was detached on the 6th; and the left, on the 9th; the fibula, on the 10th; and the tibia, on the 15th. The stump of the left

arm, certainly, promises to be rather conical ; but those of the leg and right arm will be fleshy and round, equally so with many stumps I have seen after amputation by surgical art. The wounds on the toes of the right foot are quite healed. The child has improved in looks, and gained flesh ; the appetite is exceedingly good, and all the natural functions are well performed, sleep even included.

“ It is both curious and melancholy to witness the poor little fellow rubbing the stumps of the arms, when the dressing is removed, against his face, in order to allay the itching still felt ; and the manner in which he took and held, in his mouth, a penny I gave him.”

On the 22nd of April I again visited the case. When I found, to my astonishment, that nature, unassisted by the surgeon, had amputated the three extremities, and formed stumps, which might shame many formed by the operator's knife.* The stump of the right arm was as perfect as could be desired ; the bone in the left projected slightly, but was in the course of removal by absorption. The stump of the left leg was nearly healed, with a very slight granulating projection opposite the bone. The child's health was much improved, his spirits good, and he was freer from pain.

In this case the progress of the disease seems to have been identical with that which is usually observed in senile gangrene : for instance, its first ap-

* See Plate III. fig. 2.

pearance was a dark coloured spot, unaccompanied with pain or swelling, or increase of heat in the part ; and very slight redness at the line of demarcation, between the healthy and diseased portions of the limb.

Dr. Carswell, in his admirable article "Mortification," in the Cyclop. of Medicine, observes, "that it is stated, by pathologists, that this form of mortification sometimes occurs in young persons ;" but that he himself has never seen it in young persons, and considers it a statement which has not been supported by facts, and I have not myself been able to meet with any case which bears any analogy to it.