THE TREATMENT OF ECLAMPSIA.

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It is unfortunate that the real cause of this terrible affection is yet unknown, but we are grateful for the slight advances in our knowledge that have been made in the last few years. The discovery of toxemias, the valuation of the importance of renal disease to eclampsia, the recognition of the liver as an elaborator of poisons, the role of auto-intoxications, of the placental metabolism, all these have served to clear up previously cloudy aspects of this disease, they have widened the field for research, and they have shown that not one cause, but many causes, either alone or together,

contribute to the production of the accident.

With the exception of the means of prevention however, later knowledge has added little to our fund of information regarding the treatment. We are still in the realm of empiricism. Nearly every mode of treatment presents a dark and a bright side, arguments for and against each sometimes evenly balance so that individual experience or even preference has to decide in a given case.

Cases vary very much, sometimes apparently severe cases get well while milder ones die, one practitioner may meet favorable cases while his neighbor gets the fatal ones. The former will acquire a bounding faith in a particular remedy or mode of procedure, while the latter becomes nihilistic to all methods of treatment. For this reason, perhaps, here more than anywhere else in medicine, enthusiastic reports of success in eclampsia with medication, should be reluctantly accepted.

The writer in the short time allotted, cannot present all the methods of treatment that have been used and discarded, lauded and contumed, nor even all the present methods, by no means few, with the authority, arguments and statistics for and against each, so will describe the treatment as is practiced by him.

Without going into the causation, which was done by the previous essayist, we may say that in all probability eclampsia is due to a poisoning of the blood, from unknown source or sources, which poisons, owing to some impairment of the liver as an elaborator of poisons, or to inefficiency of the kidneys as eliminators of poisons, accumulate in the blood and acting upon an already hyperexcitable nervous system, cause convulsions, by influencing the vaso-motor centers of the brain, convulsions, if the pons and medulla are involved, coma, when the cerebrum is affected.

The latest writers are prone to ascribe most of the cases to a toxemia, relegating the nephritis to second place. In the vast majority of eclamptics there are distinct evidences of nephritis, or at least of the kidney of pregnancy, either in the urinary findings, or at the post-mortem. The writer cannot but think that the kidney of pregnancy is a low grade of inflammation. The toxemia may cause the nephritis, and the nephritis may cause a toxemia by impairing the eliminatory power of the kidneys. Thus a kidney that under ordinary circumstances did satisfactory work, may under the added strain of pregnancy give out completely.

Light is breaking on the subject from a new direction. Lange claims to have found that deficiency of the action of the thyreoid gland may cause albuminuria and toxemia, which disappear on the administration of iodothyrin. His work is not yet near complete, but there is some promise in it, and it deserves more study.

Foremost in the line of prevention is the recognition of toxemia, and close to it, the recognition of renal insufficiency. The perfunctory testing of a single sample of urine for albumen is not sufficient. Even repeated thorough examinations of the urine are not sufficient, as eclampsia has occurred with normal urinary findings. Toxemia may exist and the urine not discover it, but this is very rare. Nevertheless this is the best test we have, its careful examination together with watching for general symptoms will almost invariably give the physician sufficient warning.

Many of the little ills of pregnancy are due to deficient excretion. Headache, neuralgias, insomnia, vertigo, fainting spells, nausea, vomiting, stomach ache, sometimes running under the formidable name of rheumatism of the uterus, can frequently be traced to this condition. May not chorea gravidarum, pernicious vomiting, perhaps the grave anemias be caused by this blood state?

The above symptoms should call the attention of the physician and warn to a careful examination of the patient and the urine.

Just before an eclamptic attack, the pulse is rapid and of high tension, there is

violent headache, dizziness, failure of the memory, a boring pain in the pit of the stomach, flashes of light, the patient says she sees spangles, or may be blind, tinnitus aurium, often vomiting and twitchings of the muscles of the face and extremities. A vigorous venesection and a good dose of chloral will prevent the imminent seizure.

Signs of renal insufficiency are all these, together with œdema of the extremities and face and the findings in the urine, albumen, casts, red and white blood corpuscles, decrease in the urea, low specific gravity, or decrease in the total amount voided in twenty-four hours. The other secretions are usually found also locked up, the skin is dry, thick and muddy, there is little perspiration, the patient has a disagreeable odor, the bowels are constipated, the tongue is coated brown, there is fœtor ex ore.

A healthy pregnant woman should pass sixty ounces of urine daily, the specific gravity should be 1010 to 1016, that is the total solids the same as in the non-pregnant state. When the total solids are less than 30 grams a day, symptoms of toxemia are to be awaited. One will be occasionally surprised to find a patient in excellent health with urine of 1004 sp. gr. From this we can judge that the nature of the toxine is all-important. The urea should show $1\frac{3}{4}$ to $2\frac{1}{4}$ per cent. When the percentage of urea goes below one there is insufficient excretion, and means should be adopted to raise it, though sometimes symptoms of toxemia are late in appearing.

In considering the treatment there are three things to be borne in mind. The diet must be ordered so that there is just sufficient nitrogenous matter given to sustain life, in the form that is most easily assimilated, and that will leave the least amount of waste and by-products, that only throw extra work on the kidneys. Secondly, the emunctories should be stimulated to throw off the surcharge of poisons already in the blood, and kept acting freely throughout pregnancy. Thirdly, should the above treatment not have the necessary effect, should the symptoms of renal insufficiency increase, or should the signs and symptoms of a real nephritis appear and grow worse, then the induction of premature labor is not alone justifiable, but strongly indicated.

In aggravated cases of toxemia and where the kidney is involved in even a moderate degree, it is well to place the patient on an absolute milk diet at the start. The results of this are excellent, in other hands than those of the French, who are the most ardent supporters of the plan of treatment. As the condition improves, starches may be added to the diet, then the proteid vegetables with the vegetable oils and butter. If the improvement is progressive full vegetarian diet with milder fruits, and not more than one egg a day, may be allowed. The first meats eaten should be the white meat fishes, and the white meat of chicken and turkey, but these only when recovery is about complete, and sparingly.

Spices, condiments, tea, coffee, alcoholics, beef, veal, pork, are strictly forbidden. The patient should drink a great deal of water in addition to the milk, and the various mineral waters may be used. Buttermilk is an excellent beverage for pregnant women, as are also matzoon and koumiss.

The emunctories are attended to as follows: Begin with a brisk purge, saline or compound cathartic pill, and keep the bowels open with an aperient salt or water. It is not well to give salines continuously over a long period, they should be varied with the vegetable laxatives, and the writer uses very often a combination of ext. cascaræ sag. fl., tr. rhei arom. tr. nuc. vom. as a general tonic laxative.

Before going to bed and on arising the patient is instructed to drink one or two glasses of water, salted or sugared to taste; this is both laxative and diuretic.

Diuresis is favored by the ingestion of large amounts of fluids, by buttermilk, the alkaline diaphoretic mixtures, and if necessary by the old well known general emunctory stimulant, calomel, squill and digitalis.

The skin is kept free from chill by

woolen undergarments, even in summer. Eclampsia has occurred after exposure to cold. Excretion by the skin is favored by the hot bath and subsequent rest in bed, and in aggravated cases by the hot wet pack, or the alcohol pack. Patients with weak hearts must be carefully watched during these packs. The writer has had several admonitory experiences with these powerful methods of inducing perspiration. Jaborandi is to be avoided even when the patient is conscious, as it is dangerous, and unnecessary.

A valuable means for starting the kidneys and skin, is the sub-dermal injection of normal saline solution. It is almost never necessary in the simple toxemia of pregnancy, but comes to its greatest usefulness when, owing to threatened or actual eclampsia, it is necessary to start these two functions quickly.

The patient should have a good supply of fresh air, to keep the excretory action of the lungs in play, and she should rest a good part of the day in bed or on the sofa, as exertion throws increased work on the kidneys. In severe cases absolute rest in bed, daily hot packs, exclusive milk diet may have to be ordered. The induction of premature labor, by this, aiming to remove the fundamental cause of the whole trouble, should be held as a powerful curative in reserve.

When treatment carried out in the lines herein laid down has produced insufficient amelioration of the symptoms, if the evidences of renal insufficiency persist or grow worse, and especially if eclampsia is threatening, the pregnancy should be terminated.

The best method is, anesthesia, local asepsis extreme, Barnes' bag in the cervix, repeated if necessary till the pains are inaugurated. One word of admonition, when the eclampsia is threatening or has broken out, every manipulation of the genitals, examination, catheterization, etc., should be done under anesthesia. Barnes especially emphasises this.

After the attack has occurred. The patient now needs the continuous attendance of her physician, and it is well to have plenty of assistance to divide the responsibility as well as the work which is very often quite onerous.

A. In all cases. (1). Protect the patient from the vehemence of the convulsion. Absolute quiet in bed, surround with pillows, remove false teeth, have a gag near at hand to put between the teeth to avoid injury to the tongue. A clothes pin covered with a soft cloth and placed between the jaws answers very well. The room should be darkened, all noises rigorously excluded, no jarring of the bed, slamming of doors, talking, moving about, etc., and the patient should be disturbed not more than is absolutely essential. These are not minor points, but are important, as convulsions are caused by the slightest external impression or irritation.

(2). Narcotize the woman. The arguments as to the utility and safety of this procedure are not yet closed, but they seem to be tending toward the recognition of its value in the majority of the cases. Give one quarter of a grain of morphine hypodermatically every thirty minutes till 3-4 grain are taken. Give 45 grains of chloral per rectum and repeat in two hours if necessary. Chloroform is now recommended only when one convulsion follows the other in rapid succession. Under the above treatment this will not occur so the writer desires the use of chloroform restricted to anesthesia for operative purposes.

(3). Shall bleeding be practiced? The pendulum is swinging back. In cases where the convulsions recur in spite of the above medication, where the pulse is strong and full, face flushed or even cyanotic, where in short the case may be called sthenic or apoplectic, bleeding will do good. It is not necessary in all cases, but when it is, should be practiced till there is a perceptible effect on the pulse. In cases where the pulse is weak and running or absent, where cyanosis and pallor are combined, where the case is of the asthenic variety, the utility of bleeding is doubtful. Stimulation is indicated, strychnine, nitro-

glycerine, camphorated oil. Where the right heart is engorged and pulmonary edema threatens, bleeding together with powerful cardiac stimulation, may tide the patient over. The pulse here is not the guide. In general it may be said regarding venesection in eclampsia, that it has a place in the treatment and an important place, but that careful discrimination should be used as to the cases in which it is practiced, the amount of blood withdrawn, the period at which it is drawn, and in making deductions regarding the effect.

(4). Aid elimination. The means given previously may be employed adapting them to the conditions present. If the labor is in active progress little can be done with hot packs, nor is it desirable to have the field of operation flooded with fluid feces, the result of croton oil. Diuretics are too slow during active eclampsia. An excellent remedy, applicable at all stages of labor is the subcutaneous injection of normal saline solution. The effect on the kidneys is remarkable. It has been used in combination with venesection, to supply the place of blood withdrawn, and is called sometimes, "washing the blood," theoretically a good procedure. When labor is not in progress, and during the puerperium, all the efficient eliminatory measures may and should be employed.

B. Treatment during pregnancy. In a given case of eclampsia, when labor has not yet begun, try to tide the patient over the present danger by the means just given, and induce labor after the tendency to convulsions is past, or, wait till labor comes on naturally. In the modern trend toward operative measures those successful cases, not few, where expectancy and indication lead to a favorable termination, are being ignored.

Theoretically if one should induce labor when eclampsia is threatening, one should end the pregnancy when it has broken out. Clinically, however, one can often overcome the convulsions, the fœtus may die, and be expelled, and what is not so rare, that it may be ignored, the patient may go on to term and have a living child.

The dangers of injury and shock in the rapid dilatation and emptying of the uterus, and the many irritations to the already overwrought nervous system made by it, may more than outweigh the advantages of the immediate termination of pregnancy. Should medicinal treatment have no effect, the convulsions getting more frequent, longer, harder, or the pulse getting more frequent with a rising temperature, induce labor. Puncture the bag of waters first. In a third of the cases, the convulsions cease, in another third they become less strong, but in the rest they do not improve. Labor usually comes on at once, especially if the fits are violent. They stimulate the uterus, and labor pains are often strong; if necessary to hasten the labor dilate the cervix with Barnes' bags, or the colpeurynter.

C. Treatment during labor. All authors are agreed that during labor one should terminate the process as soon as possible. The greatest differences exist, however, in regard to the amount of force to be employed. Accouchment force should almost never be used. By this is meant the rapid dilatation of the cervix, incising it if necessary, and the immediate extraction of the child.

The writer cannot agree with those who say that it is possible, *safely*, to stretch, tear and cut the cervix open and extract the fœtus in thirty minutes to an hour. Unless the upper part of the cervix is effaced, that is, drawn up into the body of the uterus (carrying the circular artery with it) the dangers of rapid dilatation by any of the means employed are great. Laceration of the cervix, even into the peritoneal cavity, hemorrhage, even fatal, later sepsis, have occured often enough to warn against this procedure.

When the cervix is effaced, and the os begun to dilate, the case has an entirely different aspect, then the dilatation by the hand or incision are comparatively without danger. It must never be forgotten that

stretching cannot replace the natural process of effacement and dilatation, and that it is therefore in the highest degree desirable in cases where operative delivery is to be made, to wait till the cervix is thinned out, that is, shortened and the dilatation at least beginning, before it is attempted. The circular artery is then out of reach and the incisions as given by Dührssen or the lacerations are not so dangerous.

The only means to produce this effacement of the cervix is the uterine action. Stretching from below, or pulling rubber bags through will not do it except insomuch as they produce uterine contractions. In cases therefore where rapid delivery is indicated the writer uses Barnes' bags and the colpeurynter to dilate the cervix as they at the same time evoke pains and hasten the shortening of the cervix. Manual dilatation of the cervix is accomplished by a method similar to that described by Edgar of New York, which the writer has used for five years with success varied by a few failures. The cervix will sometimes tear under the manipulations so that recourse must be had to incisions, or it will not give way to any justifiable force, when the scissors may again be necessary.

The delivery is best accomplished by the forceps. Version is undesirable in eclampsia. If the child is dead, by all means perform craniotomy.

If there are perineal of vaginal tears, repair them; if cervical it is better to leave them alone, unless hemorrhage gives the indication. The delivery of the placenta is as usual, contraction and retraction of the uterus are good, post-partum hemorrhage is not to be feared. Do not tampon the uterus if at all avoidable.

The child is not seldom asphyxiated, it may be narcotized by the drugs given the mother, and it may have convulsions similar to those of the mother.

It is well to remember that in eclampsia labor is usually rapid, and the patient being unconscious the baby may be born unexpectedly under the bedclothes. It is well to leave the case to nature if the labor is progressing rapidly, and if the convulsions are not too severe, if the color of the patient is not cyanotic, if the pulse is good, the fever not above 102 degrees, and there be no signs of edema pulmonum.

As soon, however, as the cervix is completely dilated there is usually no need to wait longer and the delivery may be completed under chloroform. Only in the gravest emergency should forcible means to empty the uterus be employed. Cæsarean section has no place in the treatment of eclampsia unless the woman is about to die and the child is alive.

From the above it may be seen that the writer leans toward an expectant plan of treatment of eclampsia, but it will be seen also that under proper indications on the part of the mother active, decisive, operative measures are advised.

D. Treatment during the puerperium. Those measures given under heading A., i. e., those appropriate to all cases, come into play here to the fullest extent. The eliminators must be stimulated to the full safe limit. Narcotics must be used more sparingly now, unless the convulsions are very violent, as it seems that they increase and prolong the coma, and lock up the secretions. During the labor where the irritation from the genitals is being kept up, narcotics are necessary, and we must take their bad effects with the good. No drug is an unalloyed good.

Saline solution may be given in large doses, and oxygen, which is supposed to aid elimination by the lungs. The writer has used oxygen in only one case, of puerperal eclampsia, but there was no effect, not even on the cyanosis.

Veratrum viride has been much extolled as a specific for eclampsia, and it did for a time take that part of the place of bleeding that chloroform did not usurp. Now bleeding is taking its place again to the disuse of chloroform, and veratrum is being less used than it was. It is said that by this drug the pulse may be kept at 60 and then no convulsions can occur. The writer has had but little recourse to this drug, but in

one case the fits recurred even while it was being pushed to its physiological effect. It may be used alongside of other remedies.

In general the treatment of this grave accident is much the same as the treatment of any other disease, not one drug, or course of procedure, for all cases, but a proper individualization of the cases and a careful application of the method suited to each.