PUERPERAL CONVULSIONS: A CLINICAL LECTURE DELIVERED AT BELLEVUE HOSPITAL, DEC. 30, 1869.*

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I HAVE to-day, gentlemen, to offer you some remarks upon a case of puerperal convulsions, the subject of which is now in the wards; a case interesting and profitable alike for its severity and for the excellent and gratifying prospect of recovery. The historical facts of the case are briefly these: A young woman of twenty whose whole life had been passed in the country, goes out to service, is seduced, becomes pregnant, leaves her place, goes home to her mother; her mother notices her strange behavior, and seeks the cause in vain until it at last declares itself; for, as the poet has it,

"Coming events cast their shadows before."

With all this strain upon her mind for months, she is unwillingly compelled to make a confidante of her mother; but it is necessary to keep it hidden from the father. This girl then tries to obtain from her seducer the means of supporting the child in the future, and signs a paper releasing him for one hundred dollars in cash, with a promise of another hundred, which, however, he is not inclined to give. From this hospital, to which she comes as an asylum in which she may hide

* Phonographically reported especially for this journal, by Alexander Hamilton, M.A.

herself from her father, her friends, and the world, she writes a note to this man, who sends it to a lawyer, and he writes her a letter that she is guilty of attempting extortion and may be committed. With this agonizing strain upon her mind, she passes on to her confinement.

I mention this not because of its remote but because of its direct influence. There was a hospital in Liverpool which exhibited a remarkably low rate of mortality in its lying-in wards; but it was found that they excluded primiparæ. Just so surely as you exclude primiparæ, and especially those who carry with them the whole burden of their shame and sorrow, the results are vitiated, and cease to exhibit the fair ratio of mortality for more liberal institutions.

She had the ruddy, hearty, healthy, robust appearance not incompatible with the development of the coming trouble. She had her urine examined by the house physician; as the law in the hospital is that the urine of pregnant women should be examined once a week, especially in primiparæ; and, more especially, in those in whom there is œdema of the face, or in whose urine albumen has been present or suspected, in a previous labor, or at any other time. Her urine was perfectly normal, and up to the standard. So healthy was her appearance, and she seemed so well, that the house physician did not examine it again. This is to be regretted. In private practice I follow the same law, especially in a primipara, of examining the urine as to whether it contain albumen, and the amount of this ingredient, as to its specific gravity, as to the

amount secreted by the kidneys in twenty-four hours, and as to the microscopical evidence of casts, and in doubtful cases for the amount of urea excreted. Experience teaches us that frequent examinations will, if their warning voice be attended to, enable us often to ward off threatening trouble, and will disclose a tendency to trouble, in given cases, where one of the conditions may obtain and all the rest be lacking.

Our patient went through her labor well, the first stage occupying thirteen hours; the second, a few hours; and the third, ten minutes. The labor was perfectly normal, except that the head was delayed in passing the vulva, the delivery being accomplished about noon of Sunday, Dec. 26. She remained in a favorable condition until 7.15 P.M. of the same day, when convulsions commenced. Convulsions occurring after labor belong to a class of cases in which we have more hope than in those in which they antedate labor. It is an obstetric law that, when they occur during labor, we are, as a rule, to terminate the labor promptly, and place those that may follow in the category of *post-partum* convulsions. She had the attack, then, at this favorable time. She recovered consciousness—a favorable symptom. She recognized the next approaching convulsion, exclaiming, "Oh, doctor, it is coming now!" and away she went into another. Puerperal convulsions are not all alike. Epilepsy which has existed for a long time before rarely shows itself in labor, and, if the kidneys be free from disease, you may anticipate that the epileptic will not have a fit during parturition. Hers were not of the ordinary, or hysterical form of

convulsions, but were a severe, true eclampsia, by which term we designate convulsions that are truly epileptiform and distinguished by a total abrogation of consciousness.

I saw this woman in several attacks, and the phenomena were just these: The patient, lying languidly, breathing regularly, totally unconscious, commenced to turn the head stiffly to one side—and when you see this peculiar version of the head, under these conditions, you may be pretty sure that a convulsion is coming on —the mouth open, the eyes fixed, strabismus often,—either divergent or convergent,—silence for a moment, and then a hissing expiratory sound, with puffs of air like a locomotive, with the face still turned to one side, the cutaneous circulation of the face congested, the eyes starting, but with the lids closed, the conjunctiva congested, the face and tongue growing continuously bluer and blacker, all the limbs, which at first participate in the general rigidity, pass into violent and jerking contracting, clonic movements up and down; at last, as the convulsion goes on, the face gets blacker and blacker, the tongue is protruded, and may so far pass forward, gorged with blood and covered with froth, as to get between the teeth, and then, towards the close, the masseter muscles take on this same clonic action, and close upon the teeth, biting, perhaps, the cheeks and the protruding tongue, while blood and saliva may flow in mingled streams from the lips. This lasts for a variable length of time, with the face growing still darker and blacker, and then the convulsion ends with a deep inspiration; —with the first thorough respiration the attack is over.

Then follows a stage of the most profound chloroformic relaxation, stertorous inspiration, and, with cheeks flattened, breath is expelled in gusts from the mouth, lips, and flapping cheeks, all the while the dark blue color gradually disappearing from the countenance. The pulse is quickened during the whole convulsion. She may remain in this state, after the convulsion, for a considerable time, or go at once into another. Instead of this *pleurothotonos*, there may be *emprosthotonos*—she may rise in bed, all the while being completely unconscious, and then comes the true eclamptic attack again, or the recurrence may be ushered in by opisthotonos.

From the second or third convulsion, that is, from four o'clock on Monday morning until ten last evening (Wednesday), this woman remained in a state of absolute unconsciousness; and from Sunday evening until Monday night at nine, had, in all, nineteen convulsions, with the dangerous complication of œdema of the lung, developed on Tuesday morning, and yet she is going to do well.

Now Dr. Pingry, the interne, had treated her well, had given her a hot air bath, had given elaterium to act as a hydragogue on the intestines (and it is a prompt and reliable hydragogue cathartic), also chloroform, during the convulsion and a little before it, so as to anticipate what was coming, but without controlling it—all this before I saw her. A grain of elaterium in all had been given, without producing the desired evacuation, and then Dr. Pingry came for me.

The responsibility of such cases is very great, and no

routine treatment can be laid down, or should be uniformly followed. We must then consider the physical character and present condition of our patient, and treat accordingly. I found a stout, sturdy, strongly-built woman of twenty, from the country, who had been described as hearty and healthy before her confinement; not one of your pale, pasty, anæmic women. I saw, when I came, that the elaterium was beginning to evacuate the bowels, and it soon produced full passages.

There was a strong and good pulse; and, on putting my ear to the heart, I heard the first and second sounds clearly and distinctly, with no anæmic murmur, no disease of the heart, no fatty degeneration. Why this careful examination of the heart, you ask? Because, when considering whether you will adopt the spoliative treatment or not, you must determine the condition of the circulation by an examination of the heart as well as the pulses. Here, then, I found a strong and healthy heart, with good, rich blood, in a hearty young woman with convulsions which had occurred *after* delivery. I decided to take blood from the arm. This I do rarely and reluctantly, and only when driven to this venesection by urgent necessity. I hesitate in this matter, not alone because I deprecate in it the routine use of the lancet, but because the tendency of these cases is to anæmia and hydræmia afterwards, so that we must save the strength of our patients for the future. But, in the conditions then present, the resort to abstraction of blood was appropriate, in my opinion. Venesection is rarely performed now; so rarely that it is a very common thing for me to meet, in practice and in consulta-

tion, physicians of high professional status and large practice, highly educated men, who have never seen any venesection at all. It was performed by Dr Pingry, and, we watching the condition of the patient, ten ounces of blood were taken from the left median cephalic. The pulse and heart were, afterwards, in as good condition as before. The blood taken was saved, and sent to be examined as to the amount of urea it contained; the report, made without quantitative analysis, was, that it contains a much greater quantity than should be in the blood. We had then the fact that there was present, in this blood, an unusual proportion of urea; and we know that, at the present day, we attribute much of the disturbance that occurs in albuminuria to the presence of urea in the blood. Here, then, this abnormal condition was found.

The case went on. The elaterium acted. The spoliative treatment had been accomplished. She was watched in turn by two members of the hospital staff, for Dr. Pingry had called Dr. Sproat. And, to show you what care these women have, I may state that, from the time she had her first convulsion until she did not need further observation, she has never been left alone, but has been watched by these gentlemen, night and day, and notes of the case have been made minutely and accurately—a strong argument in favor of such establishments as these, where the poor and unfortunate of every class can receive that treatment and attention which it is the glory of our art to bestow.

Chloroform was afterwards tried again. I waited

to examine the albuminous urine, and saw her again at nine A. M., Monday, and regretted to find that consciousness had not returned, and that the convulsions still went on. In the interval, according to my advice, two ounces of blood had been taken, by wet cups, from over the kidneys. Finding her in these circumstances, I decided to give bromide of potassium, a remedy with effects, in quieting the nervous system, such as are recognized all over the civilized world. Besides, its effects as a diuretic are now established, and these are desirable in just such cases as this. I saw in this medicine a remedy which, I hoped, would increase the secretion from the kidneys, and which, above all, would quiet the nervous system. Accordingly it was given, thirty grains at first, next twenty, and then ten, making a drachm in all, taken within three hours.

Now I lately met, in consultation, a physician of extensive practice, who, in speaking of giving medicines in convulsions, said that such a remedy could not be given, because the patient could not swallow. There are some affections in which partial paralysis of the muscles of the pharynx exists, and in which swallowing may not be effected; but I have never found any difficulty in eclampsia, if given in this way: Mix the remedies with butter, and then put this little pat of butter upon the back of the tongue. If the pat produces any irritation, it is swallowed at once, slipping down easily. If the patient be so insensible to reflex action that she does not swallow, it rapidly dissolves and trickles down. Thus remedies are to be given in

cases such as this. She had a drachm of the bromide, therefore.

I saw her again at half-past five P.M. At this time there began to be a great dryness of the skin, and along with it an increase of the pulse in temperature and rate. I said to myself, the hydragogue cathartic has acted well, the kidneys are beginning to secrete, although she has taken no drink; the spoliative treatment has been carried far enough, yet not too far; now let me bring the action of the skin to bear, and accordingly ordered liq. ammoniæ acetatis ʒ vj., with ʒ iij. of sweet spirits of nitre, and then ordered an ounce an hour of the mixture, saying, we will have the effects of the remedy during the evening, and we will also give support if necessary, by enemata containing milk, eggs, etc.; but these were found unnecessary. She could swallow, and, under the use of the remedy, began to perspire.

I saw her again at ten P.M. The convulsions had continued; and I then recommended the use of the hydrate of chloral—the idea now being to soothe and quiet the nervous centres. Accordingly gr. xx. of the hydrate were given, in two doses, under the administration of which the temperature was reduced slightly. During the day, sixteen ounces of urine had been secreted, slightly less albuminous, and containing hyaline casts.

Then, at five the next morning (Tuesday), Dr. Pingry watching her, the temperature was declared by the thermometer to have run up, and œdema of the lung was recognized. Now œdema of the lung is one of the con-

ditions always liable to happen in albuminuria, from whatever cause, and may be fleeting or persistent. Such infiltration or effusion as it implies may take place into any serous cavity, as the pleuræ, or into the lung, just as it may into the subcutaneous cellular tissue of the face, arms, or other part. In regard to this œdema of the lung, I have seen many cases, and have known it to increase and to disappear with great rapidity—a clinical fact of great importance. I have seen this occur in consultation with such physicians as Dr. Alonzo Clark, when it is not possible to doubt the existence of the œdema. This œdema, recognized by Dr. Pingry, placed life in the most profound peril, as the lungs, the important oxygenating centres, were being drowned, for they were fast filling up. Dr. Metcalfe happened to be in the hospital, and recommended the further use of elaterium, a right and proper thing to do. Accordingly, a grain more was given, in two doses, in order to drive from the lungs, and expel from the system, this poison which had accumulated in the blood. At the same time she looked as though about to die; the pulse could scarcely be felt, the number of respirations was between sixty and seventy, with tracheal râles. The case seemed hopeless; and so, from the result, we may draw another clinical maxim—never give up cases until they are (not thought, but) proved to be dead, a very good plan indeed. The case went on through the day, the kidneys beginning to secrete, she taking nourishment with the stimulant which was added. The urine became less albuminous, the kidneys were recovering, but still there was extreme

debility with absolute loss of consciousness, yet without recurrence of the convulsions.

I stood ready to transfuse, if necessary; not to keep her from dying from loss of blood, because there was no danger of that, but to supply healthy blood instead of the poisoned and unoxygenated material. When danger first appeared, I had requested my friend to write a note to Dr. Austin Flint, Jr., asking him to hold himself ready, with his Roussel's apparatus, to transfuse if necessary. But there would have been no use in transfusing with œdema of the lung; and it would but be bringing a good remedy into discredit. But, if œdema had not arisen as a complication, and if she had gone on with steadily increasing convulsions, I would have held it to have been my duty to transfuse her. The plan was employed first at Heidelberg; and, by Roussel's instrument, provision is made for taking away the blood from a vein of one arm of a healthy individual, which is then siphoned off into a vein of the patient. The blood can be seen as it passes from one to the other, and we can watch that no bubbles of air can go in without being seen as they pass through the glass tube of the instrument. I believe it to be the best plan yet devised. I held it in reserve, as I would in every similar case. For, in so far as the patient's strength would permit, I would take away, through the skin, the intestines, and the kidneys, the poison that has accumulated in the system, and then, if necessary, supply it with fresh and reliable human blood for its support, while the nervous centres are to be soothed by appro-

priate remedies. However, transfusion was not used, because it did not become necessary.

The patient struggled out from the œdema of the lung, which had set in. At present there is no evidence of it in the lung at all. She recognizes every one she knows, answers questions intelligently, is sensitive to light; her pupils dilate and contract well, although the eyes are kept pretty constantly closed. We feared some paralysis of the right side of her body, but she can now draw up her arms and legs. The body, shaken and shattered by torture of mind, is coming around nicely, with the kidneys working well, and eliminating the poison from the system.

Now, gentlemen, in regard to this question of the kidneys I have, in a published work of mine, the "*Obstetric Clinic*," stated my conviction that, no matter what amount of albumen was excreted in a given case, or what variety of casts was found, still there is nothing in these conditions, by themselves alone, to prevent the kidneys of a pregnant woman in these conditions from returning to a perfectly healthy condition. At the same time, it becomes your duty, wherever such a special predisposition exists, to watch narrowly her urine in subsequent pregnancies. Such affections of the kidney as are indicated by these symptoms are, however, more dangerous in multiparæ than in primiparæ. I never saw attention called to this before I stated my convictions. In the review of my book in *The American Journal of Medical Science*, the reviewer has given the opinion that my conviction that perfect recovery of the kidneys may follow such albuminuria, and amount

and character of casts, should be allowed to stand for what it might clinically be worth; and presented a long list of names in opposition. My statement is true, nevertheless; and it will stand. It is already supported by other observers; and has received additional confirmation since that time. I *know* it is true, because I have observed such cases with albuminuria, whose urine would gelatinize under heat and nitric acid, with casts of every kind and description, and yet have seen the patients recover and remain with healthy kidneys. These conditions of the urine, occurring in pregnancy and labor, are as likely to be recovered from, perfectly and fully, as the same conditions of urine occurring in scarlet fever, or the exanthemata generally; or, as sometimes happens, in pneumonia. Hence, you must be guarded in your prognosis when these conditions are found in a case of labor. You are not to say that this patient is the victim of a formidable form of Bright's disease; and that, if she do not die now, she has but a short time to live,—for it is not necessarily true; because she may pass on to perfect health. Nor can you say, when, at the autopsy, you find evidences of nephritis, that these appearances, found in the *post-mortem* examination, could not have been recovered from, had the patient lived. It is true, there are many appearances connected with advanced disorders of the kidney, which unfit it for performing its functions properly, but the point is this: the microscope and chemical tests show states of the kidneys, in a certain proportion of cases of eclampsia, where there is no absolutely necessary incapacity for performing perfectly their physio-

logical functions for many subsequent years. Your opinion is, however, to be modified in this respect, if, in a given case, by examinations repeated for a long time, it is shown to you that, before the puerperal condition complicated matters, there was present indubitably one of the forms of Bright's diseases; and then, if upon a weak organ, which is already incapacitated for its work, there is put the additional strain of pregnancy, the organ may succumb hopelessly. There is another reason why this opinion must not be given so decidedly: the law of parallelism obtains in diseases of the kidneys, for it is very rarely that we find one diseased and the other not. I have, however, seen the kidneys taken from the body of a woman who had died of puerperal convulsions, and found one of them diseased and the other healthy, and then have given them to competent observers, and have received reports in absolute accordance with ocular inspection. Again, you must not say that albuminuria inducts disorder of the kidneys: because the condition may depend upon the admixture of blood or pus, passed with the urine, as in catarrh of the bladder, or from the accidental and temporary admixture of blood, or any other fluid containing albumen. I could tell you of cases of diagnosis faulty from a too hastily given opinion. The condition of albuminuria may exist where there is chronic catarrh of the ureters, a dilated ureter or a partial hydronephrosis, conditions which cannot be positively recognized during life, and which are made out with certainty at the autopsy alone. In such cases, physicians are not warranted in making an unreserved diagnosis during life

In a case which I saw, ten years ago, there was evidence of catarrh and calculi of the kidney. I was in doubt whether a largely dilated right ureter existed or not. Upon examination through the rectum, there seemed to be pain at a part of the bladder corresponding, as near as Prof. Van Buren and I could make out, by conjoined rectal examination, to where he experiences a great deal of pain at the probable entrance of that ureter into the bladder. His urine contained thin clouds and masses of mucus and albumen. I have told him that I would very much like to see the actual conditions of things, whether there is dilatation of that ureter and hydronephrosis, but I think that he is going to outlive me.

Again, when there is but a faint trace of albumen, learn to trust the examination of no urine from a woman in the puerperal state without it has been drawn off with a clean catheter, after washing the vulva, for the catheter may take in some discharges from the vulva which may contain albuminous fluid. Trust no examination, where your responsibility is great, unless you are positive that you have drawn off all the contents of the bladder. I was consulted, only yesterday, as to the condition of uterine disease in an elderly woman; I touched the uterus, found the bladder distended, said, "Let us empty the bladder," and was handed a silver catheter,—although much preferring, as you know, a male elastic catheter,—and asked the Dr. to apply it. When he had drawn off the urine it appeared healthy. I then made an examination, thinking that the bladder was empty, but found

that there was more within. I then took the silver catheter and drew off nearly as much as before. The supernatant liquid was pure, but, at the bottom, evidences of catarrh of the bladder were plainly to be seen. Here, then, is an illustration of the absolute necessity for drawing off the urine, intended for examination, at or about the period of labor, with the precautions given you, and for the necessity of drawing off the whole urine.

Let the deep interest of the subject be my excuse for detaining you beyond the time. When you have carried your patient on to this stage in an attack of puerperal convulsions—and you are to remember that they may well occur in circumstances widely different from those of the present case, even where there is the most perfect domestic harmony and felicity—then you must keep her quiet in body and mind for a length of time, must secure sleep at night, must look after her nourishment, must carefully examine her urine, to ascertain whether the kidneys are doing their work. Drawing it off with the catheter for twenty-four hours is the only way to be absolutely sure; then measure the amount, to know how much is passed; and then examine the residuum with the microscope, testing it as it comes for albumen, and then making a quantitative analysis for the urea that is being excreted. When the amount of urea comes to the full normal standard, and all other conditions correspond, you may consider that the kidneys are doing their work.

After the urine is perfectly normal, then give her a good intelligent caution for the future. In the first

place, there must be no pregnancy for some time; certainly it is better to wait two years. Since the kidneys have been but lately disordered, and have been just restored to their normal condition, she must be instructed to wear flannel, in order to guard against any check in the performance of the functions of the skin, and subsequent congestion of the kidney. She should live in the open air, with free exercise, and good diet, the nitrogenous elements of food being supplied or withheld according to the way in which the kidneys do their work. She will probably need iron, for in such cases there is a tendency to hydræmia, absolute as a law. Even the most robust will be apt in time to give evidence of chloro-anæmia: in which case direct your attention to the venous hum in the neck, and continue treatment until assured that it is no longer there, and until all other signs of anæmia are gone. In this manner only will you do your patient full justice.

If she become pregnant again, watch the urine with redoubled care, examining it continually, and ward off the coming trouble by proper treatment. If there be such serious disturbance that palliative measures will not suffice, then the question comes up as to when premature labor is to be induced. By acting on the skin, the kidneys, the intestinal mucous membrane as far as may be judicious, and with vegetables and fruits as a diet, endeavor to carry her on to a time when premature labor may be induced with the hope of saving the lives of both mother and child, or perhaps to term.

In conclusion, let me warn you to be careful in the use of opium where there is deficient action of the

kidneys, and where there is an accumulation of urea in the blood. There are cases in which opium is treacherous, and in which many lives have been lost by the injudicious use of this remedy. Besides, the ease with which it is administered by the hypodermic syringe is a temptation towards the most dangerous way of prescribing it: because it at once passes beyond your control; and, again, it might be immediately absorbed by some venous radicle. In any case, there is a certainty that its absorption will be prompt; and then, if unfavorable symptoms follow, there is far less opportunity of overcoming them than there would have been had it been administered by the stomach, when its evil effects may be largely prevented by emesis. I speak from knowledge that what I offer you is a valuable guide to take into practice; but do not speak from any sad personal experience of my own, but with knowledge of the sad experience of others.