

Causes and Treatment of Primary Inertia Uteri.

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THE CAUSES AND TREATMENT OF PRIMARY INERTIA UTERI.

Primary Uterine Inertia may be defined as the condition in which, labour having definitely started and there being no cause of obstruction, pains are so infrequent or so ineffectual, that the first two stages of labour are unduly prolonged, the third stage being normal.

Although the results of Primary Inertia Uteri are not usually serious either to mother or child (1) the condition is one which causes so much unrest to all concerned in a confinement where it occurs that it is worthy of consideration. To the patient the discomfort, anxiety, and loss of rest are most trying, her relatives are worried and upset, while the demands on the doctor's time and temper are inordinate, especially when, as almost invariably happens, the patient and her family are of highly nervous temperament and keep sending calls at all hours of the day and night.

Further in those cases where premature rupture of the membranes occurs, Primary Uterine Inertia may be productive of serious results to both mother and child.

Owing to the unsatisfactory results of treatment obtained when the condition is established, very little, unfortunately, is able to be done for the patient. Morphia in ordinary doses is ^{and} not reliable according to Eden (2) if morphia, chloral and bromides be given in adequate doses, i.e. doses large enough to induce sleep, the progress of labour is arrested altogether. The same author recommends scopolamine and morphia, but this method of treatment is entirely unsuited to the needs of a general practitioner, to say nothing of the often dangerous effects which these drugs have

on the child. Williams (3) and Eden (4) advocate de Ribes bag or digital dilatation of the cervix at the appropriate times, but these procedures cannot be lightly undertaken except under the favourable conditions not usually met with in general practice. The full hot bath (5) is seldom practicable in the country.

The reason why the condition has not been more fully worked out and why some more reliable means of treatment is not available, may be because of the paucity of such cases in hospital practice as compared with private practice. During a term as resident out-door House Surgeon in the Royal Maternity and Women's Hospital Glasgow, and in over a thousand cases of child-birth, I did not see a single case of Primary Inertia, while in private practice out of about two hundred cases, I have seen twelve women suffering from the condition and two others in whom, but for prophylactic treatment, the abnormality would most probably have occurred.

I submit notes of the cases mentioned. I propose from a consideration of the main features of these cases to develop a theory regarding the cause of Primary Uterine Inertia. I hope to demonstrate that it is possible to forecast the probable onset of this condition, and I desire to submit lines of treatment which should be adopted to prevent its occurrence in those cases. Finally, I hope to show a rational method of treating the condition when it has developed.

CASES.

1.

Mrs. J. Aet 25 years, Housewife. 1 Gravida.

Menstrual History.

Menstruation commenced at sixteen years of age and has been regular since that time. Type ²28. The loss is small (one diaper per day). Pain in the back comes on four days before the flow starts and lasts three days. The day immediately before the flow commences is entirely free from pain or discomfort. Pain accompanies the onset of the flow but soon passes off again. The pain at and before menstruation is accompanied by a swelling in the left lumbar region the nature of which I am unable to determine.

History of Previous Illnesses.

The patient states that she suffered from Anaemia and Gastric Ulcer for eight years (from sixteen to twenty four years of age.) She had no other illness.

Examination.

Patient menstruated last on 24th September, 1919. The probable date of confinement was therefore, 1st July, 1920.

When examined on 15th April, 1920 for her confinement, this patient was found to be distinctly neurasthenic. She complained of sickness and insomnia. Her reflexes were brisk, her fingers, tongue and eyelids tremulous. Her heart was rapid in its action (120 beats per minute). The heart sounds were pure. Severe varicose veins of vulva and legs were present. The pelvis was roomy. When I saw her again in June 1920, her condition was as described above. The presentation was 1st. vertex. The urine revealed no abnormality.

Labour.

Labour started in the early morning of 19th July, 1920 and when I saw the patient at 10.30 a.m. the os was two finger and there were no pains. Occasional pains occurred at long intervals with slightly increasing dilatation of the cervix. The membranes ruptured on 20th July, 1920. Morphia gr $\frac{1}{2}$ was administered hypodermically on the evenings of the 19th, 20th, and 21st July, but although it gave the patient rest, it produced no effect on the progress of the labour. On the morning of July 22nd the os was completely dilated and 1 c.c. of pituitrin was injected subcutaneously without effect. At about 10 p.m. on July 22nd, normal pains suddenly came on and a dead baby was born spontaneously at midnight. The only pain complained of by the patient from the beginning to the end of labour was one, gnawing in character, in the back.

2.

Mrs. E. Aet. 38 years. Housewife. 1. Gravida.

Menstrual History.

I have no note of when menstruation started. The type is irregular:- $\frac{7}{21}$ and $\frac{7}{28}$. At each period the patient has "bilious attacks" which necessitate her going to bed for about two days.

History of Previous Illnesses.

Patient states that she has always been healthy apart from the trouble associated with menstruation.

Examination.

18th September, 1920. Patient last menstruated on 16th February, 1920, therefore, the probable date of confinement is 21st November, 1920. She looks older than her years, and is nervous and

restless. The pupils are dilated. The reflexes, superficial and deep, are increased. The heart is rapid in its action. (108 beats per minute). The Vagina is narrow and the Pelvic outlet slightly narrow. The pubic arch is low. The Foetal heart sounds are best heard below and to the right of the umbilicus. (Rate 146 per minute). The Urine is normal.

Labour.

Labour started at 7 a.m. on the 20th December, 1920, with pains of evidently ordinary severity which lasted until about 9.30 a.m. and then practically disappeared leaving the os fully one finger dilated. No effectual pains recurred until the morning of 24th December, 1920 - four days later. During this period there were odd pains and the patient had a feeling of great discomfort and apprehension, the latter increasing to such an extent that on the night of 23rd. December, she was almost hysterical. Examination that night revealed a three finger os, but there were still no effective pains. At 10 a.m. on 24th December, pains being fairly good and the os fully dilated Mr. Caird F.R.C.S. Ed. gave chloroform and I delivered the patient with forceps. The child breathed after an hour's artificial respiration. Two stitches were put into the perinaeum. The puerperium was uneventful and the uterus was in good position six weeks later.

In this case morphia gr $\frac{1}{4}$ was administered hypo-dermically on the evenings of 20th, 21st, 22nd, and 23rd, but had very little sedative effect on the patient although it appears to have been responsible for the asphyxia from which the child suffered.

3.

Mrs. F. Aet 29 years. Housewife. 3 Gravida.

Menstrual History.

Menstruation commenced at 14 years of age. (Type:-³28 regular)
Patient has suffered no pain and very little discomfort except when undergoing training as a Gymnastic teacher at 20 years of age.
There was then pain for the first two days of the illness, presumably owing to the vigorous exercise entailed. The loss is of moderate amount (three diapers per day). Since the birth of the first baby there has been no pain or discomfort at her menstrual periods.

History of Previous Illnesses.

The patient has always been perfectly healthy.

Obstetric History.

1st. Confinement was a case of persistent occipite-posterior, and was managed by Dr. Haultain of Edinburgh in 1915.

The 2nd. confinement was normal, in September 1918.

Patient had a miscarriage in September 1919.

Examination.

22nd June, 1921. Patient last menstruated in November, 1920, therefore, August 1921 is the probable date of confinement. She complains of breathlessness and palpitation and of nervousness. She flushes when addressed and the fingers and eyelids are tremulous. The heart's action is disordered and rapid (130 beats per minute). The Foetal heart sounds are best heard in the left iliac fossa (Rate 140 per minute). The perinaeum is intact. The pelvis is roomy. The abdomen is fleshy, and the foetal parts are not easily made out. 1st. vertex presentation diagnosed. Urine normal.

Labour.

Labour started at 4.45 a.m. on 22nd July, 1921, and the membranes

ruptured at same time. I saw the patient about five hours after and learned from the nurse that pains had lasted only a short time after the beginning of labour and had then become weak and occasional. On vaginal examination the os was found to be about three finger and I was able to introduce my finger into the baby's anus. The foetal heart was still best heard below and to the left of the umbilicus. Morphia gr $\frac{1}{4}$ was given hypodermically. At 7.30 p.m. the os was a little more dilated but pains were still very feeble and infrequent. A further enema and quinine sulphate (grs. 10) were given. The uterus was massaged and better pains came on. The baby was born by the breech at 10.30 p.m.

4.

Mrs. K. Aet 39 years. Housewife. 8 Gravida.

No opportunity was given of examining this patient before her confinement, but on going into her history afterwards, the following story was elicited.

Menstrual History.

Menstruation commenced at 14 years of age and has been regular since that time. Type ⁴28. The patient had suffered pain of a severe nature in the back and thighs on the first day of illness, but this disappeared after the birth of the first child. The loss is moderate (three diapers per day). The woman herself is a sallow complexioned, weakly, emotional person. All the previous confinements were normal.

Labour.

Pains started in the morning of July 21st 1921. They were severe and occurred at very long intervals. According to the patient they were typical labour pains. They continued until 27th July, when "the show" occurred. Pains then passed off altogether. The nurse sent for me on this date and I found the os about two finger. There were no pains whatever. I saw the patient that day and gave morphia gr $\frac{1}{4}$.

hypodermically at night. The following night I repeated this and gave 15 grs. of quinine sulphate in addition. On the 28th, odd pains occurred until midnight, when fairly good pains set in and a child was born normally at 5 a.m. on the 29th, before my arrival. The woman told me afterwards that she had been very nervous about this confinement and had spent sleepless nights in dread of it. The loss of blood after separation of the placenta was slightly in excess of what is usual. It was easily controlled.

5.

Mrs. S. Aet 30 years Housewife. 2 Gravida.

Menstrual History.

Menstruation commenced at 15 years of age, and the patient was only once ill in the next year. This was ascribed to anaemia for which she was treated by her doctor. At 16 years of age the illnesses became established and occurred irregularly at 21, 28, or 42 day intervals and lasted for two days, the loss being very small (one diaper per day). Headaches occurred at the times of menstruation and were so severe as to prevent sleep or work. The condition with regard to pain was unaltered by pregnancy.

History of previous Illnesses.

Between the ages of fifteen and sixteen years the patient suffered from anaemia.

Obstetric History.

The first baby was born nine years ago. The Labour lasted one day and was completed with forceps. She had a miscarriage three years ago and was curetted.

Examination.

13th June 1921. Patient last menstruated on the 8th January, 1921

and therefore the confinement is due about 14th October 1921. She complains of frequent attacks of fainting. She is restless and emotional. The pulse was rapid when the patient was seen at first. but quieted down afterwards.

19th September. Patient complains of palpitation and great distress. The heart is rapid in its action (120 beats per minute) but regular. The heart sounds are pure. The foetal heart sounds are best heard below and to the left of the umbilicus. (Rate 148 per minute.) A 1st. vertex presentation is diagnosed. The urine is normal.

Labour.

Labour started in the forenoon of 10th October with a few pains which lasted about two hours. The operculum was expelled. When I saw her at 12.30 p.m. the pains were very weak and infrequent and were described as being like colic. The os admitted two fingers. These colicky pains lasting about half an hour at a time and recurring at intervals lasted until about 9.45 p.m. on the 19th, when strong regular pains were gradually established. By 10 p.m. on the 19th the os was fully dilated and the head on the perinaeum. The baby was born at 10.15 p.m. The puerperium was uneventful. No drugs were exhibited in this case.

6.

Mrs. C. Aet 33 years. Housewife. 2 Gravida

Menstrual History.

Menstruation commenced when the patient was 17 years of age, occurred once in three months for the first year, and then became regular at 18 years of age. Type ⁷28. A large amount of blood is lost. Menstruation was sometimes accompanied by severe pain in the left side and a feeling of sickness. There has been no pain since the first baby was born.

History of previous illnesses.

Patient states that she has always been healthy.

Obstetric History.

She was last confined on 25th September 1918. The labour lasted three days.

She had a miscarriage on 6th December, 1920. The uterus was cleared out by finger.

Examination.

4th September, 1921. Patient last menstruated in February, 1921. therefore, October or November 1921 is the probable date of the confinement. She complains of breathlessness and distress on exertion. She looks pale and is somewhat anaemic. She has Oedema of the legs. A systolic murmur is heard all over the precordium. It is not conducted in any direction and has to be regarded as functional in origin. The heart is rapid in its action (124 beats per minute). She is nervous. The foetal heart sounds are best heard below and to the left of umbilicus. Rate 140 per minute. There is a slight tear of the cervix. The pelvis is roomy. The urine is normal.

Labour.

Labour started at 3 a.m. on November 24th, 1921, and by mid-day the os was only two finger. While I was present there were no pains. An enema was given. When she was seen at 3 p.m. the condition was unchanged. Good pains came on shortly after 3.30 p.m. and at 6 p.m. the head was showing. Owing to the screaming and weeping of the patient chloroform was given, and forceps applied, and a healthy female child was born. No drugs were given to the patient.

7.

Mrs. McK Aet 33 years. Housewife. 2 Gravida.

Menstrual History.

Menstruation commenced at 15 years of age, but the patient was ill only three or four times till she reached nineteen years of age when menstruation became regular. Type ⁷28. The loss was large. There was severe pain in the back for two days before the flow started. There has been no pain at menstrual times since the birth of the first child.

History of previous Illnesses.

Patient suffered from anaemia and gastric ulcer for four years (from fifteen till nineteen years of age) and was treated in Glasgow. On recovery menstruation became regular. With this exception, the previous health has been good.

Obstetric History.

Patient was confined three years ago. The labour lasted two days and was completed with chloroform and forceps.

Examination.

28th July, 1921. Patient last menstruated on the 12th February 1921, therefore, the confinement is due about 19th November 1921. She complains of lassitude, and of fickle appetite, and of being easily upset. The patient and her family are all known to me and all are neurotic. The uterus is mid-way between the symphysis pubis and the umbilicus. No foetal heart sounds are detected. The urine is normal.

When seen on 20th October 1921, no foetal heart sounds could be heard. The presentation was a vertex. Movements were felt. The urine was normal.

Labour.

Labour started in the morning of 22nd November, 1921. Good pains were experienced for about an hour and thereafter crampy pains came on. I saw the patient at 10 a.m. and found she was having a cramp-like feeling in the abdomen. The os was two finger and the operculum had been expelled. The patient was much upset and in tears. Morphia gr. $\frac{1}{4}$ was given, hypodermically. At 5 p.m. the condition was unchanged. 15 grs. of quinine sulphate were given and the uterus was massaged with no result. Colicky pains continued for seven days in spite of the administration of morphia gr $\frac{1}{4}$ each evening, and at 10 a.m. on 29th November, 1921, the os was three finger but good pains were still absent. At 10.30 a.m. the same day, good, strong, frequent pains came on. At 12.30 p.m. the os was fully dilated and 1 c.c. of pituitrin was given with Chloroform, and a macerated foetus born a few minutes before 1 o'clock. The child was mature, sex was indeterminate. Bromides had to be given during the puerperium to keep the patient quiet.

8.

Mrs. K. Aet 41 years. Housewife 1 Gravida.

Menstrual History.

Menstruation commenced at 15 years of age and has been regular since that time. Type ³⁻⁷ 28. Girdle-like pain at the level of the small of the back is experienced for about half an hour before the onset of the flow. The amount lost is small (one diaper per day.)

History of previous Illnesses.

She was attended by me in March 1921 for neurasthenia. The patient was then tremulous and excitable. The reflexes were increased A V.S. mitral murmur was present, conducted into the axilla. Compensation was good and the heart was not enlarged.

Examination.

16th October, 1921. She last menstruated on 18th February, 1921, therefore, the probable date of confinement is 23rd. November, 1921. She complains of shortness of breath, and dyspepsia. She is still tremulous and has increased knee jerks. The abdomen is rather protuberant. There is a V.S. mitral murmur, and some oedema of both ankles. The foetal heart sounds are best heard below and to the left of the umbilicus. (Rate 140 per minute.) The presentation is a first vertex and the pelvis is roomy. There is nothing abnormal in the Urine.

Labour.

Labour started on the evening of 7th December, 1921, with moderated pains at long intervals. I was called at 5 a.m. on 8th December, and found a two finger os. There were very long intervals between feeble pains. There was marked oedema of the lower limbs and body as high as the umbilicus. Morphia gr $\frac{1}{2}$ and digitalone gr $\frac{1}{10}$ were given hypodermically, a catheter was passed and an enema given. At 10.30 a.m. the pains were as before and quinine sulphate grs. 15, massage of the uterus, and hot douches were exhibited. At 7.30 p.m. the pains were found to be better and the os just short of full dilatation. At 9.30 p.m. owing to a rising pulse rate it was decided to apply forceps under chloroform anaesthesia and she was delivered of a child weighing 10lbs. Digitalis was given in the puerperium.

9.

Mrs. F. Aet. 36 years. Housewife. 1 Gravida.

Menstrual History.

Menstruation commenced at 19 $\frac{1}{2}$ years of age and since then has been nearly always regular. Type $\frac{10}{31}$. Severe pain in the back is experienced for one or two days before the onset of flow, and is

relieved when the flow is established. The loss is large.

History of previous Illnesses.

Patient was treated for anaemia for four and a half years (from fifteen years of age till nineteen and a half years) and on recovering from this condition, started menstruating as above.

Examination.

20th July, 1921. She menstruated last after a six weeks interval on 6th March, 1921, therefore the date of confinement is about the 11th December, 1921. * Morning sickness lasted from the second to the fourth month. The foetal heart rate is 160 per minute and the sounds are best heard below and to the left of the umbilicus. The presentation is a 1st. vertex. * 6th December, 1921. The patient has just recovered from influenza. She is tremulous, has prominent eyes, moist skin and tachycardia. (Pulse rate 130 beats per minute). The question of Grave's disease has been entertained. The urine had a trace of albumen in September, but this cleared up and there is now no albumen. The pelvis is roomy.

Labour.

Labour started on the night of 9th December, 1921, with strong pains (according to an untrained nurse) which lasted for about an hour and a half, and then passed off, and were replaced by very feeble pains. When I examined her on the morning of 10th December the os was fully one finger. Better pains were established at 2 a.m. on 12th December and labour went on slowly, a male child being born at 1.10 p.m. Chloroform and 1 c.c. of pituitrin were given when the head was well down. This patient was given morphia gr. hypodermically on the night of the 10th, but it produced no apparent effect on the course of labour.

I saw this patient in February 1922 when the symptoms of hyperthyroidism mentioned above had passed. It would appear, therefore,

15.
that the question of Graves' disease can be dismissed.

10.

Mrs. S. Aet 25 years. Housewife. 1 Gravida.

Menstrual History.

Menstruation commenced at 18 years of age. Six weeks after the onset she was ill again. Seven months after this she had her third period and from that time until she was 23 years of age, the menses occurred every three weeks. During this time the loss was large and continued for seven days at each period. About that time there was a term of four months during which menstruation occurred every ten days. Pain in the back and thighs starts three days before the onset of illness and continues right through. A swelling in the right iliac fossa causing pain and a feeling of nausea on pressure, is said to occur at the menses.

History of previous Illnesses.

She was anaemic and dyspeptic from the age of sixteen years to eighteen years. She suffers from chronic dyspepsia.

Examination.

None was made before the confinement but on enquiry, the friends told me that this girl has always been nervous and excitable.

Labour.

I first saw this patient on 19th October, 1921, when she was said to be having pains, but she was not in labour. She was tremulous and agitated and made an examination practically impossible.

On January 4th, 1922, the operculum was expelled at 6 p.m. and the patient had a few good pains. These passed off and left her with occasional colicky pains. When I saw her on 5th January, 1922 the os was found to admit one finger easily and there were no good pains. Quinine sulphate grs 10 were given without obvious effect.

That evening and the following one I gave morphia gr^{ss} hypodermically but the patient said it gave her no rest or relief. Labour pains of usual intensity occurred on the 7th. Chloroform and 1 c.c. of pituitrin were given at full dilatation owing to the patient's uncontrolled screaming.

11.

Mrs. D Aet 27 years. Housewife. 1 Gravida. Patient without
Menstrual History.

Menstruation commenced at 13 years of age and she was not again unwell till nine months later. The periods, thereafter, were regular till the time of pregnancy. Type³₂₈. Severe headache is experienced at the menses.

History of previous Illnesses.

She became anaemic at 13 years of age and attended her Doctor for nine months. She had a left-sided Bell's paralysis in 1919. The patient has been worried and anxious since she became pregnant owing to a sister's death at child-birth.

Examination.

December, 1921. This patient is rather breathless and excitable. She resists examination. She last menstruated on 14th May 1921, therefore the confinement is due about 21st February, 1922. The fundus lies mid-way between the umbilicus and the sternum. The foetal heart sounds are best heard below and to the left of the umbilicus. The knee jerks are not increased but the heart is rapid in its action (95 beats per minute). The urine is normal. The pelvis is roomy.

Labour.

Labour started at 2 a.m. 28th February, 1922, with the appearance of the operculum. She had pains of quite moderate intensity but at very long intervals until 6 a.m. on the 1st March

1922, when pains "like indigestion" came on and lasted throughout the day. Whiskey 1 oz orally and morphia gr $\frac{1}{4}$ hypodermically were given at 9.30 p.m. The patient slept for two hours and then good pains appeared. The membranes ruptured at 2 a.m. and the baby was born at 8.30 a.m.

The possibility of the occurrence of Primary Inertia in this case was noted, but it was decided to leave the patient without treatment to see whether the condition would supervene. The fact that the patient did develop primary uterine inertia strengthens my conviction that the occurrence can be forecasted.

12.

Mrs. R. Aet 32 years. Housewife. 5 Gravida.

Menstrual History.

Menstruation commenced at fourteen years of age and was irregular until the first child was born. Menstruation occurred every thirty fifth or forty seventh day, and lasted for three days. Pain was present for two days before the onset of the flow and ceased when the flow started. Pain was unaltered after the birth of children.

History of previous Illnesses.

She was anaemic from fourteen years of age until twenty two years of age and was more or less constantly under medical care during that time.

Obstetric History.

1st. baby was born in September, 1912. The labour lasted from midnight till 9 a.m. and was normal.

2nd baby was born in October, 1913. This was a case of Placenta Praevia.

3rd. baby was born in October, 1914. Labour lasted from 7 a.m. till 2 p.m. and was normal.

4th baby was born in September, 1919. Labour lasted from 6 a.m. till 9 p.m. The pains were colicky and weak from 6 a.m. till 6 p.m. and then were good from 6 p.m. till 9 p.m. Delivery was spontaneous.

Examination.

December 1921. She last menstruated during the 3rd week in May, 1921, therefore, the probable date of the confinement is the fourth week in February, 1922. The foetal heart sounds are best heard below and to the left of the umbilicus. I have no note of this patient's nervous state at the time, but she told me after the confinement that she had been worried and nervous for eight months before the child was born, owing to domestic troubles. (Her husband had deserted her so that there was ample reason for her nervous state.) The urine was normal.

Labour.

Labour started at mid-night of 1st-2nd March, 1922. Severe and prolonged pains occurring at very long intervals were experienced till 5 a.m. on 2nd March. Weak pains then came on and lasted until 5 p.m. when whiskey $1\frac{1}{2}$ ozs with an equal quantity of boiling water was given, the os at this time being just two finger. In about twenty minutes good pains came on and the baby was born spontaneously at 10.45 p.m.

A.

Mrs. S. Aet 40 Housewife. 1 Gravida.

Menstrual History.

Menstruation commenced at 14 years of age and the patient was ill once. The next period occurred a year later and after that

the flow came on at irregular periods of 6 weeks and two months and lasted for two or three days. At 21 years of age the patient became ill regularly at the 28th day., and the flow lasted for three or four days. Pain in the back and thighs was severe on the first day of the flow. The loss was small (one diaper per day) until marriage five years ago when three to four diapers per day were used.

History of previous Illnesses.

This patient was treated for anaemia for seven years by a doctor. (From fourteen years of age till twenty one years of age.)

I have attended this patient for the past two years for Auricular Fibrillation. She is neurotic to a degree and is continually fainting away without ever hurting herself and always in the presence of a sympathetic neighbour.

Examination.

12th September, 1921. She last menstruated near the middle of March, 1921, therefore the probable date of confinement is at the end of December, 1921. She complains of a choking sensation. She is sallow in appearance and is hypersensitive. The Fundus is just above the umbilicus. The foetal heart sounds are best heard below and to the left of the umbilicus. The presentation is a 1st. Vertex. The pelvis is roomy. The urine is free from albumen. The heart is irregular in force and rhythm. The pulse rate is 70 beats per minute at the wrist, while the number of heart beats is 100 per minute. There are no murmurs. This patient was treated on the lines which I shall indicate later in the course of this thesis.

Labour.

Labour started in the morning of 14th January, 1922, and when

the patient was seen at 3.30 p.m. the os was fully three finger and the pains were good. The os was fully dilated at 10.45 p.m. and the head well down. On account of the heart condition chloroform was given and forceps applied. Retention of urine was troublesome after the confinement.

This was a case in which I fully expected primary inertia to occur, and I am satisfied that the treatment given was effective in preventing its onset.

B.

Mrs. McC. Aet 27 years. Housewife. 1 Gravida.

Menstrual History.

Menstruation commenced at 14 years of age. Type ³28 regular. There is no pain or discomfort. The loss is small (one diaper per day).

History of previous Illnesses.

She states that she has always been delicate. She has suffered from gastric ulcer and pleurisy. During the time she had gastric ulcer she suffered from anaemia.

Examination.

17th October, 1921. She last menstruated about the middle of May, 1921, therefore, the probable date of confinement is February 1922. She complains of having had much sickness until three weeks ago, of palpitation, breathlessness, and nervousness. When she entered the surgery she could scarcely speak for shortness of breath, but quieted down later. She had tremors of fingers, eyelids and tongue. The reflexes were markedly increased. Tachycardia was present. (Pulse rate 110 beats per minute). The fundus was at the level of the umbilicus.

5th January, 1922. She is as nervous and as tremulous as she

was at the previous examination. The foetal heart sounds are best heard below and to the left of the umbilicus. The presentation is a 1st. Vertex.

Labour.

Labour started about 5 a.m. on 14th February, 1922, with good pains recurring at short intervals, and the labour progressed quickly. I was sent for by the nurse at 2 p.m. and the baby was born before my arrival at 2.30 p.m.

As this was a case in which Primary Inertia was to be expected, the patient was put on the line of treatment to be elaborated hereafter, with a satisfactory result. The treatment which the patient had had was stopped after the confinement. As a result the patient developed what was described as a fit, on the night of 18th February, 1922, and I was sent for. I found her lying in bed with her eyes closed, having laboured breathing, and presumably unable to speak. The temperature and pulse were normal, and the normal quantity of urine had been passed. She recovered without any treatment.

In such cases, the pains are strong (5). This last fact and the fact that the appearance of the doctor in the lying-in room often causes a cessation of pains, indicate that there is also a considerable degree of cerebral control. It is reasonable, therefore, to suppose that in hyperæsthesia, where pain is much more acutely felt than in normal individuals (9) cerebral control may be exercised to such an extent as seriously to interfere with full uterine activity. In this way therefore, irregular, painful contractions at intervals might be caused. Indeed one of the causes of protracted labour is absence of painful sensation (10). With total or partial lack of consciousness, and loss or diminished cerebral control, therefore, labour progresses more rapidly than usual, and conversely, when

DISCUSSION.

The outstanding feature in all these cases is, in my opinion, the poor nervous state of the patient. Each, as Osler would say, is in low water from a nervous point of view, and one is justified in regarding each as a case of neurasthenia, or, at any rate as being of a neurotic temperament. Eden (6) found that Primary Uterine Inertia occurred chiefly in nervous women.

According to Maurice Craig (7) the reflexes, superficial and deep, in neurasthenia are always increased, and this is generally considered as being due to weakening of the damping-out power of the afferent nerves, and consequent exaggerated response to stimuli. Now the contractions of the uterus and reflex. They can be induced by enemata; passage of foreign body into the uterus, suckling etc. and in animals, faradisation of the central end of the first sacral nerve produces the same result. As showing the position of the reflex centre, cases have been recorded where parturition proceeded normally after complete division of the cord in the thoracic region; therefore, the centre is a lumbar one. In such cases, the pains are strong (8). This last fact and the fact that the appearance of the doctor in the lying-in room often causes a cessation of pains, indicate that there is also a considerable degree of cerebral control. It is reasonable, therefore, to suppose that in neurasthenics, where pain is much more acutely felt than in normal individuals, (9) cerebral control may be exercised to such an extent as seriously to interfere with full uterine activity. In this way therefore, irregular colicky contractions at indefinite intervals might be caused. Indeed one of the causes of precipitate labour is absence of painful sensation(10). With total or partial lack of consciousness, and lost or diminished cerebral control, therefore, labour progresses more rapidly than usual, and conversely, when

when the influence of the higher centres is increased, the pains are diminished and labour prolonged.

Another way in which ineffective labour pains might be caused in these neurasthenics and which probably supplies the immediate reason or mechanism of the inhibition is as follows:

"Whenever active contractions (of the uterus) occur, the cervix at once begins to open and conversely if the cervix is artificially dilated, active contractions will be induced in the body of the uterus. This physiological relationship has been termed the polarity of the uterus." (11) It is reasonable to argue that if dilatation of the cervix induces contractions, closure or spasm of the cervix will inhibit them. This at any rate can be shown in the case of the bladder, for if, during micturition, one arrest the flow of the urine before the bladder be empty, after a few seconds, the contraction of the bladder muscle relaxes. Theoretically, at least, micturition is a reflex act, although it is initiated by a voluntary act. (12). Now in nervous persons, the sphincters are readily thrown into spasm. "Most of the cases of vaginismus are met with in recently married women of neurotic temperament." (13) Witness also how easily the sphincter ani can be thrown into spasm by a rectal examination of a nervous subject. In spasmodic dysmenorrhoea S. J. Cameron (14) says, "Not infrequently when the uterine sound is passed into the cavity (of the uterus) the patient experiences considerable pain as the instrument glides over the internal os. On withdrawing the sound, it is sometimes momentarily arrested at the internal os owing to spasmodic contraction of the fibres there." This shows first, that the os possesses ordinary sensibility and second, that it is definitely capable of being thrown into spasm. Now, when labour commences in a woman in whom the os is more than usually sensitive,

or what amounts, for practical purposes to the same thing, who is unusually sensitive to the pain of the dilating os, the attempt at dilatation by the bag of membranes may be sufficient to set up reflexly, spasm of the circular fibres at the os and so cause inhibition of contraction of the uterus. If it be held that the entire lower uterine segment is derived from the cervix and that the internal os and Bandl's ring are one, it may be argued that contraction of the uterine body and of the internal os can occur at the same time, since, in *Stricture Uteri*, pains are unusually intense. Barbour, however, holds that the lower uterine segment is derived in part from the cervix and partly from the lower portion of the body of the Uterus, so that Bandl's ring and the internal os are not the same. Williams states that most investigators are inclined to agree with this view. My own opinion is that the latter view is correct, for such a thing as the muscular fibres of a viscus and its sphincter muscle contracting together, is without physiological parallel. Very little would seem to be required for the inhibition of uterine contraction in some cases, for this often is caused reflexly by a full bladder or rectum. It appears to me, therefore, that the mechanism is two-fold in character. In the first place there is the reflex cerebral inhibition of uterine contraction consequent on increased sensitiveness to pain. In the second place, there is spasmodic contraction of the circular fibres of the os uteri, due to the markedly increased reflex excitability of the neurotic patient.

Whether the view that inhibition of contractions is brought about by stimulation of the visceroinhibitory nerve fibres through the central nervous system, or by spasm of the circular fibres around the os is not however, of great moment, for each factor is based on the general nervous hyperexcitability of the individual.

Williams (15) states that the condition is attributed by many, to faulty development or diseased conditions of the uterine musculature, and believes that these may be factors in some cases. Now it is accepted teaching that a uterus which carries a child to full term becomes mature, (Shannon) so I do not see that the first part of Williams' statement can apply. Eden(16) states definitely that the condition is not associated with defective development. If the musculature in Primary Inertia were diseased to any appreciable extent, sleep, during, for instance, an early period of the first stage of labour would not be sufficient to allow of the establishment of good pains which would last throughout the whole of labour, deliver the child spontaneously, and prevent post partum haemorrhage. As further showing that faults in the musculature of the uterine body probably do not cause the condition, I would point out that when spasm of the os is relieved, either by sleep or diminished sensibility from any cause, the musculature shows itself capable of at least ordinary power and sustained effort. In fact, in some cases, e.g. in elderly primiparae, the work done by the uterine musculature, assisted of course later by the abdominal muscles, appears to be greater than in ordinary labour cases, because it overcomes the increased resistance of a more rigid birth canal.

The next point of note in the history of these cases, is the occurrence of dysmenorrhoea. All except two patients have had dysmenorrhoea of some kind. Diagnosing the type of dysmenorrhoea from the histories, which in some of the cases may not be quite accurate, as some of the patients have had to hark back quite a number of years, and adopting Munro Kerr's Classification, (17) eight of the patients seem to have suffered from spasmodic and four from

the congestive type. Since, as Shannon says, the completion of a full time labour produces a state of maturity in the uterus, I do not see that dysmenorrhoea has any bearing on the subject, unless it be indirectly as a cause of neurasthenia. Maurice Craig(18) gives early dysmenorrhoea as one of the most fruitful sources of neurasthenia in young women. Munro Kerr (19) notes that some of the women who suffer from spasmodic dysmenorrhoea are typically neurotic, (while many are not), and this raises the question as to which really is primarily responsible for the other. Probably close inquiry into family history would decide this.

Another feature of these cases that is noteworthy is the early history of the patients. Four of them only were quite healthy in early womanhood. One has been debilitated for years (I can vouch for this in the last two years at any rate) while no fewer than nine give a history of having had medical treatment for anaemia at the time of puberty and shortly thereafter. Herman(20) says that weak pains have been said to occur in women who in early life have suffered from chlorosis, but that he knows of no evidence that has been brought forward in support of this assertion. I have not seen any mention of this in any other of the works I have consulted, but it seems to me that the occurrence of anaemia in nine out of fourteen cases cannot be ignored as due to mere coincidence. Virchow quoted by Osler(21) pointed out that the condition of chlorosis was sometimes associated with hypoplasia of the circulatory and generative organs, but it has already been shown that this does not affect the issue with regard to primary inertia. Osler(22) says that in chlorosis emotional and nervous disturbances may be prominent - so prominent that certain writers have regarded the disease as a neurosis. Here again, then, we have a starting off point for neurasthenia, which will in its turn affect adversely the process of labour.

Opinion seems to be fairly equally divided as to the type (primiparae or multiparae) of woman in which primary inertia occurs. Herman (23) says elderly multiparae and Eden (24) says primiparae. Eight of my cases were primiparae and six were multiparae. Of the primiparae four were twenty seven years of age or under and four were thirty six years of age or over, the average age being thirty two years. So far, therefore, as my cases are concerned there does not appear to be much difference of incidence in primiparae and multiparae. This is what one would expect if the condition is not due to organic rigidity but to spasm. It is true that in primiparae generally and elderly primiparae especially, labour is slower than in the general run of multiparae, but the condition in these cases is not as a rule due to faulty vis-a-tergo, but to the increased mechanical resistance of an os that has not previously been dilated, and the more rigid the os the greater the resistance. In these cases, provided things are normal otherwise, the type of inertia that might set in would be secondary and due to uterine exhaustion.

Mechanical interference with uterine contractions by multiple fibromyomata is given by Williams (25) as a frequent cause of inertia. In none of my cases was there any evidence of such a condition. I disagree that multiple fibromyomata per se can cause Primary Inertia Uteri, because as has been shown before, the musculature is not at fault. Cameron (26) and Munro Kerr (27) agree that haemorrhage is the characteristic symptom of fibromyomatous tumours and, according to the severity of the haemorrhage will be the resulting degree of anaemia with its neurasthenic phenomena.

Old adhesions about the uterus and fresh inflammatory areas in the same location are also given as causes (28). These could be causes, for here the essential mechanism that operates in the neurasthenic would come into play. In such cases there would be

greater sensitiveness to pain and consequent increased reflex irritability.

Over-distension of the uterus (twins, hydramnios) is mentioned as a cause (29). This is capable of the same explanation provided that the overdistension has not been sufficient to cause a paresis of the uterine body musculature. This will be shown from the following analogy which is common experience. I refer to the well known case of the man with the stricture, who, during his Saturday nights' carousal, omits to answer the call to micturition, lets his bladder become over-distended and develops acute retention of urine. The cause of the retention is spasm of the compressor urethrae or congestion of the mucous membrane at the stricture (30). In many of these cases it is possible to pass a small catheter, therefore, the urethra is patent at the stricture and the cause of the retention is spasm of the compressor urethrae. Where the passage of an instrument fails, the condition can almost invariably be relieved by anti-spasmodic treatment (hot bath and morphia suppository), therefore, the cause is again spasm of the compressor urethrae. The few cases that call for paracentesis may be due to swollen mucous membrane at the site of the stricture. On this analogy over distension of the uterus might cause spasm of the circular fibres of the cervix uteri and in that way lead to the condition of primary inertia.

Malpositions given by Eden (31) as a cause of Primary Inertia, would lend themselves to the explanation already advanced, except in the case of a brow presentation, which I do not think could cause the condition. In face, breech, and transverse presentations, the presenting part, not being so well adapted to the lower uterine segment as in vertex cases, allows the force of a larger head of water to be exerted on the os and, the attempted dilatation being

too forcible, the os is thrown into spasm. Here again, we have an analogy. A two finger examination of the vagina may throw the muscle of that organ into spasm, yet in the same case where only one finger is introduced, it can be felt that there is ample room for another finger.

Another point I considered when searching for an explanation of Primary Inertia Uteri, was whether the factor deciding the onset of labour might be wanting in intensity, or be so much in evidence as to disturb the balance normal at that time. In the present state of knowledge, the only way to arrive at any idea of this is by calculating, as far as possible, the duration of the pregnancies from such dates as are available. Allowing a margin of error of ten days either way, in my reckoning, I find that none of the cases was under and only three were beyond the calculated time. One (Case 1) was eighteen days over the calculated time, making her pregnancy one of 299 days duration; the second (Case 2) was twenty nine days beyond the time reckoned, making her pregnancy of 308 days duration; while the third, (Case 8) was fourteen days overdue according to dates, making her pregnancy one of 292 days duration. In the first case the baby was dead at birth. In the second case, a nine pound baby was born, breathed after an hour's artificial respiration, and did well. In the third case the baby weighed 10lbs, and was alive and well. It is quite possible, therefore, that the pregnancies may have been protracted somewhat, even if not so long as calculated. (Winckel (32) says that about one seventh of babies weighing 8½lbs or over have been carried for 302 days or longer after conception). I do not think that any significance can be attached to the occurrence of the condition in the above cases.

What has been said so far appears to apply only to the first stage of labour, but in the second stage, though the os is fully

dilated it is not paralysed, as witness the very short period of time that elapses after delivery before the os begins to close down again. Therefore, I hold that, though the os is dilated, the circular fibres round the os are still able to register their protest and inhibit contraction.

That a loaded rectum or full bladder can cause reflex inhibition of uterine contractions is well-known and every writer refers to these causes. The cause is probably stimulation of the visceroinhibitory fibres resulting from the proximity of the reflex centres for defaecation, micturition and parturition in the lumbo-sacral region of the cord.

Correct any abnormality so far as is possible. This would ordinarily be done.

Calcium has been used to prevent the onset of Primary Inertia Uteri but has been generally discarded. Pituitrin orally in small doses over a period of about a month before the confinement, is being used by Blair Bell and others. That I considered unsound and unsafe; unsound because the musculature does not require stimulation, and unsafe because "with continuous administration of pituitrin there is risk of arterial degeneration" (33) In any case it was tried ten years ago without general satisfaction.

The treatment I used in cases A. and B. was Iodine Bromide grs. 10 and Aromatic Spirit of ammonia 10 thrice daily for a fortnight before the confinement was due. The Bromide is given for its effect in diminishing orbital excitability and the reflex excitability of the spinal cord. The Aromatic Spirit of ammonia is used for its carminative and general stimulant effect. The amount of Bromide given would be sufficient in both cases. But

should it be used in TREATMENT.

A.

Preventive Treatment.

Preventive Treatment would be indicated in the case of a patient presenting at examination, the following features.

- (a) An early history of dysmenorrhoea.
- (b) An early history of chlorosis.
- (c) Complaints of great breathlessness, palpitation or nervousness, of being easily fatigued and of sleeping badly.
- (d) Examination showing flushed or moist skin, brisk or definitely increased reflexes, tachycardia, hydramnios or other cause of over distension, breech, transverse, or face presentation.

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The treatment I used in cases A. and B. was Ammonium Bromide grs. 10 and Aromatic Spirit of Ammonia m 10 thrice daily for a fortnight before the confinement was due. The bromide is given for its effect in diminishing cortical excitability and the reflex excitability of the spinal cord. The Aromatic Spirit of Ammonia is used for its carminative and general stimulant effect. The amount of Bromide given would be sufficient in most cases, but,

should it produce no definite sedative effect on the patient, it could be easily increased. I would go so far as to recommend that this treatment be given to all nervous women before their confinement, for not only do I consider it to be preventive of Primary Inertia Uteri, but its effect in enabling a nervous woman to look forward to her confinement with equanimity and hopeful expectancy makes it worthy of the highest traditions of good medicine.

B.

When the condition is established.

For years sedative treatment by the administration of opium, its derivatives, or allies has been used with varying success by the vast majority of medical practitioners. Gifford(34), "Cases in Midwifery," London 1734 p.333 says with regard to treatment of these cases "I therefore advised patience and ordered her a carminative clyster and an opiate draught, with orders to repeat the latter six hours after, in case the first did not answer; this was the method Dr. Chamberlain (the most noted practitioner in midwifery in his time in England) always pursued where the pains were irregular or weak; it being his opinion that forcing medicines did more harm than good, which I have always found verified in my own practice." When the condition of Primary Inertia exists, I think that Chamberlain's opinion "That forcing medicines do more harm than good" still holds, and that substances like pituitrin are unjustifiable even in the second stage; for if, as has been shown the sensitiveness of the os be diminished sufficiently, the labour will go on naturally of itself, and if it be not diminished, one is whipping a willing horse and letting the reins be held too tightly at the same time.

It is hard to know what to believe and what to discredit with

regard to what has been written about pituitary extract. Dueskin quoted by Bryden Glendinning(35) draws attention to its value in nearly every conceivable obstetric condition. He states it is a 'sensitizer' of the uterine muscle and not the direct cause of uterine contractions. Scott(36) goes the length of saying that it will induce premature labour, while Aarons(37) considers it should be looked on as an emergency remedy and restricted to cases where, after the third stage of labour, there is post partum haemorrhage or inefficient uterine contraction. Charteris (38) says "The general verdict is that pituitrin is the sovereign remedy for secondary weakness of the uterine contractions and that its action is most marked the later it is given and the more the lower segment of the uterus is dilated." The extract of the pituitary gland has now had 10 years of trial since it was discovered by Hopbauer in 1911 and has not given satisfaction in cases of Primary Inertia. This has been confirmed by Williams.(39). My own experience in Primary Inertia is that pituitrin is not of value until after the maximum dilatation of the cervix has been attained i.e. until after the head has passed through the os and then it is not necessary in the majority of cases.

With regard to Morphia I agree with Eden (40) that if it is to be effective it must be given in doses sufficiently large to stop labour. It has the further disadvantage that in such doses it may endanger the life of the child (vide case 2).

Working on my own theory as to the causation of the condition, I have in two cases used hot alcohol with good results. Hot alcohol is one of the best, if not quite the best anti-spasmodic we have(41) and though there is danger of the habit being formed when it is used for spasmodic dysmenorrhoea (42) it cannot be said that there is much risk in using it at a confinement. In one case I

CONCLUSIONS.

used alcohol loz. in the same quantity of boiling water and gave $\frac{1}{4}$ gr of Morphia hypodermically with it. In two hours good strong pains had been established, and lasted until the end of labour (Case 11). In the case of Mrs. R. (Case 12) I gave 1½ozs of whiskey with an equal quantity of boiling water and in twenty minutes good pains were established. In the former case I think the morphia hindered the progress of the labour by inducing sleep. In the latter case I think the happy result was due to the alcohol because in spasmodic dysmenorrhoea the same drug acts in from fifteen to twenty minutes. I do not think the quantity used is sufficient to produce any untoward result.

Whether the use of the new drug, Benzyl Benzoate, will prove to be of value in this condition, I have had no opportunity of determining. It appears to me that it possesses in its action all the requisites necessary for this purpose, for it produces no narcotic effect and it has a marked antispasmodic action on unstriated muscle fibre. Its use in spasmodic dysmenorrhoea has produced very definite beneficial results and it seems that it is well worthy of trial in the condition of Primary Uterine Inertia, at any rate for the purpose of relaxing spasm of the circular muscle fibres of the cervix uteri.

labour normally, and because of the danger to the child when given in large doses. Alcohol has been found to give the best results.

In this condition there is no rational indication for the exhibition of nitrotrin or any other drug which stimulates the muscle of the uterus.

CONCLUSIONS.

1. Primary Uterine Inertia is a condition which arises in neurotic women.
2. The mechanism of its production would appear to be two-fold in character.
 - A. The greater reflex irritability in neurotic patients leads to spasmodic contraction of the circular fibres of the cervix uteri, which, by reason of the polarity of the uterus, results in inhibition of uterine contractions.
 - B. The greater sensitiveness to pain in these patients leads reflexly to a cerebral inhibition of the contractions of the uterus. This factor does not appear to be of the same importance as the factor described under A, and is to be regarded as complementary.
3. The occurrence of Primary Uterine Inertia can be forecasted.
4. By adopting sedative treatment with Bromides before labour, the onset of Primary Uterine Inertia can be prevented in neurasthenic individuals, who are especially liable to suffer from it.
5. When Primary Uterine Inertia has developed, the rational method of treatment is to exhibit antispasmodic drugs. Of these morphia is unsuitable because of the effect which it has in delaying labour normally, and because of the danger to the child when given in large doses. Alcohol has been found to give the best results.
6. In this condition there is no rational indication for the exhibition of pituitrin or any other drug which stimulates the muscle of the uterus.

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