THE EXCESSIVE VOMITING OF PREGNANCY:-

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INTRODUCTION

Among the complications of pregnancy met with in practice, one sooner or later finds himself called upon to treat a patient suffering from the Excessive Vomiting of Pregnancy. In text books this complication is referred to under several names, such as Hyperemesis Gravidarum, Uncontrollable Vomiting of Pregnancy, Pernicious Vomiting of Pregnancy or The Excessive Vomiting of Pregnancy.

The severity of the vomiting varies. In mild cases it may only be occasional in addition to the usual "morning sickness"; in more severe cases the vomiting is almost daily; while in others the vomiting and retching are daily and continuous. Emaciation follows in many cases. Unless the condition be vigorously attacked, the patient gradually becomes worse, becomes a weariness to herself and her friends, and a great trial to her medical attendant.

During my term as Senior House Surgeon at the Glasgow Maternity & Women's Hospital, seventeen cases of Excessive Vomiting of Pregnancy were sent in by their family doctors for treatment. All the cases before admission had been treated by such drugs as are usually given for vomiting and in two cases the patients had had all nutriment and fluids by the Rectum, but without avail.

One patient, who was very ill when admitted, died; one left at her own request after vomiting had ceased though she was suffering from minute ulcerations of the oral mucous membrane. The other 15 were discharged cured, and

several of them have gone on to full term without a return of the vomiting. Those not yet delivered, I understand, have had no return of vomiting since leaving Hospital. Excluding the case which died 3 days after admission the average duration in Hospital was 17 days.

Cases 7 and 15 were in for 32 and 34 days respectively. Case 7 was at first treated in the orthodox fashion with the drugs commonly given for vomiting but vomiting still continued. She wasthen put on the treatment described later and at once improved. She was dismissed cured and has had no return of vomiting since. She is now nearing full time. Case 15 had chronic kidney disease and marked optic neuritis, the latter condition strongly favouring a suspicion of brain tumour. The vomiting ceased under treatment but as the kidney and eye conditions did not improve, labour was induced. The kidney condition seemed greatly improved after the cessation of the pregnancy, but the optic neuritis was only slightly lessened. She was later admitted to the Western Infirmary, Glasgow, where she died suddenly. The lesions found on post mortem examination were granular kidneys and a glio-sarcoma in the cerebellum.

INCIDENCE

Primiparae are said to be more liable than multiparae to suffer from this distressing complaint and excessive vomiting may or may not be present in subsequent pregnancies.

Of the 17 cases I had to deal with, one only was a primipara, one II-para, two III-para, four IV-para, one V-para, two VI-para, five VII-para and one VIII para.

Three were under 30 years of age, the others were over 30.
In 4 of the cases, there had been severe vomiting in previous pregnancies, one with her 1st, 2nd, & 3rd, and two during the 3rd pregnancy (Cases1,6 and 11)
In Case 14, the patient had severe vomiting and external accidental Haemorrhage in all her pregnancies; the vomiting began about the 5th month and continued till bleeding commenced, and this was followed by miscarriage at the 7th month.
Leishman states "Excessive Vomiting is most violent and most frequently calls for treatment in the case of primiparae."
Burns cites a case where labour was induced twice for Excessive Vomiting. This patient died during her third pregnancy and at the post-mortem examination a gallstone was found impacted in the duct.
Garraway records having induced labour twice on the one patient for Excessive Vomiting.
Martin states that women with large varicose veins are rarely troubled with severe vomiting when pregnant, but this I cannot corroborate.

PERIOD OF PREGNANCY.

Authorities seem to agree that excessive vomiting begins much more frequently before "quickening" than after it.
McClintock gives particulars of 43 cases of Excessive Vomiting observed by Gueniot, in 39 of which the vomiting began before the end of the fourth month and 4 after the fourth month.

Of the 17 cases under review, the excessive vomiting began during the 2nd month in 13 cases, one at the 4th month, two at the 6th month and one during the 9th month.

Giles found that single women were rather more liable than married women to sickness in the later months which he considered was due to emotional causes.

With one exception (Case 8) all were married women in the cases I had to deal with.

A E T I O L O G Y

By most it is agreed that the cause of the Excessive Vomiting of Pregnancy arises within the uterus and acts through the nervous system chiefly the sympathetic; how it acts is still to be satisfactorily explained. The various explanations put forward may be classified under three main groups:-

(1) Toxaemic

(2) Reflex

(3) Neurotic

The Toxaemic seems to be the most rational explanation of this complication of pregnancy so that it may be considered first. The questions then arise in one's mind - Where are these toxins produced and by what channels do they act?

Dirmoser has given what seems to me the most feasible explanation of the origin and progress of the toxaemic condition. He considers that Hyperemesis Gravidarum is a reflex irritation of the vagi- sympathetic (nervi vagi sympatici) nervous system commencing in the Internal Sexual Organs and through the secretory and motor fibres of the sympathetic, leading to the production of changes in the biochemical processes more particularly of the digestive tract followed by atony of the gut and increased production and absorption of toxins in the gut.

In the urines of patients suffering from Excessive Vomiting he found an indreased amount of uric acid, aromatic sulphates,

indoxyl, phenols etc., also in certain cases urobilin, acetone and Diacetic acid etc. By administering the intestinal contents of these patients to rabbits and mice the animals soon died while the faecal contents of normal persons similarly administered were negative.

The Urines in the cases I had to deal with gave the reaction for Albumen in eleven, granular casts were observed in four, while acetone was present in six; the urea output was diminished. The specific gravity ranged from 1020 to 1026 (v. summary of Gastric contents and urines).

Bad teeth (some very bad) and severe constipation were associated in every case. In the literature I can find no mention of this combination though Cazeaux lays stress on the severe constipation associated with Excessive Vomiting. Williams of Baltimore emphasis the value of the so-called ammonia co-efficient of the urine which is high in the Toxaemic type of vomiting, but if there are no manifest changes in the Urine he holds that the cause of the vomiting is reflex or neurotic.

Behm refers the autointoxication to Syncytiolysin, which he thinks is proved by the cessation of vomiting with the cessation of pregnancy. He maintains that the toxins are produced in the periphery of the ovum and not by the metabolism of the foetus, thus explaining the excessive vomiting of the early months.

To support his theory Behm refers to the excellent results he obtained clinically by the administration of Rectal

Salines. I do not see how this proves his theory. Undoubtedly the salines when absorbed would dilute the toxins in the blood ^from whatever source^ but during the prolonged administration of salines by the rectum the great bowel periodically requires to be evacuated with a soap and water enema so that the benefit which is obtained cannot entirely be attributed to the salines but some credit must be given to the cleansing effect of the enema. J.W.M.

Jardine is firmly convinced that the disease is of toxic origin, the toxins acting through the ~~vornous~~ nervous system. He believes the poison is elaborated within the uterus. J.W.M.

Smellie wrote "Perhaps this complaint is chiefly occasioned by a fullness of the vessels of the uterus owing to obstructed catamenia, the whole quantity of which cannot as yet be employed in the nutrition of the embryo; over and above this cause it has been supposed that the uterus being stretched by the increase of the ovum, a tension of that part ensues affecting the nerves of that viscus especially those that arise from the sympathetici maximi and communicate with the plexus at the mouth of the stomach." Even in those days it would appear that the toxaemic and reflex origins were not overlooked.

Playfair about 150 years later wrote in a similar strain to Smellie as to the cause of the excessive vomiting.

In the Hippocratic writings (Fasbender) with regard to the vomiting of pregnancy it is stated "If the head of a

pregnant woman be filled with phlegm (φλέγμα) and if this flow down into the body and she of an acid diathesis (von scharfer Beschaffenheit) and further if anorexia and weakness supervene, then there is danger of abortion and even of loss of life unless she is treated with great skill. If a pregnant woman be of the phlegmatic (φλεγματώδης) habit and if headache and occasionally fever supervene then the phlegm accumulates in her head and when the head has become filled up, the phelgm spreads through the whole body and makes its way into the veins. Upon this there ensues a feeling of heaviness and coldness, the tongue becomes white, the urine as a rule becomes quite white; there is restlessness and vomiting of slime and it is with difficulty that the patient can move." From the above it would seem that they recognised a condition analogous to what is now termed Toxaemic as a cause.

With regard to the vomiting of slime quoted, it is a fact that while washing the stomach in the cases I had to deal with I was struck with the large amount of mucus which came away.

Matthews Duncan in 1879 had a fatal case of Excessive Vomiting in which, post mortem, was found Acute Yellow Atrophy of the Liver which condition he suggested was a factor in the production of the vomiting.

Champetier de Ribes & Bouffe de Saint Blaise had a case in which, post mortem, in the Liver were haemorrhages

and areas of cloudiness somewhat similar to those found in Eclampsia and they considered that the Excessive Vomiting was the result of intoxication due to Hepatic Insufficiency. It seems to me these changes in the Liver were brought about by Toxins in the blood and were secondary.

Case 17 of the present series died. She was very ill when admitted. She aborted two days after admission and about 24 hours before her death, she being at that time about 6 months advanced in pregnancy.. Her pulse was never higher than 108 per minute while her temperature was usually 97°F but rose once to 98°F. The post mortem examination showed the Liver was enlarged and "beaver-tailed" with fatty infiltration. The spleen was slightly enlarged and the kidneys were congested. The stomach showed slight congestion of the mucous membrane with a small patch of superficial ulceration near the Pylorus. Nothing abnormal was found in the brain.

Frennd considers the source of the toxins is in the periphery of the ovum or corpus luteum or placenta, but as the toxins in the great majority of cases do not produce Excessive Vomiting he advises looking for predisposing causes such as Anaemia, Chlorosis, Nervous Disease, Organic disease of Specific Organs, Abnormalities in the stomach and diseases of the genital organs. He mentions Tetany as a parallel to Excessive Vomiting, the cause of Tetany being usually regarded as arising in the Stomach and Gut. In the cases of Tetany I have seen

in women, the stomach was dilated, but in the cases under review there was no evidence in any instance of the stomach or other organ being at fault.

Giles considers there are three factors in the Aetiology of the Excessive Vomiting of Pregnancy viz:-

(1) Increased nervous irritability

(2) A local peripheral source of irritation

(3) A ready efferent channel for nervous energy (the Vagi)

A point worthy of notice in connection with the cases I had to deal with is the fact that 15 of these were admitted to Hospital during the months of Novr. & Decr. 1909 and Jan., and Feb., 1910.

The inclemency of the weather in Glasgow and neighbourhood during the first three months mentioned was extremely severe. The continuance of fog and excessive cold was such that the death rate for a period of several weeks was over 30 per 1000. We may therefore conclude that the weather was altogether unsuitable for out-of-door exercise hence without exercise the metabolism of these patients was bound to suffer.

Another point worth recording is that from 1st March to 31st May 1910 two cases only have been sent in to Hospital suffering from the Excessive Vomiting of Pregnancy.

REFLEX.

Smellie wrote:- "Over and above this cause (fullness of uterine vessels) it has been supposed that the uterus being stretched by the increase of the ovum a tension of that part ensues affecting the nerves of that viscus especially those that arise from the sympathetici maximi and communicate with the plexus at the mouth of the stomach."

Mauriceau as stated by Williams believed there were distinct nervous connections between the uterus and the stomach by which abnormal stimuli originating in the diseased uterus were readily transmitted to the stomach.

With regard to the uterine distension and stretching of uterin fibres, Dubois and others have recorded cases where vomiting ceased when the membranes were punctured and the liquor amnii allowed to escape but McClintock commenting on these cases, affirms that in some cases where labour was induced, vomiting did not cease until the ovum was expelled. He does not mention, however, whether the membranes were ruptured during induction.

Displacement of Womb.

Grailly Hewitt and others advanced the theory that displacement of the uterus was the commonest cause of the sickness of pregnancy and in most text books this is usually given a prominent place.

Giles states that out of 300 pregnancies, 200 had vomiting and he found it difficult to believe that 2 out of 3 women had a displaced Uterus.

Playfair asserts that displacements are the exception in cases of Excessive Vomiting.

Williams writes that displacement may occasionally be the cause and considers this is proved by the fact that vomiting sometimes ceases immediately after replacement. This may be so but it might also be due to the fact that the patient felt that at last something was being done to alleviate her distress. I have known patients previously unable to sleep, drop into a sound slumber after the subcutaneous injection of 10 M of Sterile Water; they thought Morphia was being administered.

McClintock met with several cases of retroversion of the gravid uterus where vomiting was not a prominent feature and in some vomiting was entirely absent.

Continental writers record cases of women dying from the Excessive Vomiting of Pregnancy and at the post mortem examination no displacement of the Uterus was found.

In one of the cases of this series, the Uterus was retroverted. The Uterus was left alone and under the treatment to be described later, the vomiting entirely ceased. (Case 6)

Towards the end of last year, Prof. Cameron performed Caesarean section on a woman who had had a ventrofixation done some years previously. The Uterus was so held down that at the operation the uterine incision was wholly on the posterior wall of the organ as the anterior wall had taken no part in the uterine enlargement. I have seen another case of Caesarean section where a similar

condition existed after ventrofixation. In both cases there had been no excessive vomiting and in both there was considerable uterine displacement so much so that the children could not be born alive through the natural passages.

Hydramnios and Twins are said to be causes of Excessive Vomiting. In the Glasgow Maternity and Women's Hospital during the last seven months there have been twenty cases of Hydramnios and Twins and in one case of Hydramnios and in one case of Twins there was Excessive Vomiting (Cases 3 and 14)

Copeman, Cazeaux and others considered the cause often lay at the cervix so that rigidity, deep tears, erosions etc., should be attended to at once, the first names by dilatation of the Internal Os.

Inflammation of the Uterine Wall or Deciduae or both is looked upon by some as a cause.

Case 14 had External Accidental Haemorrhage and Excessive Vomiting with all her pregnancies. Under treatment in Hospital, the vomiting had practically ceased 10 days after admission. At the expiry of this time she aborted twins (about 5 months) and thereafter the vomiting ceased entirely. Her previous pregnancies (5) all terminated about the 7th month.

Bennet maintains that where vomiting is excessive and obstinate there is almost always Inflammation or disease of Cervix or a diseased Uterus and recommends the local

condition to be energetically treated.

Freund records 3 cases of Excessive Vomiting where the turbinal bones, especially the inferiors, were enlarged and congested; by attention to the nasal condition he states he cured the vomiting. I obtained this information too late to make observations on the nasal passages of the cases I had to deal with.

Giving careful consideration to the above alleged causes I think one is justified in regarding each as a coincidence but not a cause.

Freund

N E U R O T I C.

Kaltenbach stated before the Berlin Obstetrical Society in 1890 that he considered the excessive vomiting of pregnancy was due to a neurosis which might not be manifest in the non-pregnant state but was brought to light by the pregnancy. Others have satisfied themselves by treatment that neurosis is a cause in many cases. In Case 1, the patient had chorea at 14 years of age. During the first three months of her 1st pregnancy she had severe vomiting, then during the fourth month the vomiting ceased and Chorea set in and continued for two months. With her second pregnancy she had severe vomiting during the first 3 months which then ceased and was not followed by Chorea. With her third pregnancy she had severe vomiting as in the 1st and 2nd pregnancies and during the sixth month Chorea began and was present for six weeks. In this instance there is no doubt the patient possessed a highly irritable nervous system. Under the treatment described later she rapidly improved and was dismissed well in 17 days.

Williams considers a vigorous lecture on the dangers of the induction of labour as curing several cases; nevertheless I have no doubt in these cases he also attended carefully to the channels of elimination and to the diet.

V. Winckel holds that Hysteria is almost always the cause. Many women are hysterical while the Excessive

Vomiting of Pregnancy is not common.

Neurosis is an irritable condition of the nervous system and the commonest cause of such a condition no doubt is the presence of toxins in the blood.

S Y M P T O M S

The symptoms vary in intensity. In some cases the vomiting is once or twice only per diem in addition to the usual "morning sickness" while in others it is continuous. It may begin immediately after partaking of solid or liquid foods and retching often obtains between attacks of vomiting. In one case of this present series in addition to vomiting and retching the patient was troubled with severe salivation (Case 11); other cases are troubled with vomiting quite independent of the taking of food, solid or liquid.

Unless of a very sanguine temperament the patient soon becomes alarmed and nervous about herself. She loses flesh, she is easily irritated, the eyes become sunken and emaciation follows; there may be an acetone odour from the breath but this is not peculiar to The Excessive Vomiting of Pregnancy as it occurs in many cases of starvation from whatever cause arising.

Constipation is the rule and the urinary output is diminished owing to the fact that fluids cannot be retained.

The Temperature is usually about normal in the milder cases but may be raised or subnormal in very severe cases. The Pulse even in mild cases is quickened and in the severer cases may be considerably over 100 per minute. Pain may or may not be present over the Epigastrium. If it is complained of, the presence of Gastric Ulcer is to

be borne in mind.

Leishman states "some vomit painlessly as in the vomiting symptomatic of brain disease. Some suffer pain and exhaustion from the excessive vomiting to an extent which leads us to marvel how it is possible for the Uterus to remain quiescent and to retain its contemts."

Dubois' classic description of the symptoms found in very severe cases is briefly as follows:-

"Excessive vomiting, all food and sometimes even the smallest quantity of pure water being rejected; emaciation and extreme debility so that syncope takes place under slight exertion and obliges the patient to keep her bed; a febrile condition of the system and an acid sour smell off the breath. Such a combination of symptoms would plainly indicate the patient to be in great peril and if medication and local treatment have been judiciously tried without avail, art holds out only one possible mode of escape for the woman and that is by terminating the pregnancy which has brought her into this all but moribund condition. If relief be not speedily given she will pass into that hopeless condition characterised by increased prostration, constant headache, impairment of vision, tendency to somnolence, and derangement of the intellectual faculties. To operate in these circumstances would only bring obloquy on our art and perhaps hasten the patient's end." (Smellie's System of Midwifery 1876)

T R E A T M E N T.

About 1750 Smellie wrote:- "Whatever be the cause (of excessive vomiting) the complaint is best relieved by blooding, more or less, according to the plethora and strength of the patient; and if she is costive, emollient glysters and opening medicines that will evacuate the hardened contents of the colon and rectum so that the viscera will be rendered light and easy and the stretching fulness of the vessels taken off. A light nutritive and spare diet with moderate exercise and a free open air will conduce to the removal of this complaint"-
I regret Madame La Chapelle in her "Pratique des Accouchemens" 1821 gives no hint as to her treatment of Excessive Vomiting.
I now give the line of treatment carried out on the patients I had to deal with and all, with the exception of Case 17, were dismissed cured.

Day of Admission:-

The patient's history was carefully gone into. A physical examination of all the systems was made, particular attention being paid to the condition of the Alimentary Canal, vagina, Uterus and appendages. In view of the recent writings on Appendix Dyspepsia this was investigated but was negative in all cases.
The patient was strictly confined to bed and was assured under treatment she would entirely recover.
By means of the stomach tube, the stomach was wshed out thoroughly with warm water at a temperature of 100°F.

No food was given but sips of water were allowed. (hot or cold as patient preferred) An enema of soap and water was administered.

2nd Day

A test meal consisting of two slices of Dry Toast and 10oz. of tea without sugar or milk was given and withdrawn one hour after per stomach tube. One oz. of peptonized milk was then given hourly and patient was encouraged to drink soda water, weak tea and Pot. Imperialis.
A mouth wash of 1-80 Carbolic Acid solution was used immediately before and immediately after nourishment was taken and also at other times. In nearly all the cases this mouth wash was much required owing to the foul state of the mouth.

3rd day.

An enema of soap and water was given.
2 ozs. of peptonized milk were given every hour during the day and during the night when awake.
The following powder was given thrice daily:-

R Hydrarg. c Cret grs. 1
Sod. Bicarb grs 111

4th day.

3 1V Mag. Sulph. well sweetened with Lemon Syrup in hot water was given first thing in the morning. In one or two cases this was vomited; hot weak tea was then given and if no motion resulted an enema of soap and water was administered.

4th day.

Peptonized Milk 5 oz alternating with milk and soda 5 oz was given two hourly during the day, and twice during the night if patient was awake.

5th day.

Peptonized Milk & Milk & Soda as on the 4th day with a little milk pudding in addition.

If no movement of bowels, a soap and water enema was given.

6th day.

Similar to 5th with one cup of tea and a finger of toast in the afternoon. 3 lV Mag. Sulph. c Lemon in hot water in morning.

7th day.

Tea and Toast morning and evening. Peptonized Milk stopped - Milk 4oz with a little sodawater once in the forenoon and once in the afternoon. Milk pudding with milk for dinner. If no movement of Bowels, Enema of soap and water.

8th day.

Patient put on "Light Diet" i.e. Bread, butter with tea for breakfast and "tea", and for dinner Fish or Chicken, bread, milk puddings and milk.

9th day.

Diet as on 8th day. Patient allowed out of bed for one hour.

10th day.

Diet as on 9th day. Patient allowed out of bed for two hours.

Thereafter the treatment varied with the condition of each patient. On the 11th day full diet would be prescribed in some cases and they were allowed to walk about for a little. Others would remain on light diet for a day or two longer before full diet was prescribed.

Cases 8 and 9 expressed a strong desire on the 6th day for more food. Light diet was prescribed and there was no return of the retching and vomiting i.e. slight variations in the above treatment were allowed without harm to the patients.

In two cases, retching and vomiting was greatly diminished but did not entirely cease by the 3rd night. The stomach was then washed out as before and thereafter the retching and vomiting ceased entirely. Another patient complained of pain over the epigastrium. A mustard leaf to the part soon relieved her. At least one motion of the bowels was obtained each day. Mag. Sulph. in hot water with Lemon Syrup was the purgative I found to give the best results with these patients.

REMARKS

It will be noted I used no Sod. Bicarb. in the stomach-wash to soften mucus as I did not wish in any way to disturb the Gastric secretions until I had examined the result from the Test Meal. When washing out the Stomachs, I was struck with the large amount of mucus which was obtained from all the cases, and I should say this greatly benefited the patients and also allowed the treatment to

commence on a comparatively clean mucous membrane. The examination of the filtrate from the Test Meals showed the Free HCl and Total Acidity to be normal except in three cases where the free HCl and Total Acidity were under normal. In these cases 5M of Tc. Nuc. Vom. c Liq. Peptic. 30M tid. was prescribed for a few days. The Motor activity of the stomach was tested in five cases by the Salol method and was found normal in all, i.e., the reaction appeared within 1¾ hours and disappeared within 27 hours.

Microscopic examination of the Stomach contents proved negative and the reaction for Lactic Acid was never present.

Case 17 was too ill on admission to have her stomach washed out so that a soap and water enema was administered and Rectal Salines, 10oz., four hourly were prescribed. Two hours after each Saline a nutrient enema was given. The nutrient enema consisted of milk 4 ozs., one egg beat up, 30 grs Sod. Bicarb. and 2 ozs water. With this treatment the retching and vomiting diminished but did not cease until abortion occurred after which she was unable to retain fluids per rectum. She gradually sank. To diminish the restlessness each night she was given Pot. Brom. 40grs., Chlor. Hydr. 20grs per rectum.

I think I can lay claim to being the first to make a systematic examination of the Stomach contents and motor activity in a series of patients suffering from the

Excessive Vomiting of Pregnancy and also to make washing out of the stomach by the stomach tube a part of the treatment.

I have thus proved that these cases did not require the drugs usually given for vomiting, in fact my treatment (leaving out of account Mag. Sulph,) is conspicuous by the absence of drugs, two only being used, viz., Hydrarg. c Cret. as a bowel antiseptic and stimulant and Sod. Bicarb. to soften mucus in the stomach. In other words the Gastric Secretions and Motor activity are not at fault and consequently do not require treatment by drugs such as recommended in text books.

It has since occurred to me that "Buttermilk" would be an excellent drink for pregnant women to take daily during the whole course of the pregnancy. It is a good diuretic and in view of Metchnikoff's teaching, it would have a beneficial effect on the Alimentary Canal.

Annexed will be found Summaries of Treatment, Urine and Gastric Contents Examinations and a tabulated statement of the main facts of the cases instead of the usual brief report on each.

In conclusion, I am of opinion that as in Eclampsia so in the Excessive Vomiting of Pregnancy, prophylactic treatment is of prime importance. I recommend the following as the most important points in such a line of treatment:-

(1) Gain the confidence of the patient.

(2) Prevention of oral sepsis.

(3) Good plain food well cooked and daintily served.

(4) Bowels should be moved at least once per diem.

(5) The Kidneys & Skin to be kept active

(6) Gentle exercise in the open air daily if weather at all suitable and a good supply of fresh air night and day.

SUMMARY OF TREATMENT

(1) Absolute rest in bed

(2) Confidence of patient gained and assurance that her complaint is only temporary.

(3) Condition of Alimentary tract improved and other channels of elimination stimulated.

(4) Careful dieting.

(5) If a nurse be in attendance, in addition to her usual duties, she should be capable of exerting a strong influence over the patient's mind.

SUMMARY OF EXAMINATIONS OF URINES

& GASTRIC CONTENTS;

ALSO PULSE AND TEMPERATURE ON ADMISSION.

Case 1.

URINE, acid, Sp. Gr. 1022, Distinct haze of Albumen, granular casts, urea output 1st 24 hours 320 grs. Acetone reaction.

PULSE 126 Temperature 99°F

GASTRIC CONTENTS:- Attempts on 3 successive mornings failed to get a return from Test Meal. After each test meal stomach was washed out, but there was no evidence of food in wash.

Case 2.

URINE:- Acetone Smell, acid. Sp. Gr. 1022, no albumen but phosphates on heating:- no casts , urea output 1st 24 hours 380 grs.- Acetone reaction.

PULSE:- 100 Temperature 98.4°F.

GASTRIC CONTENTS:- Free HCl. .072 Total Acidity 50, No. Lactic Acid.

Case 3.

URINE:- Dark amber colour, acid. Sp. Gr. 1024, no albumen mucous deposit, urea output 396 grs.- no acetone reaction.

PULSE:- 96 Temperature 98.4°F.

GASTRIC CONTENTS:- Free HCl .13 Total Acidity 65 No Lactic Acid.

Case 4.

URINE:- Acid. Sp. Gr. 1020, faint haze of Albumen, no casts, urea output 400 grs.

PULSE:- 86 Temperature 98.2

GASTRIC CONTENTS:- Free HCl .054, Total Acidity 45
No Lactic Acid.

S U M M A R Y.

Case 5.

URINE:- Amber colour - mucous deposit - acid, Sp. Gr. 1026 - no albumen - urea output 368 grs.

PULSE:- 80 Temperature 97.2° F.

GASTRIC CONTENTS:- Free HCl. 14 Total Acidity 65
No Lactic Acid

Motor Activity - Salicyluric Acid reaction appeared in Urine 1 15/60 hours after administration of 15grs Salol by mouth ; reaction was absent 24 hours after administration.

Case 6.

URINE:- Acid. 1024, copious deposit of Urates, no albumen, urea output 300 grs.

PULSE:- 80 Temperature 98.6

GASTRIC CONTENTS:- This patient vomited two test meals. The 3rd retained on the 3rd morning after admission showed:-
Free HCl .072 Total Acidity 35
No Lactic Acid.

Motor Activity - Salicyluric reaction appeared in 1 45/60 hours and disappeared 25 hours after Salol (15 grs) given by mouth.

Case 7.

URINE:- Acid. 1020, mucous deposit, distinct haze of albumen No casts but squamous epithelial cells present,

urea output 324 grs.

PULSE:- 104 Temperature 97.6

GASTRIC CONTENTS:- First test meal was retained but no return could be got. Next morning another test meal given with the following result:- Free HCl. 13 Total Acidity 70 No Lactic Acid.

Case 8.

URINE:- Light Amber, mucous deposit, acid sp. Gr. 1022 no albumen, urea output 368 grs.

PULSE:- 106 Temperature 97.6° F.

GASTRIC CONTENTS:- Free HCl. 08, Total Acidity 50. No Lactic Acid.

Case 9.

URINE:- Amber, acid. Sp. Gr. 1024, faint haze of albumen no casts, urea output 338 grs acetone reaction.

PULSE:- 96 Temperature 98.6°F

GASTRIC CONTENTS:- Free HCl . 18 Total Acidity 80 No Lactic Acid.

Motor Activity Salicyluric acid reaction appeared in $1\frac{30}{}$ hours and disappeared 26 hours after Salol (15 grs) administered by mouth.

Case 10.

URINE:- Amber, acid. Sp. Gr. 1024, distinct haze of Albumen, granular casts, urea output 352 grs.

PULSE:- 90 Temperature 98.2

GASTRIC CONTENTS:- Free HCl .13, Total Acidity 65
No Lactic Acid

Case 11

URINE:- Amber, mucous deposit, acid. sp. Gr. 1023 distinct albumen, no casts but squamous epithelical cells present, urea output 380 grs. acetone reaction.

PULSE:- 118 Temperature 99.6

GASTRIC CONTENTS:- Free HCl .18 Total Acidity 70
No Lactic Acid

Motor Activity Salicyluric acid reaction appeared in Urine 1$\frac{45}{}$ hours after administration by mouth and disappeared 27 hours thereafter.

Case 12.

URINE:- Amber, acid. copious deposit of Urates Sp. Gr. 1024 faint haze albumen, no casts, urea output not estimated, acetone reaction.

PULSE:- 92 Temperature 98°F.

GASTRIC CONTENTS:- Free HCl. 12 Total Acidity 65
No Lactic Acid.

Case 13.

URINE:- Acid, deposit of Urates. Sp. Gr. 1024, no albumen, Urea output not estimated.

PULSE:- 94 Temperature 97.6°F

GASTRIC CONTENTS:- Free HCl .14 Total Acidity 60
No Lactic Acid

Case 14

URINE:- Acid, mucous deposit, Sp. Gr. 1024, faint haze of albumen, no casts but squamous epithelial cells present, urea output not estimated.

PULSE:- 84 Temperature 97.8

GASTRIC CONTENTS:- Free HCl .14 Total Acidity 70
No Lactic Acid

Case 15

URINE:- Acid. Sp. Gr. 1026, Phosphates on heating, distinct haze of albumen, numerous granular casts - urea output not estimated.

PULSE:- 70 Temperature 98.6 F

GASTRIC CONTENTS:- Free HCl .12 Total Acidity 65
No Lactic Acid

Case 16

URINE:- Acid. Sp. Gr. 1024, faint haze of albumen no casts but squamous epithelial cells present urea output not estimated.

PULSE:- 120 Temperature 98°F.

GASTRIC CONTENTS:- Free HCl .13 Total Acidity 60
No Lactic Acid.

Case 17

URINE:- Acid. Sp. Gr. 1024 distinct haze of albumen acetone reaction.

granular casts – as she voided urine in bed no estimate of urea output could be made. She was so ill on admission that no attempt was made to wash out the stomach.

STATEMENT OF CASES

Case	Age	Grav.	Days in Hospital	Period of Pregnancy Excess. Vom. began	Duration of Vom. before Admission	Exc. Vomiting with Previous Pregnancies.	Menstruation	Remarks
1	33	1V	17	2nd Month	Six weeks	Yes V page 3 b/s	21 4-5	Chorea
2	33	V11	18	do.	four months	no.	28 7	
3	41	111	11	do.	four weeks	no.	28 4-5	Hydramnios
4	37	V11	11	do.	three "	no.	28 3	
5	22	1V	18	6th month	seven "	no.	28 7	
6	35	V1	22	2nd month	two "	Yes V page 3	28 3	Retroverted Uterus
7	39	11	32	do.	three "	no.	Irregular	
8	18	1	9	do.	three "	-	28 3-4	
9	37	V11	10	do.	four "	no	28 4	
10	42	V11	12	4th month	three months	no	28 3	
11	32	1V	11	2nd month	six weeks	Yes V page 3 b/7	28 4 -5	Salivation
12	31	1V	23	do.	two weeks	no	Irregular	
13	34	V11	14	9th month	one week	no	28 2 -6	
14	32	V1	20	2nd month	four months	Yes V page 3 b/3	21 6	Twins
15	28	V	34	do.	three "	no	28 4-5	
16	31	111	15	do.	six weeks	no	28 4	
17	38	V111	3	6th month	two "	no	28 5-6	Died

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