X

Notes of three Cases of Puerperal Eclampsia with a short account of the Causation and Treatment

By

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A Short account of

Puerperal Eclampsia with notes of three cases

Definition Puerperal Eclampsia is an Epileptiform condition occurring during the latter months of pregnancy or during or after parturition associated usually with some abnormal condition of the urine

It is one of the most serious conditions that the obstetrician may be called on to attend as it usually occurs so suddenly and is so fatal both to mother and child.

The following are the notes of 3 cases occurring in my own practice Twin Antipartum occurring in the same patient & once post partum in another patient

Case I Mrs B. 1st Attack

On October 5th 1895 I was called up at 2 a.m by the husband who said that his wife was dying. I accompanied him to the house where I found the patient lying on her back in bed apparently quite unconscious breathing heavily the eyes were closed the face pale and moist the pulse quick the temperature 101° F

After a few minutes she opened her eyes rolled them from side to side, this was soon followed by a twitching of the muscles of the face, the hands became clenched and then a general convulsion of an exceedingly severe character set in during which the face which had previously been pale became red and then purple and at the same time was so horribly distorted that she was almost unrecognisable. After lasting for about 3 minutes the attack gradually subsided and she regained her former comatose condition.

The history of the case so far as I could gather was as follows;

She was 22 years old and previous to marriage had been very healthy, having practically never been ill before, and her parents likewise were both healthy people being farmers. At the time of her attack she was 8 months advanced in her first pregnancy having ceased menstruating on the 9th February

She had been well all the time

of her pregnancy never having had reason to complain except that for a day or two before the attack she had had slight headache and vertigo. She had never noticed any alteration in the urine, the bowels had been fairly regular and she herself had been in good health right up to the time of the attack. When I saw her I noticed a slight puffiness about the eyes but there was no oedema of the leg, or feet. A sample of urine could not be obtained,

At this time labour had not commenced. The attacks which were all severe came on about every twenty minutes and lasted for about 2 or 3 minutes, The characters of the attacks were all alike, Commencing by the eyes opening and then rolling from side to side, this being followed by a twitching of the facial muscles and then the general convulsion

Treatment I had no Chloroform with me at the time but I gave her 10 grains of calomel at the back of the tongue and 40 grains Bromide

of Potassium by means of an enema, I also gave her a hypodermic injection of 1/10 grain of Pilocarpin but the fits continued with unabated frequency and power until 8 a.m. when I decided to try the effect of Venesection. About one pint of blood was removed from the right forearm but she had another attack within 10 minutes followed in 20 minutes by still another both of them being of equal if not greater severity than the previous ones

(During the convulsions a gag composed of the handle of a teaspoon wrapped round several times with flannel was inserted between the teeth in order to prevent any biting and laceration of the tongue)

I then left her for a few hours calling again about noon, I found that she had had no severe paroxysm during the time that I had been absent, although there had been several slight attacks. She had perspired freely but no urine had been passed. She was unconscious

Labour had not commenced
I saw her again at 4 P.M the same evening
The attacks I now found to be in-
creasing in severity although they were
only slight compared with those which
had occurred in the morning. I
found also that they came on co-incid-
dently with the uterine contraction
On examination I found that labour
had commenced and was progressing
very satisfactorily, the Cervix being
completely dilated. She was still quite
unconcious. As the convulsions
seemed to be aggravated by the
uterine contractions and as the Cervix
was well dilated I determined to
empty the uterus by the forceps
This was comparatively easily effected

The effect of this procedure was
marvellous, the fits which had for some
time previously been increasing in force
suddenly ceased there not being a single
fit after the child was born,

The Child was still-born.
Although the fits had ceased she was
by no means out of danger, She was

unconscious & apparently quite exhausted
She was very pale & almost pulseless, the
attendents were quite hopeless as to her recovery

During all this time she had not
passed a drop of urine and I did
not pass a catheter for fear of increasing
the convulsions.

Oct 10th the day following
She had rested fairly well during the
night, there had not been any more
convulsions, She was able to swallow
a little milk, The temperature had
fallen to 102° F The Pulse was rather
fuller and was able to be counted
it was 144 per minute, She had
not as yet passed any urine, I
ordered her a saline diuretic mixture
to be taken every four hours.

Oct 11th She had passed
a little urine on the afternoon of the
preceding day having been at least
36 hours from the onset of the attack
without passing any, It was high
coloured smoky urine but contained
only a mere trace of albumin

The temp had fallen to 100.4° F the pulse was stronger being 108 per minute. She could swallow her milk rather better but there was no other sign of consciousness The Bowels had been moved that morning

Oct 12th She was still unconscious. The temp was now normal the urine was more abundant and was not so high coloured, The Bowels had again been freely moved.

Oct 13th During the preceding night she had spoken for the first time, as though she was in a dream, She said "Go to Sleep, Lass"! but nothing more, She seems to rest more naturally.

Oct 14th On this date 6 days after the attack she first recognised her husband and her mother but she did not know any one else although others about her were well known to her.

The Urine is now abundant with a slight trace of albumin S.G. 1028

The Bowels being regular, there is no oedema except a slight puffiness about the eyes

Oct 21st On this date she was allowed to sit up for a short time. She had made great physical improvement but the mind seemed to be very clouded and she was exceedingly irritable. She did not seem to have the least idea what had occurred. I asked her how far advanced she was in her pregnancy but she did not know She did not know whether she was six months or whether she was 10 months

When asked her age she said 15 years

She complained of her food being sour and on being told that it was not sour she got very irritable and finally threw the food into her husbands face.

At this time also she complained of not being able to see saying that it seemed as though there was a mist before her eyes.

After this with suitable diet and gentle exercise in the open air both mind and body gradually improved

When I saw her again some two months afterwards it was scarcely noticable externally that there had been anything wrong. The haziness over the eyes was gradually clearing away. The mental symptoms had almost vanished The Urine was quite free from Albumin & was in fair quantity

The only medicine she took after the attack was a saline diuretic

Case II

On the 4th Sept 1894 nearly 2 years after Case I I was asked to see the same patient again, When I arrived she was lying in bed in a semi-conscious condition, the face pale and rather swollen there was a bloody froth about the mouth the result of a severe laceration of the tongue, there was a slight oedema of the legs and face, The temperature was subnormal being 94.6° F the pulse was small and quick being about 96 per minute, Labour had not commenced,

She had apparently enjoyed good health since her last attack of Eclampsia and had been able to do her own household duties, She was about 6½ months pregnant, She had had 3 fits when I saw her at 6 P.m.

The attacks were very much the same as they were on the previous occasion, They commenced by the respiration becoming fuller & deeper She then opened both eyes

Afterwards she turned the head to the right side This was followed by a turning of both eyes to the right so that scarcely anything of the eye was visible except the white sclerotic. This was immediately followed by nystagmus in both eyes (this continued during the whole of the paroxysm) and this was followed by the general convulsion. The attacks lasted between 2 & 3 minutes and recurred about every 30 minutes. Immediately after the attack the pulse was 156 per minute and was full and bounding but it gradually fell to 90 per minute and became small and compressible

Treatment I gave her a hypodermic injection of Pilocarpin 1/57 and put a hot bottle to her feet in order to encourage free perspiration and as she was able to swallow I gave her 30 grains of Chloral hydrate but as she vomited some time afterwards part of this may have come back again

During the Convulsions I gave her Chloroform to inhale with the view of diminishing their force if not their frequency but the effect was not very marked. Remembering the very beneficial effect produced in the previous case by the emptying of the uterus and as the treatment so far had been of no effect I determined to induce labour, The Cervix was dilated by digital pressure & the ~~labour~~ pregnancy terminated but in this case the good effect seen in the former case was not repeated the fits still continued to come on as regularly and quite as severely as before.

At this time the temperature had risen to 103 F the pulse was 144 per minute and she was in a very profuse perspiration

The paroxysms went on regularly until 4 a.m when she had one more severe than any of the previous ones after which there was an interval of an hour & half during which there were no general convulsions although there were periodic twitchings of the eyes & hystagmus After 5.30 a.m they commenced to come on as

before — (every 20 minutes) At 4 a m I gave her a hypodermic injection of 15 grains of Chloral hydrate she did not have another attack until 8·40 a·m and this one proved to be the last for although she had several slight attacks afterwards she had no more general convulsions.

At 2·30 P·m the pulse was 126 per minute and was easily compressible the temp was 101·6° F

She remained unconscious until the following Monday — (about 48 hrs) when she began to notice the people round about her She passed no urine from the commencement of the attack until the Monday on which day I was able to obtain a sample of it It was slightly albuminous the Specific Gravity 1030

From this date the urine gradually increased in quantity & the oedema disappeared She made a gradual and satisfactory recovery.

The Eye symptoms although present on this occasion were not so bad and they cleared up sooner than they did on the previous occasion

The Child was born alive and appeared to thrive the first 2 or 3 days but it died at the end of the week in convulsions.

Case III Mrs T. Crumpara aged 24 yrs.
This patient had had an attack of Scarletina about 10 yrs previously & this had evidently been followed by an attack of nephritis although the history was not by any means precise on this point. She had been healthy ever since.

She was confined at full time on the 14th May 1898, Labour was normal but she had a slight attack of Post Partum Haemorrhage about ½ hour after the birth and while the nurse was changing her this was controlled by means of the hot douche. She progressed favourably for the first 5 or 6 days but at the end of the week the temp went up to 101°F and the Lochia which was fairly copious became offensive. I ordered the nurse to give her a vaginal douche and gave her a saline mixture.

On the following morning the 25th May I was roused with a very urgent message to go & see her. When I arrived she appeared very pale & exhausted, only partly conscious.

I saw her again at 10 a.m (about 8 hours after the first attack) she had not had

any more attacks, I was just proceeding to give her a douche myself when she had another attack the whole body being convulsed the attack lasted about one minute after which she soon became conscious again The temperature was 101° F. The Urine was very scanty only about a teaspoonful being got It contained a great amount of albumin (about one half) & also blood

I ordered poultices over the loins and I gave her a draught of 20 grs each of Potassium Bromide and Chloral hydrate, she also had a Saline diuretic mixture.

She had another attack at 8 P.m that is at the end of 10 hours and another at 8 A.m the following morning neither of them being so severe as the previous ones.

She had no more attacks afterwards

The urine gradually increased in quantity while the amount of albumen decreased

The temperature had fallen to normal by the end of 48 hours & she made a very good recovery.

Comparative Frequency of Eclampsia

The frequency seems to vary according to different observers Thus Gener (Centralbl. f. Gynäk. 1884) enumerates 50 cases out of 5,000 labours or 1 in 100, while Schriebner (Arch. f. Gyn., 51 pp. 335) out of 42,607 labours had 134 or 1 in 311 while Spiegelberg in his text book thinks that 1 in 500 is too high an estimate

It occurs much more frequently in Primiparae than in multiparae probably about 4 times as often, In Schriebners 134 cases 109 were primiparae while only 28 were multiparae

It occurs along with parturition much oftener than either before or after probably because the onset of Eclampsia tends to bring on labour

Diagnosis

In the older textbooks Puerperal Eclampsia was divided into the Hysterical, the Apoplectic and the Epileptic, But we may have any

one of these diseases occurring in the Pregnant woman quite independently of Eclampsia. These diseases are those from which we require to diagnose eclampsia

In Hysteria the patient is not totally unconscious and there will ~~have~~ probably have been some previous manifestation of hysteria

In Apoplexy there are the local symptoms e.g. one side being paralysed & one pupil contracted while the other is dilated

In Epilepsy we shall probably have the previous history of the woman, also the temperature is not raised in the epileptic state while it is in the eclamptic.

While in true Eclampsia we have the scanty urine which is probably highly albuminous, besides which there are ~~also~~ & certain premonitory symptoms to be afterwards described

Premonitory Symptoms are not always present or when present are not very prominent, Thus, in Case I the patient had complained of nothing except slight headache on the previous day, while in Case II She did not notice anything although she was on the lookout for anything abnormal,

Headache is the most common of the premonitory symptoms often being accompanied with a feeling of indisposition or of dizziness, sometimes there is a transient loss of sight or there may be spots before the eyes, There may also be oedema of hands or feet or face, there is also sometimes a severe pain in the epigastric region, these symptoms occurring in a pregnant woman should make us suspicious and should lead to an examination of the urine, If we find on examination that she is suffering from albuminuria more particularly if we know that it has developed during pregnancy, immediate treatment is indicated

The Onset is usually sudden and in its character it is the same as an ordinary epileptic fit. There is first a tonic spasm during which the face is pale, this period lasts only a very short time and is followed by a stage of clonic convulsions during which the face becomes first of a dusky red colour changing gradually to a livid purple. The eyes may be turned upwards so that the white sclerotic only is visible, the tongue may be protruded and may be bitten by the convulsive movements of the jaws. The muscles of the face become contracted so that the countenance becomes horrible and may be unrecognisable. Frothy saliva collects about the mouth and this may be blood-stained if the tongue has been bitten. The convulsions extend to all the muscles of the body. The thumbs may be turned in towards the palm of the hand which may also be spasmodically clenched. The involuntary muscles are apt to be implicated as well as

the voluntary as shown by the occasional involuntary expulsion of urine or faeces or by the temporary arrest of respiration.

During the attack the patient is totally unconscious, she is quite insensible and afterwards has no recollection of what has taken place, The attack may last from 2 to 3 minutes (Spiegelberg says never more than one minute) mostly not so long after which consciousness generally returns although she is rather dazed and has no clear conception of what has occurred.

After a longer or shorter interval there is generally a return of the convulsions characterised by the same symptoms, and they may come on with more or less force and frequency according to the severity of the attack.

The paroxysms are sometimes induced by something disturbing or irritating the woman as for example a uterine contraction.

Between the attacks she is in a semi-conscious condition, rather dazed, but the more frequent and the more numerous

the attacks the less thoroughly does she regain consciousness between them, this is due probably to the cerebral congestion caused by the spasmodic contraction of the muscles of the neck compressing the blood vessels of that region. It sometimes happens that this state of Coma may deepen and the patient die but this intense state is comparatively rare. She usually, is able to groan when the uterine contractions occur or she may respond when shouted at.

The Number of Fits in a case varies greatly. Spiegelberg states that the severer the first attack the more rapidly does a fresh one follow, There may be only one or two or there may be a large number as many as 60 or 70 fits. Anything irritating the woman e.g. any obstetric interference or even uterine contraction tend to induce the paroxysm.

Zweifel states that in his experience the average number of fits in a case treated on

the expectant plan was 5, but if treated by operation then the average rose to 11 fits per case

In 53% of Schriebners cases there were less than 5 fits while the average in all ~~the~~ his cases was 8 fits per case

Gener states that the greatest number of fits in a case which recovered so far as his experience went was 14 fits while he had known as many as 56 fits in a fatal case

In my own experience I am inclined to think that in Case I there were ~~not~~ at least 24 fits for although I did not count the attacks & several times timed the interval between them.

The interval between the attacks may be only a few minutes or there may be some hours thus in Case I the interval was regularly 20 minutes while in Case II it was from 8 to 12 hours

Cause It is a well known fact that during pregnancy the whole nervous system of a woman is in a state of unstable equilibrium approaching in this respect the nervous system of a child, she is thus more liable to suffer from any nervous excitement, she often suffers from neuralgia mania or melancholia insomnia or chorea as also vomiting which is often * merely a nervous symptom.
But besides this excitable nervous condition something else is also requisite to cause them convulsions In 1843 Lever pointed out that the attack of Eclampsia was usually accompanied by albuminuria but it has since been conclusively proved that the two conditions are not necessarily co-existent Thus Patay gives a list of 19 cases of Albuminuria in only 4 of which Eclampsia occurred Also one case of Eclampsia in which there was no albuminuria Lapt says that Albuminuria occurs in 5% of all pregnancies and is more frequent in Primiparae than in Multiparae but that it disappears in the first few days after delivery, In Cases of Eclampsia where albuminuria is present the severity of the

Eclampsia is not at all proportional to the amount of albumin thus in Case I which was a very severe case of Eclampsia the amount of Albumin was only very slight while in Case III which was only a ~~bad~~ mild case of Eclampsia there was a considerably greater amount of albumin

Until quite recently two theories of the causation of the convulsion held the field, the first of these, The Chemical theory, explained the convulsions as being due to the urea which ought to be excreted by the kidneys being retained in the blood and acted as a poison to the nervous system, This theory was afterwards modified by Frerichs who held that this urea was decomposed into carbonate of ammonia and water and that this ammonia was the active poison but it is only very rarely that Ammonia can be detected in the blood and then only in very small quantities, It was afterwards suggested that there was some other substance such as kreatin or kreatinin which had failed to be excreted & that this acted as a poison

This theory gradually fell into disrepute and the opposing theory that of Traube and

Rosenstein was gradually accepted
This theory is shortly as follows
I As a normal concomitant of pregnancy
there is an hydraemic condition of the blood
II If albuminuria is present this condition
is intensified III There is a rise
of blood pressure during pregnancy due
to a normal hypertrophy of the heart
IV The result of these combined states
is a hyperaemia of the brain which is
followed by a serous effusion into the
cerebral tissue, this presses on the minut
vessels of the brain causing cerebral anaemia
and so convulsions

In reference to this theory Spiegelberg
states that it fails to explain why Eclampsia
is so rare while the pathogenic conditions
supposed are present in a great numbers cases
Moreover he states that this hydraemia is not present
in most Eclamptics, Oedema is not by any
means constant in the corpses of Eclamptic women
Also the clinical signs of Cerebral pressure
due to oedema are absent,

Bouchard later still brought forward a theory which he calls the Auto-Intoxication theory. It is shortly as follows

I The metamorphosis constantly taking place in the body results in the formation of certain things that are excreted by the kidneys and that these substances are poisonous even in normal healthy urine.

II That during pregnancy these poisons are increased III That the pregnant woman is more susceptible to these poisons

IV That under certain unknown conditions the excretory organs fail to excrete these poisons and that they then increase in the blood and eclampsia results.

Dr Clifford Allbutt in an article in The Lancet of Feb 24th 1894, ~~He~~ compares certain Symptoms occurring in pregnancy to similar ones occurring in infectious disease.

He points to the vomiting of pregnancy and likens it to the same occurring at the commencement of Scarletina. The same with the enlargement of the heart, the increased arterial pressure, also the albuminuria in both cases.

He then asks the Question "now if in Scarlet fever we were to see first vomiting, then nervous disturbance, then albuminuria then enlargement of the heart what would be the conclusion in the case? Surely that there is some toxin circulating in the body, . Why then in pregnancy should we fail to consider the conclusion which is drawn so readily and so correctly in cases where the presence of a poison is better known? It is because we are possessed by the prejudice that pregnancy is a normal process", but then our bodies are constantly dying and the products of such death are poisonous, we are only saved from poisoning by the unceasing activity of our excretory organs"

Now is there any evidence tending to prove that during pregnancy there is any such poison circulating in the blood which may set up vomiting Albuminaria & Eclampsia?

There is some evidence that tends to support this view, Bouchard states that 45 grammes of healthy human urine will kill 1 kilogramme of rabbit when

injected into them, he also states that this toxicity of the urine was decreased in cases of Eclampsia but at the same time the toxicity of the blood serum was increased

Rummo & Sienna showed that whereas it required 10 c.c of blood serum from a healthy person to cause death when injected into a rabbit it only required 3 or 4 c.c's of blood serum derived from an eclamptic woman, Chambrulent working independently arrived at similar conclusions, and he suggests that the toxicity of the blood serum when ascertained may enable one to arrive at a prognosis, He states the case of an eclamptic woman who seemed likely to recover but the toxicity of whose blood was found to be very great and the gravity of the case was confirmed by her death.

Certain experiments of Van De Velde tend to support this theory, He compares the ease with which the injection of human urine induces convulsions in pregnant and in non pregnant ~~animals~~ rabbits finding that 9 c.c per kilogram

of body weight is suffient in pregnant while it requires 20 c.c in non pregnant rabbits

In only one out of 34 animals was there any difficulty in inducing convulsions,

The cause of this increased ~~increased~~ susceptibility he thinks to be 1. the presence of a greater proportion of the toxins producing convulsions in the blood of the pregnant rabbit & 2nd a greater vulnerability of their nerve centres to these toxins.

He also finds that 18 c.c of blood (per kilogram) serum from a gravid animal induce convulsions when injected into a rabbit while it requires 25 c.c from a non pregnant animal to induce the convulsions

If urine be substituted for blood serum the figures are 18 c.c & 30 c.c per kilogram

From these experiments Van de Velde concludes that pregnancy leads to the formation in the female organism of substances whose principle action is the causation of Convulsions that these substances are normally eliminated by the urine and that they circulate in the blood to a greater extent

in pregnant than in normal animals thus indicating an excess of production over excretion in the pregnant animals. He also thinks that there is an increased susceptibility of the nerve centres during pregnancy because for some days after delivery the animal is more easily convulsed by the injection of blood or urine than the normal although its own urine is no longer abnormally toxic. He finally accepts Bouchard's views as to the cause of eclampsia being auto-intoxication by the accumulation in the blood of the toxins of pregnancy.

The Question now arises what is this poison and where is it formed? Dr Allbutt admits that it has not been isolated and that as yet it is indicated by negatives "It is not urea, it is not uric acid, it is not kreatinin it is not potassium chloride" and he goes on to state that it is a toxin which is absorbed from the bowel he states that "fatigue products form part of it as on a day after great exertion the urine is more toxic". —— The toxin may be

absorbed direct from the blood but the means of our impunity is the liver which neutralizes the toxins which find their way into the circulation ... If then for any reason this protective function of the liver be checked or a larger quantity of toxin be turned into the blood than the liver can deal with the excess will fall directly on the kidney and probably will so injure its finer structures that albumin can leak through ---- Uraemia then is a retention of these toxic bodies in the system"

I agree to a great extent with this theory but I do not see sufficient evidence to point to any particular poison and so would rather leave it as being due to retention in the blood of some unknown constituent or constituents of the urine this may be quite consistent with the patient passing a fair quantity of urine but in such cases it is found to be of low Specific Gravity and it is not so toxic to rabbits as it normally would be,

but in many cases as in Case I we find that there is almost if not quite suppression of urine.

Cohnheim in his Pathology attributes the convulsions to the retention in the blood of the urinary constituents this in its turn being due to a spasm of the renal arteries, while Spiegelberg goes still further back and attributes this spasm to a reflex irritation from the uterus.

Why does Eclampsia occur so much more frequently in Primiparae than in Multiparae? We have the patient in a more excitable condition she is more prone to think about her condition it is something strange to her. Clifford Allbutt advances the theory of immunity due to previous pregnancies to account for this. He thinks that if a woman has successfully gone through one pregnancy she will have become so habituated to the toxins formed during pregnancy (or the increase in the blood of the Urinary Constituents) that she is practically immune from their effects. He states that the blood serum & urine are as hypertoxic in Multiparae as in Primiparae

Termination of the attack, Spiegelberg says that it very rarely ends in recovery except after delivery, The oedema and albuminuria disappear very rapidly.

She is very prone to suffer from severe Haemorrhage after delivery this is probably due to the accompanying albuminuria

She is also more liable to other puerperal diseases such as puerperal fever due no doubt to the operative measures so often undertaken.

We may have as sequelae various nervous disorders a feeble mental condition or mania

In Case I it appeared for some weeks possible even probable that she would degenerate into melancholia.

Occasionally the patient may die at the time of the attack this may be due to Asphyxia from the long continuance of the spasm or it may be from the combined effects of the Exhaustion induced together with the Asphyxia, It may be due to Cerebral apoplexy or it to the so-called oedema of the lungs, This oedema may be due to the disease or to the Pilocarpin given in the course of treatment or as D- Tweedy suggests it may be partly

due to fluids that have reached the lungs from the mouth, It is for this reason that he condemns the Dorsal position and he says also that the gag is prolific of harm for the act of swallowing cannot be accomplished with the teeth & lips apart.

Prognosis As to the mother

It depends greatly on the number & severity of the attacks as besides the danger of dying in each attack the exhaustion becomes greater with every succeeding fit, The more complete the anuria the more serious the case.

Chambrelent suggests that the toxicity of the blood when ascertained may enable one to arrive at a prognosis, He relates the case of an Eclamptic woman who seemed likely to recover but the toxicity of whose blood was found to be very great and the real gravity of the case was confirmed by her death, but of course it is not always an easy matter or convenient to test the toxicity of a patients blood particularly in so sudden and serious an emergency

The amount of Albumin in the urine is not by any means a good sign of the gravity of a case, thus in Case III the albumen was very plentiful but she was not by any means so serious as Case I where there was only a very slight trace of it, Chambrelent relates the case of a woman who recovered although there were 18 grammes of albumin in the litre of her urine but the toxicity of her blood was not much increased and a favourable opinion had been given.

The earlier in pregnancy the case occurs the more serious it is thus those occurring before labour are more serious than those occurring during labour & these more serious than those occurring during the puerperium Thus of Schriebners 23 cases occuring Antipartum 4 died or 30·4% of 85 during labour 16 or 18·8% died & of 29 during puerperum 4 or 13·8% died.

When it does occur in Multiparae it is said to be more serious than in Primiparae

Diseased the Respiratory or Circulatory organs naturally affect the prognosis

Prognosis depends also on treatment The mortality is less now when indiscriminate

bleeding has been abandoned while Chloroform & other Sedatives have been more used.

The Prognosis as regards the kidneys is good it is only very rarely that any permanent renal disease is left as a result unless it existed previous to the attacks

The Prognosis as regards the <u>child</u> is serious about one half of them dying

In the cases 55 children recorded by Gener 16 of them were still born while 13 died in the course of a few days while out of 165 children in Schreibners cases 37 were still born 26 died soon afterwards. Spiegelberg says that "the cause of the high mortality (infantile) lies less in the toxæmic condition which produces the disease than in the accumulation of Carbonic acid in the maternal blood, caused by the attacks, as a result of which the aeration of the foetal blood is prevented. The foetus therefore dies from asphyxia and its effects, as is shown by the post-mortem appearances. The prognosis for the child therefore bears a direct relation to the number and severity of the attacks. But I need hardly add that the mode of delivery has a by no means unimportant influence"

Treatment may be divided into Prophylactic & The Treatment of the attack itself

Prophylactic treatment. At the International congress of Gynaecology held at Geneva in 894 Charpentier said that the urine of every pregnant woman ought to be examined, and that if the least trace of albumen was found she should be put on to a strictly milk diet and that this must be continued till after labour and until the urine is free from albumin; Or, on the other hand, if there is oedema without albuminuria a milk diet is indicated

But as Sir John Williams points out the onset of albuminuria may be very sudden and we cannot always be examining the urine of pregnant women still if there is reason to suspect the presence of albuminuria, or the onset of eclampsia as by the presence of amaurosis oedema headache or any other premonitory symptom it is our duty to examine the urine for albumen and if found to treat her for it, but we

must remember that we may have eclampsia without albuminuria as well as albuminuria without eclampsia.

In reference to the milk Treatment Ferré (L'Obstetrique Nov 15th 1886) says that the milk treatment is most efficient from a prophylactic point of view, though it does not necessarily cause the other alarming symptoms to vanish, he has never seen fits in a patient subjected to over a week to milk diet, nor any other trouble of a toxic origin although it may not lessen the oedema or albuminuria, In those cases where an exclusively milk diet is badly borne we must try some other method of feeding, we may allow a few vegetables arrowroot, tapioca, rice fish or a little white meat.

In addition to the milk diet we must have the patient confined to bed and try to reduce the Vascular tension by Diuretics such as the Citrate or Acetate of Potash Digitalis etc, We must also keep the bowels active & clean as by calomel & Jalap and Intestinal antiseptics as Salicylate of Bismuth Salol or Beta Naphthol & occasional mercurials, Diaphoresis

may also be encouraged as by the Turkish or Vapour bath. Pilocarpin has also been given for this purpose but it has been found to be a dangerous remedy.

Dry Cupping over the loins has also been used with advantage in order to lessen the Renal hyperaemia.

If after this treatment the patient does not improve but the quantity of albumin continues to increase and the general condition of the patient gets worse the question arises "Are we to induce labour?". This is a question of great difficulty. Some practitioners are in favour of the procedure while others are against it. Hofmeier says that it does not increase the risk of eclampsia and may avert it altogether

I think that the general opinion is that if the child has reached a viable age and the risk to the mothers life is great or the chance of permanent injury to the kidneys of the mother are great then the operation is justifiable

If the child is dead in utero then of course the sooner it is away the better

The Treatment of the Convulsions

When we come to the treatment of the attack itself we find that there are 2 schools of Teachers I° The German school represented by Halbertsma Zweifel Dührssen etc who teach that the first and practically the only duty of the attendant is to empty the uterus as soon as possible

II° The School represented by Charpentier in France and the majority of Obstetricians in this country who teach and practice a more conservative line of treatment.

We will now glance at the treatment advocated by one or two members of these schools and so get an outline of the treatment of this condition

Zweifel of Leipzig in the Centralb. f. Gynak No 46, 1885. advocates the immediate delivery by operation in every case of Eclampsia. first of all by dilatation by elastic bags & when the cervix is partly dilated making slight incisions into the Os or he may make much more extensive incisions into the Cervix He makes the incisions between 2 Bibroths

Billroths clamps so that the Cervix is firmly fixed and he is able to cut deeper & to control the haemorrhage better. He admits having had at least 10 cases of severe haemorrhage although he never incised the vagina nor perinaeum (this is advocated by Dührssen) in three of these vessels had to be afterwards secured. It is on this account that Zweifel does not advise Venesection which he admits to be a useful procedure. He admits that the operation is dangerous and does not recommend it for private practice

In his statistics he states that despite the anaesthesia the interference increased the number of fits there being an average of 5 fits in those cases treated on the expectant plan while in those treated by operation there was an average of 10 or 11 fits

Halbertsma in the Wien. Med. Woch. Oct 10th 1886 considers that cases of Eclampsia occurring in the last 3 or 4 months of pregnancy or at the beginning of labour indicate

more radical treatment than is commonly employed, He thinks that active interference is requisite in every case if the pregnancy has lasted 8 months and in all other cases in which 2 doses of 1/20 gramme of Morphine have proved ineffectual,
In such cases, he says, the prognosis is much worse if the patient is left alone than if Caesarian section is performed

The same author in an article in "Nederlands Tydschrift van Verlosk en Gynek" 1854 analyses 49 cases in order to show the advantage of operation, of these 18 occurred during labour and 31 during pregnancy.

Of those 31 cases occurring during pregnancy
4 occurred before the 8th month all the mothers were saved but only one child was saved, this one being operated on by Dubrosens method (Incising Os)
5 Cases he describes as light
1 " " as Moderately severe
1 " " peculiar Pneumonia and Gangrene of lung having set in.
14 Cases he describes as severe, of these
2 rejected owing to uncertainty about treatment
4 Neither Caesarian section nor incision

of the os undertaken and all died
In 8 cases either one or other of these operations
was performed and only 2 died 6 of
them being saved
Of 18 cases occurring along with labour
6 of them are described as light
12 — — . as severe of these
9 died none of them undergoing Caesarian
section nor incision of Os
2 Incising Cervix performed, both lived
+ Chloroform and morphia ~~was~~ given
and when the os was dilated completely
the forceps were applied, She recovered.
Halbertsma concludes by advising
operative measures in these cases & states
that the continuance of the fits will
be more deadly to mother and child than
Caesarian section would be.

On the other hand Dr Hastings Tweedie
in a paper reported in the Dublin Medical
Journal for March 1896 states that no
greater danger could happen to an

Eclamptic than the onset of labour particularly if it were induced artificially.

She inclines to the opinion that the fits are caused by the presence of some poisonous material in the nervous centres, She believes that it is quite possible to quickly remove this substance from the centres of danger by depleting the blood of its water and so cause a current to flow away from the nervous centres, This may be done by Purging Sweating or Bloodletting but he relies mainly on the kidneys to get rid of this harmful substance, The administration of fluids in any form would in his opinion completely counteract any good effects which might follow this line of treatment, She was on no account to be allowed to lie on her back for the so-called oedema of the lungs often seen in cases which ended fatally had its origin in most instances to the drowning of the organs by fluids from the mouth

Of all drugs Morphia given hypodermically in large doses (up to 2½ grs in 24 hours) presents the greatest number of advantages with the fewest disadvantages in the treatment of Eclampsia, Chloroform Chloral & Pilocarpin all tend to kill in a similar manner to the Eclamptic poison and therfore ought not to be employed. Neither should any fluid be placed in the mouth as the patient is unconscious.

Charpentier at the International congress of Gynaecology held at Geneva said, that when the patient was seized with Eclampsia and labour appeared spontaneously all were agreed that the right treatment was to terminate labour as soon as possible, but, when Eclampsia set in before labour a distinction must be made between cases at or nearly at full term, and those

earlier in pregnancy, She is convinced that Induction of labour is useless and forced delivery dangerous

She concludes that

I The urine of every pregnant woman should be examined

II If the least trace of albumen be found she must be put on a strict milk diet, and this must be continued till after labour and till no albumen is present

III When oedema is present milk diet is indicated although there is no albuminuria

IV When Eclampsia occurs with Cyanosis, in a strong woman bleeding up to half a litre should be performed

V Chloral should be given

VI When Convulsions have set in milk should be given by the mouth, this alone sometimes causes Cessation of the fits

Besides this the fits must be treated with Chloroform, and diuresis induced by subcutaneous injections of saline solutions, One must then wait till normal labour sets in, If there is inertia uteri labour must be terminated

by forceps or version. And he concludes by stating that Induced labour is only exceptionally necessary and forced delivery never.

Obstetric treatment. From the foregoing extracts we see that there is very great diversity in the obstetric treatment of this condition ranging from men like Zweifel who advocate delivery in every case to men like Tweedy who say that no greater danger could happen than the onset of labour On theoretical grounds the ~~ea~~ induction of labour would appear to be advisable. It is natures own remedy to which she resorts in a great number of cases, And also after the birth of the child, Chambrelent states the toxicity of the urine falls almost at once even in cases of normal labour, I have no doubt that in many cases it is a very useful procedure and it is well to have it in mind when the mothers life is in danger and where we are unable to control the fits in any other way. But still this is not a method of treatment to enter upon rashly, we know that the longer

a child remains in utero the better a chance it has to survive besides which the birth of the child is not always followed by the cessation of the fits, thus in my 2nd case the fits were as bad after as before the birth of the child, and we must also remember that any interference, any irritation to a woman suffering from eclampsia causes or tends to cause an increase in the number of fits.

Then again if we would wish to induce labour we cannot in private practice follow out the method practiced by Zweifel Dührssen and others of incision of the Os & other allied measures, Zweifel himself admits that the operation is not without danger and does not recommend it for private practice.

But if Labour has commenced & the cervix is fully dilated it may be advisable to terminate the labour as soon as possible either by turning or by forceps, the good effect of this was well illustrated in my first case the fits were gradually increasing in frequency and in force when I terminated the

pregnancy after which she did not have another fit. In cases where labour has commenced but is only proceeding slowly the effect of cocain applied to the Os might be tried as this would not irritate the woman while it would have a beneficial effect in relaxing the tissues, Dr Playfair in his textbook says that Forcible dilatation of the Os is strongly contra indicated, he also states that we should adopt that course which seems least likely to prove a source of irritation to the mother, thus if the fits seem evidently induced and kept up by the pressure of the foetus and the head be within reach the forceps may be resorted to but if on the other hand there be reason to think that the operation necessary to complete delivery is likely per se to prove a greater source of irritation than leaving the case to nature then we should not interfere

<u>Venesection</u> In the early and middle part of this century venesection was used in nearly all cases of Eclampsia as in

nearly all other diseases, and with the revulsion of feeling which set in against Venesection it has been neglected in many cases where it might have been useful, and in properly selected cases of Eclampsia it seems by almost universal consent to be useful. In the old days when it was used so indiscriminately it was no doubt responsible for the loss of many lives, at any rate the mortality from the disease has been much less since it was to a great extent discontinued.

Almost the only argument against its use is that we do not know how much blood the woman will subsequently lose in the parturient process and so we may weaken the woman too much by performing venesection previously, this argument is of course not available in post partum cases

Spiegelberg places venesection first in the treatment of this condition, He says "There is no other way of so rapidly and certainly lowering arterial pressure, none has such power of restoring to the kidneys .... their functional activity; few have such a

sedative influence on the irritated vaso-motor nerves". Charpentier recommends it to be performed in the case of Cyanotic strong women to the extent of ½ a litre but personally I think that the quantity ought to be regulated by its effect on the patient

The temporary good effect of Venesection is well illustrated by a case recorded in the "Practitioner" by Sir John Williams A patient had twice previously had Eclampsia associated with Albuminuria, During the 3rd pregnancy very great attention was paid to the state of the urine it was examined night and morning from the 3rd month, No albumin appeared till the end of the 4th month, a trace then appeared and almost immediately it increased to ½ associated with the symptoms preceeding Eclampsia, She was then bled with the effect of obtaining complete relief, The Albumin disappeared completely from the urine within 24 hours and remained almost entirely absent for 8 days, Then the old symptoms returned together with albumin in the urine She was bled again with

equal relief to the suffering and almost as good an effect on the urine, the improvement lasted for a week again then the old symptoms returned. She was bled again & with relief but the relief was not so complete nor so lasting as on former occasions for the albumin was not reduced to less than 1/10 and the dustiness of the face, the pain and breathlessness returned in the course of 4 days she was bled once again with relief which lasted only 24 hours then labour was induced.

In my first case I think that Venesection was decided although not immediate benefit as although she had 2 fits afterwards that were quite equal in severity to the fits that she had had before there was then practically a cessation of fits for some hours and they never afterwards became as severe as they had previously been.

Venesection may be used in Post Partum cases if it is necessary without the same fear as to any future loss but still in these cases we should only use it when she is a strong full blooded woman with full pulse.

Sedatives Chloroform, Chloral & Potasium Bromide, These are almost universally employed although some few observers do not consider them safe, Thus Tweedy is opposed to their use as they are Cardio-depressants and kill in the same manner as the Eclamptic poison.

It is well known that all convulsive attacks tend to recur if left to themselves and that the tendency increases with each recurrence of the attack, how the effect of the Chloroform is to reduce the excitability of the brain and cord and so counteract this tendency besides lowering the blood pressure but the effect of the Chloroform is not lasting it ceases soon after the administration & you cannot get them under rapidly enough on the approach of the convulsion so that it is advisable to give something which shall have a more permanent effect and for this purpose Chloral or Bromide or both are very often given, by this means less chloroform is required to get her under when the attack recurs, if she is conscious the Chloral or Bromide may be

given by the mouth but if unconscious it may be given either per rectum or hypodermically. Chloral seems to be much more active when given hypodermically than when taken by the mouth. In my 2nd case it appeared to be very efficacious as previous to giving it hypodermically I had given it by the mouth, had used Chloroform and induced labour all apparently without effect any yet after 2 doses hypodermically the fits entirely ceased nor did they ever return

Morphia is highly recommended by Tweedy who advises the hypodermic injection of ½ gr followed if necessary in 2 hours by ¼ gr and so on untill the symptoms are alleviated or untill 2 grains have been given in 24 hours In his opinion the drug seems to have little effect on the heart or kidneys. No other drug has so great an inhibitory effect on metabolic changes. It is a nervous sedative and diminishes salivary and bronchial secretions and by these actions counteracts those conditions which tend to kill in Eclampsia

Personally knowing the great power of morphia in suppressing the secretion of urine in other conditions I should be rather chary about using it in Eclampsia holding as I do the view that the Eclamptic state is due to the retention in the blood of the urinary constituents

Diaphoresis may be useful but it is not at all times easy to induce nor very certain in its good effects, It may be obtained in various ways as by the use of hot baths, wet packs, or by the administration of Pilocarpin I used this drug in both Case I & Case II but although there was free perspiration particularly in Case II I could not detect any good effect it had.

At the present time opinion seems to be against this drug thus Tweedy says that no more fatal drug could be found it depresses the heart promotes free salivation & Bronchial secretion & so oedema of the Lungs. During a discussion at the London Obstetrical Society Dr John Phillips spoke of 39 cases in which Pilocarpin had been used in 9 of which dangerous symptoms followed shortly after the

exhibition of the drug and I died, Post mortem appearances showed that rapid oedema of the lungs took place

Rectal Irrigation has occasionally been used & it is said with a good effect It is said to have a diuretic action. It may possibly be of use by clearing out the lower bowel and so according to Allbutt stop the absorption of toxins but I am inclined to the opinion that it ought not to distract one's attention from more important means of cure

Subcutaneous Injections of Saline solutions This also acts as a diuretic and is recommended by Charpentier

An interesting case is recorded by Solé (La Presse Médicale Belge Jan 24th 1904) of a woman who when pregnant was attacked with Eclampsia she was delivered artificially but 2 days afterwards the Coma persisted and the general condition was deteriorating. Normal Saline Solution was injected into the subcutaneous tissue of the axilla on both sides this was

immediately followed by increased secretion of urine, the injections were repeated every 4 hours in different parts of the body & 24 hours she was much improved and she eventually recovered.

Other diuretics may be given afterwards or between the convulsions if she is able to swallow such as Digitalis & Nitrates but they are more suitable afterwards than during the convulsions

Purgatives The bowels must be kept open as by Calomel & Jalap or by Croton oil. This helps to lower the arterial tension & so helps the kidneys to act better.

Various other drugs have been used for the purpose of lowering the arterial tension with more or less success

Veratrum Viridi has been much praised by some practitioners particularly in America but it is said to be too depressing for the heart & therefore dangerous

if pushed to the point of Controlling the fits
Nitrite of Amyl has also been used
for the purpose of overcoming the reflex excitability
of the spinal Cord.

The Gag must be used during
the convulsion to prevent her from biting
her tongue (the handle of a spoon wrapped
round with flannel is a very efficient gag)
but it must not be used except during the
fit as she is unable to swallow any
saliva unless the teeth & lips are in contact
with each other.

In Conclusion, Although I have been
successful in all my cases so far as the
mother was concerned I do not think that
I should adopt exactly the same line
of treatment in any future case. For
example, in both Case I & Case II I used
Pilocarpin hypodermically but I do not
think that much good resulted and my
subsequent reading teaches me that it
is often dangerous.

In any future case (although each case

must be treated according to its own merits)
I should probably go on the following lines;
I should first give a large dose of Chloral
hydrate either by the mouth or hypodermically
and I should give chloroform to inhale
just as soon as I could discern any signs
of the fit coming on, If after this the
fits showed no signs of abating I should
consider the advisability of Venesection
while if labour was at the same time
progressing I might apply a solution of
Cocaine to the Cervix so that it might
dilate more rapidly, and when fully
dilated I should consider whether to
terminate labour by turning, by forceps
or to leave it alone

I should also administer Calomel
and Jalap or Croton oil as a purge

The Normal Saline Solution might
also be injected subcutaneously as an
auxillary in the treatment.

If she was not in labour
I should not do anything to induce it
(particularly if the child had not reached
a viable age) unless I considered

that the mothers life was in serious danger or that the child was dead in utero but should keep her in bed on milk diet give Chloral & other sedatives and do Venesection

The following is a list of the authorities quoted in the foregoing essay

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I hereby declare that the foregoing Thesis has been composed and written entirely by myself

Signed

J. Matthews

Holmfirth

April 28th 1899