The Treatment of Eclampsia : A Resume of Eighteen Months' Experience.

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FOR six years (1905—1910) I have acted as physician in charge of the Edinburgh Royal Maternity Hospital during the Autumn quarter (comprising the months of August, September and October); and in these eighteen months two thousand, two hundred and fourteen patients were under our care in the hospital, in the outdoor department, and at the Leith Branch. Thirty-eight of the patients suffered from eclampsia, or 1·7 per cent.; and five of them died, giving a maternal mortality of 13 per cent. If, however, I divide the six trimestral periods into two periods of three trimesters each I find a very interesting result. During the Autumn quarters of 1905, 1906, and 1907 there were twelve cases of eclampsia with three maternal deaths, or a mortality of 25 per cent.; whilst during the corresponding quarters of 1908, 1909, and 1910 there were *twenty-six cases of eclampsia with two maternal deaths, a mortality of 7·6 per cent.* The difference between these two periods, which, it will be noted, were seasonally the same, was so striking that I was led to scrutinize the nature of the cases and the treatment employed with a view to discovering a possible cause for it. I found that there was no evidence that the cases of the second period were of a less serious type than those of the first; but I soon discovered that the treatment I was employing in the latter period of time differed very markedly from that in vogue in the former. During the Autumn quarters of 1905-7 I was still trusting in some measure to rapid emptying of the uterus, whilst in the corresponding quarters of 1908-10 labour was hardly at all expedited. In the former years the maternal mortality was 25 per cent., in the latter it was only 7·6 per cent.; in the former years the foetal and infantile mortality was 75 per cent., in the latter it was 42 per cent.

It may be well if I first summarize in a tabular form the eighteen months' experience with eclampsia, and thereafter give some of the details more fully.

No. of Obstetric Cases in	1905	1906	1907	1908	1909	1910	1905-1910
Indoor	102	105	117	133	141	151	749
Outdoor	151	158	174	196	214	197	1090
At Branch	—	—	—	103	149	123	375
Totals.....	253	263	291	432	504	471	2214
							Total.
Eclampsia cases.	5	4	3	5	12	9	38.
Eclampsia deaths (maternal)	1	1	1	0	2	0	5

Of course cases of albuminuria and eclampsism (of which there were several) in which treatment was successful in averting eclampsia are not included in the above list; although one felt practically certain in some instances that it was the prophylactic measures which had prevented the development of eclampsia, still it was not felt to be justifiable to place these aborted eclampsias with the others which had manifested convulsions.

I shall now give briefly the leading characters of the eclampsia cases in each of the six trimestral periods in the years 1905—1910.

(1) In the Autumn quarter of 1905 five cases of eclampsia were sent into hospital for treatment. One of the mothers died, and in her case the lumbar spine was tapped and Bossi's dilator used to stretch the cervix in order to permit the application of forceps and rapid delivery; death followed two days later from pneumonia, and the infant was born dead. The other four mothers recovered: in three of them there was time (a week, two weeks, and a month respectively) between the occurrence of eclampsia and the onset of labour pains for the adoption of medical measures; in the fourth, labour was in progress when the patient was admitted to the hospital, and there was no time for anything save the hot pack; two out of the four infants were born dead, and one (premature) died when four days old. The medical measures to which reference has been made were the hot pack, large enemata, salines under the breasts, morphine hypodermically, and purgatives by the mouth if time permitted; in the fits chloroform inhalation was given, and chloral *per rectum*. In one case thyroid extract was given in 10 grain doses.

(2) The Autumn quarter of 1906 saw four cases of eclampsia received into the Royal Maternity Hospital. In one of them the convulsions (seven) came on post partum, and with the help of the hot pack, enemata, and purgatives, recovery took place. Two patients were admitted suffering from the prodromata of eclampsia; fits supervened, but two days elapsed before the occurrence of labour, and in each case a macerated fœtus was expelled; both mothers

received medical treatment, which was the same as that given in the preceding autumn with the addition of thyroid extract in larger doses; and both recovered. The fourth patient was a primipara, who had passed no urine for two days before admission; she was having fits and was in labour when she was brought in; venesection was employed, the stomach was washed out and croton oil put in, and salines were given under the breasts; the Bossi dilator and deep cervical incisions were made, and the infant was born dead by version; the mother died soon after.

(3) In 1907 only three cases of eclampsia were dealt with in the months of August, September and October. All of them were primiparæ. One of them had a contracted pelvis and prolapse of the cord in addition to the convulsions; forceps having failed outside the hospital, craniotomy was done when the patient was brought in; she recovered. Another had a number of fits before she came into hospital, and none after admission; she did not go into labour for five days after admission, and during that period she received medical treatment (hot pack, calomel, purely milk diet, thyroid extract, and diuretics); she recovered but her infant was dead-born. The third patient had a fit just before the birth of her child (by forceps) and had a great many post partum; she received the saline into the vein of the arm, and was given diuretics and thyroid extract; she became septic (through the transfusion wound), and died from septicæmia.

(4) In 1908 my experiences with eclampsia were so noteworthy that I published them soon afterwards (*Trans. Edin. Obstet. Soc.*, xxxiv, pp. 30-38, 1908-9). They marked the more complete adoption of the plan of treating the fits by medical means and of leaving the uterus alone. There were five patients in all, of whom four were primiparæ; all of them were treated with hot packs, diuretics, enemata, magnesium sulphate, and strict milk diet; three had morphine, two got thyroid extract, and one had venesection with saline transfusion and dry cupping; all the mothers recovered, but four out of the five infants were lost (dead and macerated at birth). Only one patient caused us great anxiety; she was the multipara, and had had long established renal mischief; in her case labour was induced, and it was some days before she was out of danger. The experience of the Autumn quarter directed my attention more exclusively to antepartum treatment by means of measures which were largely medical. The existence of the Hamilton Ward for the treatment of morbid pregnancies enabled me to give beds for any number of days or even of weeks to pregnant patients who had suffered from eclampsia; there was thus nothing to influence my mind in favour of emptying the uterus save the requirements of each individual case; and medical measures got a full trial. I reflected that the cases which had done best in the preceding three years had been just those in which there had been an opportunity for medical

treatment between the occurrence of the eclamptic fits and the supervention of labour. The particular form of medical treatment which was to be preferred had not yet taken a fixed form in my mind; but I found myself trusting less to morphine and thyroid extract and beginning to use venesection and transfusion into the vein more often. In 1909 my views as to the best method of medical treatment crystallized into a much more definite and approved plan of procedure.

(5) Twelve patients suffering from eclampsia were treated during the Autumn quarter of 1909; of these ten were primiparæ and two multiparæ; in eleven the convulsions either began in pregnancy or coincided with the occurrence of labour, and in one the fits were truly puerperal; there were two maternal and four fœtal and infantile deaths. Another case of convulsions occurred during the quarter and terminated fatally; but the symptoms during life were unlike those of true eclampsia, and the conditions found post mortem pointed to brain disease; there was evident and recent syphilis. If, however, this case were included (on account of there having been convulsions) the mortality for the past three years would be 11·5 instead of 7·6.

All the twelve patients were treated by medical means, and in three of them there was abundant time for full medical treatment before the supervention of labour. In most of the cases the measures employed were as follows. The patient was bled from the arm to the extent of some ten, twelve or fifteen ounces; from one and a half to two pints of saline solution were then transfused into the vein; the stomach was washed out with a solution of bicarbonate of soda; then before the stomach tube was withdrawn ten ounces of Henry's solution (magnesium sulphate and sulphuric acid) were run into the stomach cavity; and finally a large enema was given to clear out the bowels. Occasionally the hot pack was added; in one case morphine was given hypodermically; in another chloral and bromide of potash were introduced per rectum. Chloroform was used to control the fits. The diet was always milk only. In only one instance was labour expedited, and it was one of the two fatal cases; it was not regarded as a serious case, the convulsions being few and slight; forceps was applied in the second stage, rather from old associations than because of any pressing need as the patient was not looked upon as in danger; immediately after delivery another fit supervened in which death occurred. The other maternal death occurred in a woman who had only two fits and in whom there was little time for either medical or obstetric interference. The general plan of treatment in all these cases was to favour the continuance of pregnancy and to trust to the medical measures combined with gastric lavage to check the toxæmia.

(6) In 1910 (Autumn quarter) there were nine patients suffering

from eclampsia in the hospital; eight of them were primiparæ, and the ninth patient had previously been pregnant seven times (four dead-born infants and three abortions); three of them (including the multipara) developed eclampsia post partum, in the other six it preceded or accompanied labour; in one only of the patients was there time for what may be called prematernity treatment, for in no other instance did forty-eight hours elapse between the admission of the patient and the occurrence of labour. All the mothers recovered; six out of the nine infants did well, and of the three which perished one was non-viable (macerated $6\frac{1}{2}$ months' fœtus). The eclampsia varied somewhat in severity, there being forty fits in one case and only one in another; in most instances the number was about half a dozen. Seven of the patients were sent into hospital for eclampsia which had developed already; in two, fits supervened for the first time after admission, and in one of them the convulsions were post partum. Of the seven patients sent into hospital two came from the Leith Branch, one from the Edinburgh Royal Infirmary, and four were from medical practitioners in Edinburgh or the country. There were also seven patients suffering from albuminuria of pregnancy, two of whom had all the symptoms of eclampsism, and they all did well; but as stated already they are not included.

The treatment was closely similar to that in use in 1909. A few notes of the most serious case will suffice to illustrate the treatment adopted. This patient, who was six and a half months' pregnant and was undergoing treatment for syphilis, had been ill for twelve hours before she was sent along to the hospital and had had 29 fits. On admission she had a temperature of 102° , a pulse rate of 128, and a blood pressure of 176; seven ounces of highly albuminous urine had been drawn off before she was sent in; and she was in labour. A few minutes after coming in she had a fit lasting three minutes. Seven ounces of blood were drawn off from the median basilic vein, and two pints of saline were introduced; the stomach was washed out with two pints of bicarbonate of soda solution (a drachm to the pint), and six ounces of magnesium sulphate in concentrated solution (sufficient water to dissolve the six ounces of the salt) were run into the stomach at the time. The labour which was well advanced was terminated by forceps (the fœtus being dead and macerated), and the placenta which was partly adherent was removed by the hand and an intra-uterine douche given. Soon afterwards a copious enema was given with a good result, and the patient was put to bed with hot bottles around her. She had been unconscious all this time, but in four hours she became partly conscious. Her respiration rate which had been fifty on admission gradually fell. She made a good recovery save for her mental state which remained a little dull, and she left the hospital thirteen days after delivery.

It will be noticed that instead of introducing Henry's solution

into the stomach (as was done in previous years) a dose of six ounces of magnesium sulphate was employed; this was done because it was thought desirable to omit the sulphuric acid. The bleeding, the transfusion, the enema, the stomach-washing, and the hot pack were carried out as before. The use of forceps might easily have been omitted for the *foetus* was nearly born at the time. In this and in other cases in 1910 chloroform was generally used to control the convulsions till the venesection and other measures could be carried out. In a few cases morphine was injected hypodermically, generally before the patient reached the hospital; and in three or four cases thyroid extract was given during the puerperium for a few days. In no case was any attempt made to hasten the dilatation of the cervix, and the forceps was applied most often when the *foetal* head was bulging the perineum and in no instance when it was above the brim.

The *conclusions* which I have drawn from my recent experiences with eclampsia have already been stated in my paper read before the Fifth International Congress of Obstetrics and Gynæcology in September last;* and my further experience gained in the Autumn quarter of the present year has fully confirmed them. The results are improved considerably by this year's experience—nine cases with no maternal deaths and three *foetal* ones—and so long as one obtains progressively better results one is not inclined to make any radical change in the methods in use. Whether the eclampsia develops in the pregnancy, during the labour, or in the puerperium, I order venesection, transfusion with saline into the vein, the washing out of the stomach with bicarbonate of soda solution, the introduction into the stomach of a large dose of magnesium sulphate, the use of a copious enema of soap and water and castor oil, and the hot pack. Obstetric interference has been put by me more and more into a secondary position; I can still foresee cases in which I should feel justified in hastening labour, but such hastening would be contingent upon circumstances which of late I have not often met with.

* *Ve Congrès international d'obstétrique et de gynécologie*, I-e Vol. Comptes-rendus, pp. 443-451, 1910, St. Petersburg.