CHOREA GRAVIDARUM

THESIS

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Ashley M. Mackenzie, M.B., Ch.B.

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INTRODUCTION

Chorea Gravidarum is a rare condition complicating pregnancy, and there are many experienced obstetricians who have never seen a case. I was fortunate in seeing three cases in one hospital in a period of six months.

The condition was first described by Schenkius (69) in 1594 and by Horstius in 1660 (37), and since then many isolated cases and series of cases have been reported in the literature.

In this country, valuable contributions have been given by Barnes, Buist, Wall and Andrews, French and Hicks, Fletcher Shaw, and Croft. The most extensive and important papers by continental writers are by Pineles in German and by Vinay in French. In America, papers have been given by Newell, Royston and Campbell, but the most valuable contribution of all has been given by Willson and Freece, who in 1931 made a statistical study of 951 collected cases.

In this thesis I am presenting 22 cases of Chorea Gravidarum collected from the records of the Royal Maternity and Simpson Memorial Hospital, Edinburgh, which occurred within the years 1925 to 1937, inclusive, and 3 cases which I personally attended in six months at St. Mary Abbots Hospital, London, in 1937 - in all 25 cases.

In /
In the period 1925 to 1937 there were 33 cases of Chorea Gravidarum recorded at the Royal Maternity and Simpson Memorial Hospital, Edinburgh, but the records of 11 of these are not available.
CHOREA GRAVIDARUM

FREQUENCY and GEOGRAPHICAL DISTRIBUTION.

The frequency of the condition varies in different countries and in different parts of the country.

In Europe its frequency is about 1 in 1580 cases on the average; in U.S.A. 1 in 3501; in Australia 1 in 20,000; and in Calcutta peculiarly enough, in a country where rheumatism and septic tonsils are very common, the records of the Eden Hospital show that Chorea Gravidarum occurs only once in every 20,000 cases. According to Green-Armytage (27), however, its occurrence is more frequent among the well-to-do, and in private practice.

These figures are taken from hospital records and really do not give a true indication of the frequency of Chorea Gravidarum because, to quote Allard (3), "Maternities are the refuge of pathological cases."

In the last 13 years, that is from 1925 to 1937 inclusive, 30,362 cases have been treated in the Royal Maternity and Simpson Memorial Hospital, Edinburgh. Pregnancy was complicated by Chorea Gravidarum in 33 cases, and from these figures the frequency of this complication was found to be 1 in 920, which /
which is considerably above the average frequency in Europe. However, the Royal Maternity and Simpson Memorial Hospital is the centre for such a large area that this figure does not give a real indication of the incidence of the complication all over Scotland, and this point is borne out by the fact that only two cases were reported at the Glasgow Maternity Hospital in a period of 22 years (Willson and Greece).
AETIOLOGY.

The aetiology of the disease has given rise to much discussion, based for the most part on statistical surveys of collected cases.

Willson and Preece (81), in their review of the literature, classified the aetiology of Chorea Gravidarum into two groups of opinion:

A. That chorea in pregnancy is purely an accidental association of the two conditions, the chorea being identical with the ordinary chorea of childhood.

B. That chorea of pregnancy is entirely different from ordinary chorea; in other words, merely a choreic condition either directly or indirectly dependent on pregnancy for its production.

In support of the view that Chorea Gravidarum is similar to Sydenham's chorea, the following opinions are quoted.

As early as 1850, Sée (67) expressed a belief in the essential unity of Sydenham's chorea and Chorea Gravidarum. He said that pregnancy serves only as an intermediary of the actual causes of which it favours the production.

In 1901 Launay (44) said, "It is very certain that Sydenham's chorea coming on during pregnancy /
nancy or labour should not be confused with the tics, or hysterical chorea, for its clinical existence cannot be doubted."

In 1903 Wall and Andrews pointed out "that no distinguishing feature can be determined which points to any difference from the movements of Sydenham's chorea."

Poynton and Holmes in 1906 said "Chorea in pregnancy is probably a rheumatic chorea." In support of this they quoted Wall and Russell Andrews (77), who gave the following statistics of Buist (13), showing that in 226 cases of chorea in pregnancy, 24 gave a previous history of rheumatism, and 66 gave a previous history of chorea.

From their own observations Wall and Andrews (l.c.) found that in 23 out of 37 cases of chorea in pregnancy there was a previous history of chorea, and in 16 out of the 37, a previous history of rheumatism.

French and Hicks (25) in 1906 reported 29 consecutive cases of Chorea Gravidarum in Guy's Hospital, and found that 19 gave a previous history of chorea or rheumatism, and 15 of the 19 suffered from chorea before marriage. "This is so large a proportion of the whole", they concluded, "that we feel convinced that Chorea Gravidarum and infantile chorea have a similar pathology.

In /
In 1913, Pinard (59) quoted Dieulafoy (20):
"Pregnancy generally makes the prognosis of chorea more grave, not that the chorea of pregnant women is a special form, but that, as Jaccoud (40) has clearly shown, the gravid state associated with ordinary chorea aggravates its manifestations."

In 1925, Urechia and Elekes (75) stated that F.H. Lewy (47) did not consider chorea of pregnancy as different from ordinary chorea, and they described the two comparatively, giving the same pathology for both.

If the condition is similar to Sydenham's chorea, then there are further views to be given as regards the aetiology.

Osler (58) thought that Sydenham's chorea was an acute infection, suggested by the following facts:

1. The association with rheumatic fever.
2. The frequency of involvement of the tonsils.
3. Endocarditis.
4. The finding of micro-organisms, though no one micro-organism is accepted as the cause.
5. The occurrence of a chorea type in Epidemic Encephalitis, in which the lesions are similar and in the same region, the basal ganglia.

Other /
Other investigators, Mackey (49), Quigley (62) and Birnbaum (9), concur in the belief that Chorea Gravidarum is of infectious origin, and point out that bacteria, mostly streptococci, as well as small cerebral emboli from endocarditic processes, are often found in the brain.

It is concluded that an infective rheumatic factor is operative in a certain number of cases at least.

The following are the opposing views.

In 1888, Hocquet (36) said "Hysteria and chorea of pregnancy would appear to be two forms of the same malady."

In 1891, Riche (64) gave the following opinions. "The special study which has been made of chorea of pregnancy is well justified. It is not an accidental complication of pregnancy; it is a disease caused by pregnancy. This is proved by the facts that chorea of pregnancy appears at an age when simple chorea is exceedingly rare, that it lasts much longer than ordinary chorea, and that, finally, it ordinarily does not cease until the uterus has been emptied of its contents . . . . One rarely finds in the etiology of chorea of pregnancy the causes invoked by the majority of authors. One is then forced to admit that pregnancy itself can suffice to provoke the appearance of chorea, and one can then explain /
plain this disease by saying that it is a reflex neurosis of which the point of departure may be the utero-ovarian complex."

In 1893, Duchateau (21) described chorea of pregnancy as "Chorée Autotoxique" and attributed its causation to "Éclampsie atténuée".

In 1899, Giles de la Tourette (74) classified it with tics.

In a paper published in 1903, Sir Dyce Duckworth considered toxæmia to be one of the basic elements of this complaint.

In 1907, Newell (56) stated "Chorea deserves a special place in the pathology of pregnancy. It is not an accidental complication due to the recurrence of a previous infantile chorea, but in the majority of cases appears for the first time during pregnancy. Pregnancy is not the only causative factor, but is the fundamental condition on which the other elements in the causation of chorea depend."

Shaw (68), in 1908, concluded that:

(1) Chorea of pregnancy is due to a toxin which appears to be identical with, or closely to resemble, that of acute rheumatism.

(2) It affects human beings under two circumstances, both of them being characterised by instability or irritability of the nervous system, namely childhood and pregnancy.

(3) /
(3) The cause of the instability or irritability of the nervous system in pregnancy bringing it down to the level of childhood is the toxaemia of pregnancy.

In 1913, Pinard (59) wrote agreeing with the above. On the question of the prognosis and pathology of the so-called chorea of pregnancy he believed "That that which is called chorea should be placed in the category of the neuroses. But I cannot admit that the choreic syndrome is the manifestation of an encephalitis or a meningo-encephalitis. Neither can the recently advanced view that chorea is of syphilitic origin be accepted by any informed physician. Being given the facts which I have observed of the reproductive function with chorea, I believe more than ever in an autointoxication, manifesting itself by choreic symptoms in predisposed individuals. With Joffroy (41) I think it is an autointoxication and an evolutionary disease (showing itself at the moment of the grasp of the individual by the species) and with Latique (43) I admit that pregnancy prolongs puberty."

The opinion of Sicard (70), the European neurologist, is that choreic manifestations in pregnancy are due to epidemic encephalitis. He said, "Chorea of pregnancy sometimes allies itself to epidemic /
demic encephalitis. I have had occasion to report cases of the chorea syndrome developing during pregnancy, with choreic gesticulation and delirium, without any of the classic signs of encephalitis, i.e. without diplopia, without rhythmic clonicity, without lethargy, which were followed by a characteristic Parkinsonian syndrome, thus indicating their epidemic encephalitic origin, since, in the absence of all diagnostic certainty, we have the clinical testimony of the Parkinsonian to determine a retrospective diagnosis." And later, "Bringing together this case of chorea of pregnancy followed by Parkinsonism, and two others of which I have knowledge, which progressed in the same manner towards tremor and hypertonicity, and joining the findings of Carnal and Harvier (16) with the anatomicopathologic observations reported . . . . one cannot but differentiate between chorea of pregnancy and Sydenham's chorea, and connect the former, thanks to the bond of pathogenic Parkinsonism, to epidemic encephalitis."

Hirschl (35), although recognising that rheumatism plays a part in chorea of pregnancy, thought that the factor of greater importance might be the auto-intoxication produced by the circulation of poisonous substances, which should normally have been excreted by the maternal organism.

In /
In agreement with this view is the theory that Chorea Gravidarum is a toxaemia due to the defective elimination of toxins resulting from suppression of the menses, and to toxins of foetal origin having a selectivity towards the nervous system and joints.

The fact that choreic symptoms occur towards the third month favours this view, but Campbell (15), does not agree, and in his review of the literature says that at autopsy no findings were recorded which showed changes similar to those found in the other fatal toxaemias of pregnancy, viz. degeneration in the liver, kidneys, or heart muscle.

Kobrinsky (42), Albrecht (2), Le Page (46), De Lee (19) and Harding (32) also favour the theory that the condition is a toxaemia.

Campbell's opinion in regard to the aetiology is that there is a preponderance of evidence to support the belief that it is of infectious origin, that the usual seat of infection is in the brain and heart, with a predilection in the brain for the basal ganglia and in the heart for the endocardium, more particularly the mitral valves.

Genova (26) considered the most reasonable hypothesis to be a toxico-infectious origin of the disease.

Berkley and Bonney (8) expressed the view /
view that many cases have a tendency to neurosis, and Whitmore (79) seemed to agree with this finding.

It has been stressed by Poynton, and Wall and Andrews (77) that emotional disturbance acts definitely as a predisposing cause.

Wall and Andrews conclude that the complaint is determined by mental worry and shock, but the determining cause is only effective when it acts on a brain whose power of control is somewhat lowered by the pregnant state and in addition is unstable because of: (1) Antecedent chorea.

(2) Antecedent rheumatism, or other debilitating condition.

(3) A defect in development.

That psychogenic factors play an important aetiological role is the belief of Weigner (78), who stated that the quick clear-up of the condition following labour mitigates against the infective theory. He pointed out in support of his view that Chorea Gravidarum usually occurs in young primiparae, and that the period of pregnancy at which it usually commences is about the fifth month, when "quickening" leaves no doubt that the cessation of periods means pregnancy.

The condition is precipitated by shock too frequently to be overlooked.

Mosler /
Mosler (54) reported a case which occurred just after a fall. Hand (30) also reported a case which developed after a fall from a ladder. Bamberg (6) reported a case where the pregnant woman was awakened by the crackling noise of fire. The next morning she was suffering from chorea.

Emotional stress might in time so reduce stamina as to allow dormant infection to light up, but this can hardly explain the sudden onset in the above cases.

In further support of this view are the dramatic cures by treatment which is really only suggestive.

In 1919, Flamma (23) reported a case in which he feigned interruption of pregnancy, with resultant cure. He warns against interruption of pregnancy in neurotic cases, and in fact it would be wise to consult a neurologist if there is any doubt.

Audébert (4) reported a case cured after dilatation of the cervix.

Buist (13) reported a case in which there was dyspareunia, and which cleared up after incision of the hymen.

These views are in conflict with those of Boyd (11), who did not consider fright or emotional stress an important aetiological factor.

It /
It has been pointed out that chorea is the most frequent acute nervous disease of childhood, and that if the danger of recurrence during pregnancy were great the number of cases of Chorea Gravidarum would be very high.

However, from the statistics of the Baude-locque Clinic, Paris, Allard (3) showed that 28% of women who have chorea in childhood may be expected to have a recurrence during pregnancy.

Willson and Freece (81) suggest that these facts can be explained only on the hypothesis that pregnancy causes a latent disease to become active: and, furthermore, it has been shown that chorea occurring for the first time during pregnancy may, and often does, complicate subsequent pregnancies, and may finally continue indefinitely post partum.

Osler (58) thought that scarlet fever with arthritic manifestations might be a direct antecedent of Sydenham's chorea.

In a further small group with features much like those of chorea, congenital syphilis was apparently the cause. Specific treatment resulted in rapid improvement.

He adds that there is a tendency to the disease in certain families, and that the disease may follow on injury of shock.

The /
The conclusion which Willson and Preece (81) reached after a very careful and exhaustive study of 951 cases of Chorea Gravidarum is that it is of toxic origin and identical with Sydenham's chorea.

They found that more than one-half gave a history of previous chorea, more than one-third of them of a previous attack of rheumatism, and more than one-fourth had had both diseases.

"The Reports of the Collective Investigation Committee of the British Medical Association" (MacKenzie, 48) showed that rheumatism preceded chorea in 26% of cases, and that in 46% of the remainder rheumatic signs accompanied the chorea or appeared subsequently. These figures, more or less identical with the incidence of preceding rheumatism in Chorea Gravidarum, give strong support to the view that the condition is identical with Sydenham's chorea, modified slightly by the associated pregnancy, and that rheumatism is the most common predisposing cause.

As previously stated, two main views prevail as to the aetiology of Chorea Gravidarum. Firstly, that it is infective and rheumatic in nature and similar to Sydenham's chorea in childhood and adolescence, and secondly that it is dependent on pregnancy for its production and in the nature of a pregnancy toxæmia.
The proponents of the first viewpoint point out as significant the frequency of the occurrence of a previous history of rheumatism or chorea, while the supporters of the opposing viewpoint base their theory presumably on the fact that there is no evidence of chorea or rheumatism or endocarditis in many cases, and further that the condition rapidly clears up when the uterus is emptied.

In the series of 25 cases under discussion, there was a history of previous chorea alone in 9 cases, a history of previous rheumatism alone in 4 cases, and a history of both in 5 cases. In other words, 56% gave a history of previous chorea, 36% gave a history of previous rheumatism, and 20% gave a previous history of both. These figures are practically identical with those of Willson and Preece.

In 11, or 44%, of these cases there was clinical evidence that the heart was diseased, and this again is very near the percentage – 48.8% – in which Willson and Preece discovered the heart to be affected in a study based on 358 cases.

The figures which I have just given are therefore not isolated to my series of cases, but agree very closely with those given by Willson and Preece in their statistical survey of a very large and extensive collection of cases. I feel justified therefore in stating that they strongly favour the infective /
infective rheumatic theory.

In four cases there was a history of rheumaticism or rheumatic fever in the family, and I think this point is also significant in favour of the same view.

The fact that the teeth were carious or the tonsils infected in 7 cases also lends support to the view that the condition is of infective origin, and that the causative organism may be harboured in these foci.

In 6 cases the condition was preceded by some emotional disturbance, or occurred in patients who were emotional or mentally below par. This seems to be a large enough proportion to be noteworthy, and in fact there seems to be little doubt that the psychogenic factor plays at least a part in the aetiology of Chorea Gravidarum.

The view that there is a rheumatic origin to the disease, and that emotional disturbance may be a predisposing cause, is I think demonstrated by the following 2 cases.

One case (No.vi) gave a previous history of rheumatic fever and chorea in adolescence, but she went through her first pregnancy and the first two trimesters of her second pregnancy without exhibiting any sign of a recurrence of the disease. A study of this case suggests that one is not dealing with /
with a new phenomenon but with a latent condition which has become reactivated due to a specific stimulus, namely pregnancy. There was no evidence of a toxic process at work, nor was there any evidence of an infective lesion, apart from the history of a previous attack of rheumatic fever. There was an almost immediate recovery following spontaneous delivery.

The conclusion reached in this case is that, whatever the predisposing cause, pregnancy is the determining cause.

If pregnancy is the determining cause, one may ask why she did not develop chorea during her first pregnancy. It seems obvious that one cannot compare the effect of pregnancy on two different individuals, or of two pregnancies on the same individual, from the mental and physical point of view. Chorea manifests itself essentially by nervous instability, and therefore it seems possible that altered home conditions, worry, or impaired general health might react unfavourably on a patient with a susceptible nervous system by lowering resistance to an infecting organism.

This view might also explain the state of affairs in the following case (No. IX).

Chorea Gravidarum appeared in the first pregnancy.
pregnancy. There was a previous rheumatic history but not a history of previous chorea. The tonsils had been removed in childhood, but the teeth and gums were in very poor condition. The chorea started at the beginning of pregnancy and the patient associated the onset with an injury to her foot. It was noted in the history that the patient was very emotional. The condition cleared up completely after treatment in hospital, but she was readmitted 7 weeks later with a further attack, and this time she gave the history of having had a whitlow. She had a spontaneous delivery at full term, and the choreiform movements had completely disappeared 3 weeks after delivery.

Her second pregnancy was uncomplicated.

Her third pregnancy, however, was again complicated by chorea, which commenced at the same time as an attack of rheumatism affecting first her ankles and then her knees. There was a history of a sore throat 3 weeks previously.

As the patient is classed as an emotional type, the fact that she was pregnant for the first time - a condition of which she was entirely ignorant and about which she may have been most apprehensive - together with the fact that she suffered an injury to her foot, may have precipitated a first attack of chorea in her first pregnancy /
nancy. The second attack of chorea in this pregnancy was no doubt due to her impaired general health, as evidenced by the presence of a whitlow.

In the second pregnancy, which was uncomplicated, she would not have had the same fears, because the previous pregnancy had terminated satisfactorily in spite of complications. Together with this fact, she may have been in improved general health, and indeed there is no history of injury or infection.

In the third pregnancy she might also have gone to term without complications brought on by either emotional stress or lowered physical resistance, if she had not suffered from an attack of rheumatism, preceded by a sore throat. The attack of rheumatism may have precipitated the onset of the chorea in two ways. First, the worry of it in such a neurotic individual may have been the psychogenic cause, or alternatively the chorea and rheumatism may have been two manifestations of the same latent infection reactivated by pregnancy, and psychogenic factors may not have entered into the question at all in this pregnancy.

I conclude from these cases that pregnancy may so lower mental and physical resistance as to allow a flare-up of a dormant infection, and also that /
that chorea in pregnancy and rheumatism are very closely allied to one another.

In 4 cases there was a previous history of scarlet fever without any previous history of chorea or rheumatism. This is the same number of cases as were recorded with a previous history of rheumatism alone, and I think this point has not previously been stressed, so far as the aetiology is concerned.

The following 2 cases support the view that scarlet fever as well as rheumatic fever may be a latent predisposing cause of Chorea Gravidarum.

The first case (No.XIV) gave no previous history of chorea or rheumatism, but there was a previous history of scarlet fever. The patient attributed her condition to home worries. This may have been the case, and it is also possible that the pregnancy with this associated emotional upset may have so lowered the patient's resistance that again a latent infection may have been re-activated, in this case the organism being the scarletinal streptococcus.

In the second case (No.XVII) the patient also gave a negative history in regard to rheumatic fever and chorea, but had scarlet fever in childhood. She had five previous uncomplicated pregnancies, and even went through her sixth pregnancy as far as the /
the end of labour, without complications. During the first four days of the puerperium, however, she became very hysterical, requiring sedatives, and on the fifth day developed definite choreiform movements. After a few days' treatment these subsided, and the rest of the puerperium was normal.

The conclusion reached in this case is that repeated pregnancies had so affected the nervous system of this person, in which there was a latent infection, that eventually this latent infection was able to assert itself and give rise to a choreiform condition.

The conclusion derived from these 4 particular cases, therefore, is: that pregnancy may so affect a patient's psychological status as to lower her resistance to an infective agent, latent for many years.

It might be argued that it is unlikely that a definite chorea per se could be caused by two organisms giving rise to two such different clinical entities as scarlet fever and rheumatic fever.

In acute rheumatism, several forms of streptococci have been isolated, which are supposed to be the causative organisms in this condition, including the streptococcus haemolyticus. It has been point-ed out that it is against all bacteriological teach-
ing for one definite clinical condition to have such a varied microbic aetiology. In 1928, Swift and his co-workers (73) propounded the allergic theory of the cause of acute rheumatism. They suggested that by absorption of some streptococcus from an infected focus the tissues have acquired a peculiar hypersensitivity to it. The sensitising protein may be common to a variety of streptococci, so that patients infected with any streptococcus may become sensitised not only to that one but to all others which possess the same sensitising protein.

Scarlet fever is also produced by a haemolytic streptococcus, and is also sometimes complicated by chorea.

Such considerations tentatively suggest that chorea of pregnancy may be an allergic condition due to a previous sensitisation to a streptococcus, whether it be the streptococcus rheumaticus or the scarletinal streptococcus. Pregnancy may lower resistance, mental and physical, as shown above, so that a much smaller dose of the sensitising protein is necessary to produce an allergic reaction than would normally be the case.

I suggest that ordinary chorea and Chorea Gravidarum may both be allergic phenomena, and that the latter is only modified slightly by the pregnant state.

In /
In regard to the theory that Chorea Gravidarum is a toxic manifestation of pregnancy, it is noted that in 6 cases only was there any evidence of a pregnancy toxaemia, and this was manifested by albuminuria. In one case (No.XXIV) in which there was no albuminuria, the blood pressure was high 169/106, the blood urea was 46 mgm. %, and Calvert's urea concentration test showed defective elimination of urea. Hyaline casts were present in the urine. There were no symptoms of a toxaemia of pregnancy, and these findings are presumably due to a chronic nephritic condition.

Albuminuria may occur in normal pregnancies and, as pointed out by Willson and Preece, might be expected to occur anyway in a condition which is presumably of infective origin. A correlation of the incidence of toxaemia of pregnancy (3 to 5%) with that of Chorea Gravidarum, suggests that toxaemia of pregnancy is of little significance in the aetiology of chorea. It might be emphasised, however, that in the majority of cases, alleviation of the condition follows termination of pregnancy, and this strongly supports the hypothesis of pregnancy influencing a latent predisposition to chorea.
PATHOLOGY.

From their study of the literature, Willson and Greece found reports of 67 autopsies between the years 1824-1930, inclusive.

Though they were chiefly interested in the heart and nervous system, the pathology of the other organs were also studied, and after reviewing the results of the pathological examinations of the liver, kidneys, spleen, lungs and uterus and adnexa, they concluded that the evidence pointed to an underlying pathology of an infective nature.

They found that in 86.9% of cases the heart was pathologically affected.

Fraiport (24) reported 50 autopsies in which valvular lesions were found in 66%.

Campbell pointed out that streptococcal infections, e.g. scarlet fever, rheumatic fever and endocarditis, often precede Chorea Gravidarum.

Foynton and Holmes (61) found that in support of the above, the diplococcus rheumaticus was present in the nervous system and heart valves, showing that the morbid changes in the brain are essentially similar to those in rheumatism. They recorded 3 cases in which the diplococcus rheumaticus was found in the pia mater of cases which had proved fatal while suffering from chorea. In addition, this micro-organism has been demonstrated in the brains of /
of these cases, lying in the perivascular spaces and connective tissues.

In a case of chorea which occurred in a first pregnancy without a previous history of rheumatism or chorea, lesions were present similar to those found in rheumatic cases.

One of the earlier opinions regarding the site of the lesions in the central nervous system was given by Huglings Jackson (38, 39), who said:

These movements (38) are not mere spasms or cravings, but an aimless profusion of movements of considerable complexity, much nearer the purposive movements of health . . . . . and therefore it is certain that the part diseased (39) serves in highly specialised and complex co-ordinations, and that thus it is a part very high up in the nervous system.

Raymond (63) found pathological changes in the corpus callosum and cerebrum. He found also that the ductless glands (suprarenals and corpus luteum) played no part in this complication of pregnancy.

Creutzfeldt (17) reported a case in which he found lesions in the cerebrum following the course of the vessels, the most severe degenerative processes being located in the striate body.

Marie, Bouttier and Trétiakoff (53) presented one of the most complete and extensive histo-pathological /
logical studies in the literature. In a post mortem on a case of Chorea Gravidarum, they found in the cortex and striatum nodules up to the size of a pinhead, consisting of perivascular glia proliferation with destruction of the adjacent nervous tissue. They add that "the influence of leucocytes is entirely absent".

Creutzfeldt thought that the reaction was inflammatory and not degenerative, as just described. He described a fatal case and concluded that the findings in the nervous system consisted of an inflammatory type of disease which attacked both grey and white matter, the localisation being dependent on the course of the vessels.

He was of the opinion that the anatomical location of the lesion could be connected with the location of the choreic movements.

Lehoczky-Semmelweis (45) showed that in a fatal case there was perivascular infiltration in the striatum thalamus and substantia nigra. The cellular elements in the infiltration consisted chiefly of lymphocytes. There was necrosis of the nerve cells in the putamen and globus pallidum, accompanied by glia proliferation.

Marie and Trétiakoff examined the nervous system in a typical case of St. Vitus Dance in a child.
child 10 years of age, and found lesions in the neo-
striatum and cerebral cortex, similar to those of
epidemic encephalitis.

Campbell reported that evidence had accumu-
lated to show that the pathological basis of Syden-
ham's chorea may be a diffuse encephalitic process
involving the cortex, pia, arachnoid, and the corpus
striatum. The caudate and putamen are also affect-
ed. Macroscopic changes are very slight and usually
absent.

Greenfield and Wolfschn (28) found in a post
mortem in a case of Sydenham's chorea, in addition
to vegetative endocarditis, small round cell peri-
vascular infiltration in the basal ganglia and in-
ternal capsule, similar to that of lethargic enceph-
alitis. They also found thrombi in the cortical
vessels, but no evidence of cerebral embolism such
as has been reported by others. The theory that
cerebral emboli were responsible for the disease
is not supported by pathological findings. They,
with Marie and Trétiakoff, think the changes are
similar to those in lethargic encephalitis.

Lewy (47) found that in addition to foci of
cell degeneration in the neostriatum, cell changes
and fatty infiltration were present in the cortex.

Osler /
Osler reported that in the pathology of Sydenham's chorea two anatomical changes were found:

(1) **Endocarditis** - mitral valve usually.

(2) Foci of softening in the basal ganglia, in the situation and with the appearance of an acute encephalitis.

He summarised the pathology of epidemic encephalitis in the following terms:

- The brain is hyperaemic.
- Haemorrhages occur in meninges and basal ganglia.
- Vascular congestion with marked lymphocytic infiltration about the vessels and cellular infiltration of the nervous tissue, with oedema.
- The lesions occur in nodular and diffuse forms.
- The nerve cells show degeneration, which may be very local and unequally distributed.

To summarise the histo-pathological findings in the brain and meninges in cases of Chorea Gravidarum, there appears to be congestion of the brain often associated with haemorrhage and thrombosis. The perivascular reaction is degenerative rather than inflammatory, and leucocytic infiltration is slight or entirely lacking. The neuroglia is hyperplastic. These changes are most marked in the corpus striatum and especially in the caudate nucleus. They have also been found in the cerebral cortex and the other nuclei of the base.

There /
There appears to be no unanimity in the literature as regards the pathology of Chorea Gravidarum. It has been pointed out, and there seems to be general agreement on this point, that the endocardium is affected in a very large percentage of cases, as it is in cases of Sydenham's chorea. It has also been conclusively shown, I think, that there are no changes in the organs similar to those found in the other toxaemias of pregnancy. In the 25 cases here reported, there are only 2 post mortem records. In one case the heart showed advanced mitral stenosis, and in the other — a more detailed report — there was evidence of acute rheumatic endocarditis. In the second case there is a detailed pathological report on the viscera, but the pathology was not similar to that found in fatal cases of toxaemia of pregnancy.

But when one considers the pathology of the brain, the various views are somewhat bewildering. Some say the pathology of Sydenham's chorea and Chorea Gravidarum are essentially different, while others consider the findings identical in the two conditions. There is another school who consider the pathological findings similar to those in epidemic encephalitis. Most, however, agree that there is congestion of the brain and a lesion of the corpus striatum in all 3 conditions.

In /
In the present series the brain was examined in one case only, and was noted to be congested macroscopically, but the microscopic examination — and I was fortunate enough to be allowed to examine the slides — did not show evidence of any pathological lesion.

I am inclined to think that this latter finding is the rule rather than the exception in most cases of Chorea Gravidarum and Sydenham's chorea, and as far as the brain pathology is concerned the factor common to both is its absolute negativity. If this is the case there should be no reason for confusing chorea with epidemic encephalitis, in which there is a more definite brain pathology and in which the heart is unaffected.

Further, Roques (66) in a special study of epidemic encephalitis in regard to pregnancy differentiates definitely between it and Chorea Gravidarum.
CLINICAL FEATURES.

The disease most commonly occurs in primigravidae.

In 7 of my cases Chorea Gravidarum appeared for the first time in primiparae in whom there was no previous history of chorea, but in 3 of these there was a previous history of rheumatism, and in 2 a previous history of scarlet fever without a history of either rheumatism or chorea. In 11 cases chorea occurred in the first pregnancy of women who had previously had chorea or rheumatism, or both. In one case chorea was present continuously since the patient was six months old, and was aggravated slightly by her pregnancy. Excluding this last case, it is seen that 72% of the cases were primiparae, and that Chorea Gravidarum occurs most frequently in primiparae is an accepted view.

From Buist's (13) records of 285 cases collected from the literature, 60% were primigravidae.

It is most common during the first pregnancy but is liable to recur during subsequent pregnancies, when it tends to become more severe. Martin (52) records a group of cases in which chorea was absent in the first and present in subsequent pregnancies.

There /
There is often a personal history of chorea in childhood or adolescence, or of chorea and rheumatism combined, or pregnancy may start during an attack of chorea. There may be a family history of chorea, or there may be a history of shock or violent emotional disturbance immediately preceding the attack. Whether the latter is of any aetiological relationship is uncertain.

According to Willson and Freece (81), the disease is pre-eminently one of young women, and the average at which it occurred in 66 of their recorded cases was 22.4 years. This figure is exactly the same as that found in the series of 25 cases under discussion.

The condition, as a rule, becomes apparent during the first three months of gestation, usually the third month, but may not occur until the second or third trimester. In 7 of Buist's cases the onset was in the puerperium. In 5 cases of my series the chorea became apparent in the first trimester of pregnancy, in 7 cases in the second trimester, and in 6 cases in the third trimester. In 5 cases chorea was present before pregnancy. In 1 case it was not aggravated by the pregnancy. In 3 cases it was aggravated during the first trimester, and in 1 case the movements became more marked during the second.
second trimester. In 1 case the condition commenced in labour, and in 1 it commenced and cleared up in the puerperium.

From these figures it appears that the onset of Chorea Gravidarum is no less frequent in the second and third trimesters, including labour and the puerperium, than it is in the first trimester, though the general opinion is that it occurs most commonly in the first trimester.

The characteristic inco-ordinated movements are pathognomonic. They may be generalised, or may be localised to different groups of muscles, or there may be a hemi-chorea. Indeed, the chief symptoms, whether occurring in the gravid or non-gravid state, are involuntary purposeless movements of any or all muscles of the body.

Oppenheim (57) described these movements as "muscular insanity", but pointed out that they may be localised to various muscle groups, e.g. the muscles of speech or of the eyes.

Browne (12) stated that paresis of some degree is a constant feature. In the milder cases the movements cease during sleep, but in severe cases they are apt to be continuous, preventing sleep and leading to exhaustion.

In /
In this severe type, mental symptoms such as loss of memory, mental confusion, hallucinations, or even acute mania may develop - chorea insaniens. Chorea insaniens was present in 8 of Buist's 285 cases. McCann (50) has stated that mental confusion of greater or lesser degree occurs in every case.

Occasionally there is a trace of albumen in the urine, a feature considered by advocates of the toxaemic theory to be in favour of their view.

Though the disease is usually afebrile, in the terminal stages of fatal cases there may be fever, increased pulse rate, delirium and retention of urine.

The blood pressure is not raised, as is the case in the toxaemias of pregnancy, and examination of the urine is usually negative, except for a trace of albumen and the appearance of hyaline casts in a very few cases, excluding those of fatal outcome. The blood calcium was noted in one of my cases, and was found to be within normal limits.

The condition usually clears up after labour. There is a tendency in severe cases to premature labour and foetal death in utero. When the foetus dies in utero, some authorities think the movements tend to diminish, but Buist found that there was little /
little or no improvement as long as the foetus remained in the uterus.

The child, if pregnancy goes to term, is practically always born healthy, though possibly there may be a tendency to develop chorea in later life.

**Complications.** The main complications are the acute psychoses of the intoxication exhaustion type, acute endocarditis, and acute rheumatic fever. Acute endocarditis was present in the two fatal cases in this series.
DIAGNOSIS.

The diagnosis must be made from hysteria, tic or habit spasm, Huntington's chorea, and epidemic encephalitis.

Hysteria may be differentiated from true chorea by the presence of other stigmata of hysteria, viz. areas of insensitivity, more purposeful and rhythmic movements, which may cease when the patient thinks she is unobserved.

Tic is confined to a single muscle or group of muscles physiologically related. The movement is more abrupt and under the control of the will, and the same movement is always repeated.

Huntington's chorea is hereditary, chronic, begins in middle life, and is associated with progressive dementia.

Epidemic encephalitis with chorea-like movements is recognised by the other features of the disease. It is an infectious disease with protean manifestations, chiefly in the central nervous system, characterised by lethargy, paralysis of the cranial nerves (usually the 3rd), and in some cases spinal and neuritic features.

The diagnosis was self-evident in every case in this series. The movements are pathognomonic and, after /
after a thorough clinical examination, little difficulty should be experienced in differentiating this condition from Huntington's chorea, the tics, hysteria or epidemic encephalitis.
PROGNOSIS.

Backaus (5) says that chorea in general is less serious for a child, more serious for a man, still more serious for a woman, and most serious of all for a pregnant woman.

Buist (13) in a survey of the literature found that Chorea Gravidarum was very rare, and the patients usually died or became insane.

Fatality increased with age and the number of the pregnancy, according to Campbell (15).

Barnes in 1869 (7) observed that, whether labour is induced or not, some cases will recover while other patients die in spite of the interruption of pregnancy.

Bonhoeffer (10) stated that over one-half of the cases of Chorea Gravidarum are harmless and result favourably.

Mulbaum (55) has observed that most of the milder cases are treated by the neurologist and are not seen by the obstetrician. He adds that an attack of chorea occurring for the first time during pregnancy, accompanied by marked motor disturbances, forms an indication for interruption of pregnancy. He is also of the opinion that the predominance of psychic over motor delirium indicates an unfavourable prognosis.

Royston /
Royston (66) concluded that pregnancy in a choreic individual is not necessarily serious, though it may assume this character; but that an acute chorea begun during pregnancy is a grave affection.

I think there is little doubt that Chorea Gravidarum in the majority of cases runs a mild course, and does not alter the course of pregnancy to any marked degree. It may clear up during pregnancy, but usually continues till after labour, when it improves very rapidly and the choreic movements have usually disappeared by the end of the third week of the puerperium.

The chorea tends to be more severe in the pregnant than in the non-pregnant state, and insanity — chorea insaniens — is more likely to develop.

Maternal Mortality. The maternal mortality is difficult to estimate, as often only the serious cases are reported.

Williams (80), in his most recent textbook on obstetrics, recounts having seen only 1 grave case, which ended fatally in spite of spontaneous premature labour. According to De Lee (19) the maternal mortality is 20 to 30%, and the foetal mortality 50%. In their series of cases at Guy's Hospital /
Hospital, French and Hicks (25) found the maternal mortality rate to be 10%. Fletcher Shaw (68) found that in 32 consecutive cases at St. Mary's Hospital, Manchester, all recovered. In 28 consecutive cases at the London Hospital, Wall and Andrews (77) report 2 deaths, which is 7%. Finard (59) had 9 cases with 1 death, and Stein (72) 5, all of whom went to term. Excluding De Lee, in the above 103 consecutive cases, therefore, the death rate was only 5%.

Wilson and Freece give the maternal mortality rate as 12.7% in a series of 541 pregnancies from the year 1900 onwards, which they term the aseptic era.

Two maternal deaths occurred in the 25 cases covered by the present investigation.

One (Case No.Ⅰ) a patient who had recovered from a previous attack of chorea during the pregnancy in question, was admitted to the Royal Maternity and Simpson Memorial Hospital, having a recurrence and in a moribund condition. She died three hours after admission, and the clinical diagnosis of acute endocarditis was verified post mortem.

The other patient (Case No.Ⅲ) had such a severe attack that she was maniacal, and had to be put in a padded room to prevent her injuring herself. As her condition was becoming worse in spite of medical /
ical treatment, it was decided to terminate pregnancy by Caesarean section at 7 months. The child, though viable, did not survive. The condition of the mother gradually improved for a few days, but on the fifth day after operation she relapsed, and a diagnosis of acute endocarditis was made. Three days later death occurred. Post mortem examination revealed acute rheumatic endocarditis, and also an acute pelvic peritonitis associated with infection of the abdominal wound.

**Foetal Mortality.** The foetal mortality is high, though if the pregnancy goes to term the child is practically always born healthy.

Willson and Preece give the foetal mortality rate as 50.9%. This high percentage, they say, is largely due to prematurity, either spontaneous or induced, or due to the woman dying undelivered.

In 6 cases of my own series the infant was premature and survived, two cases being induced surgically with success; one case died with the mother; and one died after Caesarean section, as recorded above. In another case the woman recovered from an attack of Chorea Gravidarum in the early months, but pregnancy was terminated at a later date by hysterectomy because of advanced mitral stenosis.

It /
It will be noted that the maternal and foetal mortality is high in Chorea Gravidarum, a point which is often not realised by medical practitioners.

The points of serious significance are:
- a rise in temperature;
- a rise in pulse rate;
- albuminuria;
- movements so severe as to preclude the taking of adequate nourishment;
- delirium or coma;
- retention of urine or incontinence;
- and the presence of petechial haemorrhages.

With adequate antenatal treatment the prognosis can be made more favourable. All toxic foci should be dealt with, particularly the teeth and tonsils, and patients who are neurotic and temperamentally unstable should be encouraged to rest and avoid excitement, and treated with firmness and tact.
TREATMENT.

In a consideration of the treatment of Chorea Gravidarum one finds there are again two extreme schools, one advising radical and the other conservative treatment.

The following are views on the radical form of treatment.

The surgical group, including Royston (65) and Guynes (29), advise the termination of pregnancy as soon as the condition is diagnosed.

Lepage (46) advocates emptying the uterus promptly in severe cases, because he feels that the mortality in delayed cases is extremely high.

Bumm (14), Martin and Anton recommend vaginal Caesarean section.

De Lee advocates abdominal Caesarean section when the patient is at or near term.

Hellier (34) strongly advises terminating pregnancy in severe cases, and gives the following indications for evacuation of the uterus:

1. When there are violent movements in spite of rest in bed and sedatives.
2. Inability to sleep and eat, accompanied by loss of weight.
3. When there is mental confusion and delirium.
4. When there is a rise in temperature, dry tongue, and pulse rate persistently over 100 per minute, becoming more rapid and weaker.
Fletcher Shaw (68), Wall and Andrews (77), and Croft (18) believe in more conservative treatment, and have reported a large number of cases treated successfully without induction of labour.

Fletcher Shaw, who is of the opinion that the condition should be treated as if it were a toxaemia, states:

(1) In chorea of pregnancy it is more important to remove the predisposing cause than to apply merely symptomatic treatment.

(2) The treatment must be eliminative, as in the other toxaemias.

(3) The pregnancy should not be arrested, as this is generally unnecessary and harmful to the patient as well as to the child.

Croft, in a series of 12 cases, concluded that induction of abortion or premature labour was unwise, and advocated the eliminative treatment as described by Fletcher Shaw on the theory of the disease being associated with a toxaemia. He had marked success with this method in cases with delirium, delusions, and severe restlessness. Cure was effected, the patients went to full term and were delivered of living children. Treatment was as follows:

Isolation and putting the patient in a darkened room if very restless.

Diet /
Diet consisting of milk and diluents at first. Bowels cleared with calomel or jalap at first, and kept free with salines. A simple diuretic and diaphoretic mixture was used. No arsenic or tonics till convalescence was established. Narcotics and sedatives were avoided as a routine, and only resorted to very occasionally. Morphine was strictly forbidden, owing to its tendency to check excretion.

Wall and Andrews stated: "In the majority of cases pregnancy continues undisturbed and results in natural labour . . . . In the majority of cases, rest, full feeding, freedom from worry and anxiety, and sleep, if necessary assisted by chloral, produce such diminution, if not cessation, of movements that the induction of abortion need not even be considered.

My conclusion is that the most important factor in the treatment of this condition is complete rest in bed, with quietness and freedom from excitement, even in mild cases.

Dejerine's dictum, "Au lait et au lit", admirably sums up the treatment of the average case, but
but it is unnecessary to keep to a milk diet only, and a bland nutritious diet is advocated. In the severe cases sedatives may be used to control the intensity of the movements, and of these the most popular is a mixture of potassium bromide and chloral hydrate. The bowels should be kept acting freely by calomel and salines, and, as already pointed out, the teeth and tonsils should be treated if necessary. Should paresis occur in a limb, massage is often beneficial (McLean, 51).

Various other forms of medical treatment have been used. But a specific has yet to be found.

Salicylates, aspirin, and calcium aspirin have been used on the assumption that the condition was rheumatic in origin.

Of the sedatives, luminal, paraldehyde, mor- phine and hyoscine have been used with varying success.

Intramuscular magnesium sulphate has been tried. Hartel (33) used salvarsan with some success. Wall and Andrews (77) have had good results with aspirin and arsenic. Haneborg (31) advocated endocrine therapy, while Koblinsky (42) and Sichel (71) report good results from transfusion of small quantities of blood from healthy pregnant women. Albrecht (1) has used blood serum from healthy pregnant women.

Nirvanol /
Nirvanol has been used for Sydenham's chorea but it is unsuitable in pregnancy as it causes a sharp rise in temperature which may be harmful to the foetus.

In 4 cases in this series, ostelin and parathyroid (Glaxo) tablets were used in conjunction with the intramuscular injection of callosal calcium, and the rationale of this treatment is as follows: A reduction in the blood calcium is the cause of tetany, which can be relieved by the exhibition of parathyroid extract or calcium. The choreic movements somewhat resemble tetany and it was thought that the therapy might be the same. This theory, however, has been proved fallacious, as there is no reduction in blood calcium in Chorea Gravidarum, as shown in Case No.

I am inclined to agree with Campbell (15), who summarises the medical treatment as follows: With the exception of sedatives, in the cases of recovery in which these medicaments were used, the patient recovered in spite of and not because of treatment.

In severe cases occurring during labour or in the puerperium, a drug of the sulphamidamide series might be used as a prophylactic, if one agrees that the condition may be due to a haemolytic streptococcus; and again if there is any foundation /
foundation to the theory that the condition is allergic, vaccines may be used in future. A possible disadvantage with the latter therapy, however, is that unpleasant reactions sometimes ensue, with a rise in temperature, and this, of course, is always a risk during pregnancy.

In cases which are very severe and becoming worse in spite of medical treatment, some form of induction of labour may be considered. If this method is going to be used, it should be carried out while the patient is in a condition to stand it well, and before leucocytosis, rise of temperature and pulse rate, which usually indicate an acute endocarditis, have occurred.

The most suitable method of inducing premature labour in these cases is by hysterotomy if the condition occurs early in pregnancy, and either by rupturing the membranes or, as some authorities advocate, by bougies in the later months. If the condition is so severe that these latter methods appear too slow and rapid termination of pregnancy by Caesarean section is considered necessary, then it is too late for any kind of surgical intervention at all and medical treatment should be persevered with.

In the series of cases under discussion, two cases in which labour was induced by rupturing the membranes /
membranes before there was evidence of acute infection, ended favourably for mother and child. In another very severe case, which already showed signs of an acute infection, Caesarean section was performed as a last resort. The child died soon after birth and though the mother improved temporarily she succumbed 8 days later. The post mortem showed, as well as acute rheumatic endocarditis, acute peritonitis in the lower abdomen, due to infection of the wound.

This latter finding brings up another argument against abdominal operation in these cases: that there is great difficulty in nursing these patients properly.

To conclude: rest in bed, freedom from excitement, gentle discipline, a nutritious diet and attention to the bowels is sufficient treatment in mild cases. Sedatives may be used with discretion in more severe cases, always bearing in mind that the cause of death in a few cases has been as much due to overdosage with morphine and hyoscine as to the choreiform condition. In the most severe cases, medical treatment alone is again usually sufficient, but if there is no improvement under medical treatment, or if the condition becomes more pronounced, labour should /
should be induced without delay, the methods of choice being by the use of bougies in the uterus or by rupture of the membranes in the later months, or by vaginal hysterotomy in the early months.
SUMMARY

1. The frequency of Chorea Gravidarum at the Royal Maternity and Simpson Memorial Hospital, Edinburgh is 1 in 920.

2. It is the same condition as Sydenham's chorea in children, modified slightly by the pregnant state.

3. Both Sydenham's chorea and Chorea Gravidarum may be allergic conditions.

4. In Chorea Gravidarum this allergic reaction is brought about by pregnancy lowering the patient's resistance, so that a smaller dose of sensitising protein is necessary than would be the case in the non-gravid state.

5. The sensitising protein may be either the streptococcus rheumaticus or the scarletinal streptococcus.

6. Psychogenic factors play a part in the aetiology of chorea.

7. The mortality, both maternal and foetal, is high but might be lowered with adequate care in the Ante-Natal Clinics, more attention being paid particularly to the treatment of neurotic patients and to the removal of any possible foci of infection.

8. 
8. That Chorea Gravidarum and Sydenham's chorea are identical is neither proved nor disproved by a study of the brain pathology, as in most cases there are no pathological findings.
ACKNOWLEDGMENT

It is a great pleasure to acknowledge my indebtedness and thanks to Professor R.W. Johnstone for allowing me to use the records of the cases of Chorea Gravidarum at the Royal Maternity and Simpson Memorial Hospital, Edinburgh.

I have also to thank Professor James Young and Mr. Green-Armytage for allowing me to treat the cases under their care at St. Mary Abbots Hospital, London.
Case No. I.

JANE WILLIAMSON. Age, 19 years.

o/o Campbell, 7 Tennant Street, Leith.

23-11-28. Admitted

PAST HISTORY.

Previous Illnesses:

All children's ailments.

Never had scarlet fever or rheumatic fever.

Always healthy.

Family History:

Father and Mother, unknown.

Previous Obstetrical History:

Primigravida.

Periods regular.

No dysmenorrhoea.

PRESENT PREGNANCY.

L.M.P. March 1928. E.D.D. December 1928

History.

No morning sickness. Has attended Ante-
natal Clinic since 12th July, 1928. On 1st Oct.
1928, she was found to be very nervous, and
generalised choreiform movements were noticed.
On 25th October, 1928, she was given a bromide
mixture.

She has been so bad for the past 5 weeks
that she has been unable to dress herself, un-
less /
unless she took about an hour to do it. She can feed herself, but only with difficulty. She is easily frightened and gets very depressed at times. She cries a good deal.

She is constipated. Sleeps well.

**Condition on Examination.**

**General Appearance:**

Good colour. She is seen to have constant, irregular, jerking movements of her limbs, eyes, face and head. When she carries out voluntary movements, the jerkiness is more pronounced.

No oedema, cyanosis or jaundice.

**Cardio-vascular System:** N.A.D. Pulse regular in T. and F.; strong. B.P. 110/70

**Respiratory System:** N.A.D.

**Urine:** Straw. No albumen. Acid. S.G.1015.

**Height of fundus:** 4 fingers above umbilicus.

**Vertex L.O.A.**

**Head engaged.**

**F.H.H.**

**Measurements:** I.S. 10". I.C. 11".

**Treatment and Progress.**

Patient was put to bed and encouraged to have complete rest.

Full diet.

Elimination.

She /
She was put on: – Pot. Brom. gr. xxx, Chl. Hydrate gr.xv} 4 hrly.

23-11-28. Sleeps well, but there is a good deal of involuntary movement, even when asleep.


27-11-28. Put on Parke-Davis & Co.'s "Palerdin", 0.2 c.c. every 12 hours.


1-12-28. Left Hospital on her own responsibility.

27-11-37. Blood Calcium = 9.8 mgm. per 100 c.c. serum.

To report at A.N.C. for further test.

5-12-37. Blood Calcium = 9.5 mgm.% after treatment.
Case No. II

RACHAEL MOORE. Age: 19 years.

2, Hunters Buildings, East Whitburn.

25-9-29. Admitted to Royal Maternity and Simpson Memorial Hospital.

8-10-29. Discharged.

PAST HISTORY.

Previous Illnesses:

Chorea, age 8 years and 12 years.

Tonsillectomy, age 12 years.

Family History:

Father and Mother: alive and well.

7 Brothers: alive and well.

5 Brothers: dead. Cause unknown.

Obstetric History:

Primipara.

Menstrual Periods, N.A.D.

PRESENT PREGNANCY.

L.M.P. July 29, 1929.

E.D.D. April 5, 1930.

History.

Two months ago she developed chorea.

She had been in Ward 28, Royal Infirmary, since 20th September.

State /
State on Admission.

Heart: Mitral systolic murmur.

Otherwise, N.A.D. B.P.110/82

Lungs: N.A.D.

Height of Fundus: 2 fingers below S.P.

F.H.H.

Urine: N.A.D.

TREATMENT and PROGRESS.

25-9-29. Marked choreiform movements of face and hands.

Drugs: Aspirin gr.x, t.i.d.

Chloral Hydrate gr.xv.)

Pot. Brom. gr.xxx } nocte

27-9-29. Movements less marked.

Sleeping quietly.

30-9-29. Chorea improving daily.

1-10-29. Definite choreic movements.

No evidence of permanent cardiac damage at present. No rheumatic pains.

Tonsils a little ragged.

Slight pyorrhoea.

11.10.29. Chorea greatly improved.

To go home and report to Ante-natal Clinic.
Case No. III

Mrs. MARGARET BOYD. Age: 19 years.

14-8-30. Admitted to Royal Maternity and Simpson Memorial Hospital.


PAST HISTORY.

Previous Illnesses:
Measles. Bronchitis.
Always very healthy.
No history of rheumatic heart, scarlet fever, previous chorea.

Family History:
All healthy.

Obstetric History:
Primigravida.
N.A.D.

PRESENT PREGNANCY.


History.
Patient was very well till 6th month of pregnancy, when her right arm "started to jerk". She had no control over it. These movements were worse at night and not so marked when working. Had "fainting attacks" about the 8th month. Was not unconscious, and never fell.

Occasional /
Occasional slight dizziness.
No headaches.
Never constipated.

State on Admission.

General Appearance:
Healthy.
Slight choreic movements of right arm.
No cyanosis, jaundice or oedema.
Tongue: clean.
Teeth and gums: healthy.
Tonsils: N.A.D.

Cardio-vascular System: N.A.D.
Respiratory System: N.A.D.

Measurements: I.S. 8". I.C. 9½".
D.C. 4½". E.C. 7½".

Height of Fundus: 2 fingers below E.C.

Presentation and Position:
Vertex R.O.P.
Head free.
F.H.H.

TREATMENT /
TREATMENT and PROGRESS.

15-8-30. Patient has mild choreiform movements. R.O.P.
Fads applied.
Medical induction for impending disproportion.
Unsuccessful.

16-8-30. Still R.O.P. with head above brim.

19-8-30. Another medical induction.
Still no success.

28-8-30. Head engaging L.O.L.

30-8-30. Patient went into labour.
Membranes ruptured spontaneously
Spontaneous delivery of healthy male child.

7.15. Vertex L.O.A.
Duration of labour 15 hours 10 mins.
Choreic movements still present during labour.

PUERPERIUM. Uneventful and satisfactory.
Choreiform movements absent during puerperium.

8-9-30. Discharged in a satisfactory condition.
No evidence of chorea.
Case No. IV

Mrs. EWING. Age: 27 years.

1, North Square, Newcraighall.

11-9-30. Admitted to Royal Maternity and Simpson Memorial Hospital.


PAST HISTORY.

Previous Illnesses:
Growing pains in childhood.
Tonsillectomy, age 10 years.
Subject to sore throats still.
Chorea for first time in 2nd pregnancy.

Family History:
Father dead. Gastric ulcers.
Mother dead. Rheumatism.

Obstetric History:

Para III
1923. Full-term pregnancy.
No complications.
1924. Induction of labour at 2 months because of severe chorea.

PRESENT PREGNANCY.


History.
Excessive vomiting during first 3 months of /
of pregnancy, after every meal. Epistaxis after some of these attacks. Sometimes has backache. No urinary symptoms. "Pus cells in urine treated with Pot. Cit. Mixture."

When she was 4 months pregnant she began to complain of twitching of right arm and leg. She was treated with Thyroid gr. i daily, with no effect on the chorea.

22-5-30. She was admitted to the Antenatal Ward and treated with Bromides and Paraldehyde at nights.

The movements ceased after 1 week, and she was allowed home after 2 weeks.

Patient has remained at home since, and has been very well.

**Condition on Examination.**

**General Appearance:**

Healthy.

No cyanosis, jaundice or oedema.

Tongue: clean.

Teeth: dentures.

Tonsils: N.A.D.

Cardio-vascular System: N.A.D.

Respiratory System: N.A.D.

Urine: Acid. S.G. 1012.

Albumen and Pus .

Fundus /
Fundus: 4 fingers below E.C.

Presentation and Position:

Vertex L.O.A.

Head engaging.

F.H.H.

TREATMENT and PROGRESS.

15-9-30. Normal delivery of male infant, 7 lbs. 7 oz.

Duration of labour, 3 hrs. 10 min.
Perineal tear sutured with cat-gut.

PUERPERIUM. Uneventful.

There was no evidence of chorea throughout labour or puerperium.

Urine clear of albumen and pus on discharge, 24-9-30.
Case No. V

Mrs. DUFFY. Age: 19 years.

29-10-30. Admitted to Royal Maternity and Simpson Memorial Hospital.


PAST HISTORY.

Previous Illnesses:

Measles, whooping cough, bronchitis in childhood.

"Growing pains" and "Neuritis" in knees and arms, age 16. Two attacks

Occasional sore throats.

Family History:

Father died of pneumonia. Had rheumatism.

Mother, alive and well.

Obstetric History:

Primipara.

Menarché, age 13.

Irregular periods since age 15 years. Slight dysmenorrhea.

PRESENT PREGNANCY.


History.

No marked vomiting.

Constipation, relieved by cascara.

No /
No heartburn or headache.
Occasional glycosuria.

Involuntary movements of right hand first noticed at end of September, i.e. a month ago. This gradually became more marked, and now there are involuntary movements of right arm and leg. Left eye feels as if something were preventing patient from opening it fully.

Complains of breathlessness on exertion, and also occasionally when at rest - duration since childhood. It is not much worse since pregnancy began.

Occasionally suffers from palpitation.

Condition on Examination.

General Appearance:

Very nervous.
Choreiform movements of right arm and leg.
Slight intention tremor.
No cyanosis, jaundice or oedema.
Tongue: clean. Slight involuntary movements.
Teeth: 3 carious.
Tonsils: slightly enlarged and infected.

Cardio-vascular /
Cardio-vascular System:

   Seen by Dr. Gilchrist. N.A.D.
   B.P. 70/40.

Respiratory System: N.A.D.

Urine: Trace of sugar, which was again present on 7-11-30 and 14-11-30.
   (Probably lactosuria.)

Measurements:
   I.S. 10".  I.C.10½".  D.C. 4½".

Height of Fundus: 2 fingers below E.C.

Presentation and Position: Vertex L.O.P.
   Head free.

F.H.H.

**TREATMENT and PROGRESS.**

   Rest in bed.
   Full diet.
   Aspirin gr.x, t.i.d.
   Pot. Brom. gr.xv, t.i.d.

   Wassermann Reaction negative.

30.10.30. Attempt to rotate child L.O.A. Pads applied.

4.11.30. " " "

6.11.30. Vertex L.O.L.

17.11.30. Vertex L.O.L. Pads applied at 9 p.m.

18.11.30. 10.00 a.m. F.H.120 .5 cc.Pit. F.H136 MP112
          10.30 a.m. F.H.128 5 cc.Pit. F.H130 MP112
          10.50 a.m. Membranes ruptured.
18-11-30. Patient given "Twilight Sleep", and she delivered herself spontaneously of a healthy female infant, 7.2\frac{1}{2}

Duration of labour: 6 hours 15 mins.

Puerperium: After delivery the patient's condition rapidly improved.

Puerperium normal.

On discharge, practically no evidence of choreiform movements.
Case No. VI

Mrs. AGNES ANDERSON. Age, 23 years.

3-2-31. Admitted.

PAST HISTORY.

Previous Illnesses:
- Chorea, age 15 years. Lasted 10 weeks.
- Rheumatic fever (fingers and shoulder); age 16 years.

Family History:
- Good.
- Mother very nervous.

Previous Obstetrical History:
Para I.
- 9lbs. child. Alive and well.
- No complications.

PRESENT PREGNANCY.


History. Patient has been very easily tired since December. Says she has not felt fit for anything. She has had no sickness.

About 8 weeks ago she began to notice involuntary twitching movements of her arms, especially the left. Since then the movements have become progressively worse. Now the right arm is chiefly /
chiefly affected, and the left hardly at all. The movements are coarse and purposeless. She has complained of sleeplessness since the twitchings began. No headaches. No sore throats. No swelling of ankles. No breathlessness. No frequency of micturition. Bowels regular. She says she has occasional abdominal pains.

**Condition on Examination.**

**General Appearance:**

Violent choreic movements of head, right arm and right leg. Face distorted and constantly twitching.

No cyanosis, jaundice or oedema.

**Cardio-vascular System:**

Systolic murmur at apex.

Apex beat rapid and diffuse.

B.P. 120/80 Pulse, 120 per min.

**Respiratory System:** N.A.D.


Height of fundus: 2 fingers below xiphisternum.

**Presentation and Position:** Vertex L.O.A.

Head engaged.

F.H.H.

Cervix, 2 fingers dilated.

Record /
Record of Labour:

Labour started 3rd Feb. 1931.
Membranes ruptured 1-15 p.m. 4th Feb. 1931.
Normal delivery of healthy female infant at 1-50 p.m.
Duration of labour - 19 hours 5 minutes.

Treatment.

3-2-31.

7.10 p.m. H.I. Morphine gr. 1/6
   Hyoscine gr. 1/150

4-2-31.

12.30 a.m. Thymophysin .75 c.c.
12.35 p.m. H.I. Morphine gr. 1/6
   Hyoscine gr. 1/150.
1.15 p.m. H.I. Hyoscine gr. 1/200.

The choreic movements were very marked up to
the time of birth of the child. Then the patient became almost normal the day after delivery.

Treatment was begun with:
Ostelin and parathyroid tablets, 1 tab. t.i.d.
Collosal Calcium, ½ c.c. I.M. t.i.d.

The puerperium was very satisfactory, and the patient was discharged in a healthy condition with no evidence of chorea on 21st February, 1931.
Case No. VII

Mrs. JANET ROSS. Age: 39 years.

8-3-31. Admitted to Royal Maternity and Simpson Memorial Hospital.

21-3-31. Discharged home.

PAST HISTORY.

Previous Illnesses:
Scarlet fever in childhood.

Previous Obstetric History:
Para VI

1920. Full-term. Spontaneous. No complication
1923. " " "
1926. " " "
1927. " " "
1928. " " "

PRESENT PREGNANCY.


History.
No sickness or vomiting.
No headaches. No blurred vision.
No swelling of face, hands or feet.
No urgency of micturition.

Condition on Examination.

General Appearance:
Good.
No /
No cyanosis, jaundice or oedema.
Tongue: clean.
Teeth and gums: good.
Tonsils: N.A.D.
Cardio-vascular System: N.A.D.
Respiratory System: N.A.D.

Apparantly at full term.
Presentation and Position:
Vertex L.O.P.

Record of Labour.

9-3-31. Onset of labour at 3.30 a.m.
Period of gestation: 39 weeks.
Condition at onset of labour: good.
Membranes ruptured: 10.30 p.m.

The position of the child was
vertex L.O.P., and the pains were poor and irregular.

10.3.31. 6 p.m. Ol. ric. i given.
7 p.m. En. Sap. given
8 p.m. Quin. Sulph. gr.x
10 p.m. " " "

12.3.31. 11.30 a.m. Thymophsin M vii given.
H.I. Thymophsin, 1 cc. at 10.45 p.m.
Patient was delivered of a healthy
male infant, weight 7 lbs. 9 oz., at
11.20 p.m., 12-3-31.
Duration of labour, 2½ days.

Faituitrin /
Pituitrin and Ergot given after delivery of placenta.

PUERPERIUM.

Involution normal.

Throughout the puerperium the patient was rather hysterical. During the first 3 days of the puerperium she required a hypnotic (chloral and bromide as gr.x) to make her sleep. During the following 5 days she developed definite choreic movements. She was treated with Pot. Brom. gr.x, t.i.d. Sod. Salicyl. gr.xx t.i.d.

With this treatment she settled down, and was discharged well on 21-3-31.
Case No. VIII

Mrs. MILLAR. Age: 29 years.

9, Ramsay Square, Loanhead.

6-5-31. Admitted to Royal Maternity and Simpson Memorial Hospital.


Past History:

Previous Illnesses:

- Measles and chickenpox in childhood.
- Rheumatic fever 6 years ago. In bed for 5 months, and in Royal Infirmary, Edinburgh for 7 weeks.
- Fatty tumour of breast removed a few years ago.
- Rheumatoid arthritis of hands 3 years ago.

Family History:

- Husband, alive and well.
- Mother, dead.
- Father, alive and well.
- 7 Brothers Alive and well.
- 2 Sisters
- 1 Sister died in infancy.
- 1 Sister died of diabetes.

Obstetric History:

- Primipara.
- Menarche, age 14 years.
- Dysmenorrhea. Severe on 1st day.

Present /
PRESENT PREGNANCY.


History.

Patient has had pains in back of neck and right arm and hand for past month. She has also had twitchings of hand, face and neck for last month.

Bad headaches at beginning of pregnancy.
No frequency of micturition or dysuria.
Bowels regular.
Heartburn severe for past 3 months.
No vaginal discharge.
No swelling of legs and hands.
Very bad vomiting between 4th and 5th month.

D. & C. for menorrhagia in Ward 35, Royal Infirmary, Edinburgh, 12 months ago.

Condition on Examination.

General Appearance: Healthy.

No jaundice, cyanosis or oedema.
Tongue: clean.
Tonsils: N.A.D.
Teeth: fairly good.

Cardio-vascular System:

Heart = systolic murmur at mitral area. (See below)
Otherwise N.A.D.
B.P. 90/60.

Respiratory /
Respiratory System: N.A.D.
Measurements: I.S. 9½". I.C. 10½".
Height of Fundus: 5 fingers below E.C.
Presentation and Position: Breech L.S.A.
F.H.H.
Head free.

**TREATMENT and PROGRESS.**

6-5-31. Rest in bed.

Sod. Brom. gr.xx, nocte.

8-5-31. Seen by Dr. Rae Gilchrist.


Condition satisfactory.
Case No. IX-A.

Mrs. ELIZABETH LINES. Age: 18 years.

22-1-32. Admitted to Royal Maternity and Simpson Memorial Hospital.

9-2-32. Discharged.

PAST HISTORY.

Previous Illnesses:

- Diphtheria, age 13 years.
- Rickets.
- Abscesses in the neck.
- Measles.
- Tonsillectomy in childhood.
- Chickenpox.
- Appendicectomy, age 13 years.

No history of rheumatic fever, but suffers from frequent sore throats and used to have severe growing pains.

Never had St. Vitus Dance.

Family History: N.A.D.

- Father and Mother, alive and well.
- 2 Brothers, alive and well.
- 1 Sister died, cause unknown.
- Husband healthy.

Obstetric History:

- Primigravida.
PRESENT PREGNANCY.

L.M.P. Beginning of August, 1931.
E.D.D. Middle of May, 1932.

History.

Patient states she got a "wire in her foot" at the beginning of August and that the movements have been present since then. She has felt them all through the pregnancy, and states that they were just as severe at the beginning as they are now.

She drops things which she is holding, and finds difficulty in walking owing to uncontrollable jerkings of her left foot.

She has no difficulty in speaking.

She has not had any sickness, but has been very constipated.

Condition on Examination.

General Appearance: Very pale.

Twitching on left side of the body.

Movements very coarse.

No movements on right side.

No cyanosis, jaundice or oedema.

Tongue: dirty.

Teeth and gums: very poor condition.

Tonsils: have been removed.

Cardio-vascular /
Cardio-vascular System:

Pulse regular in T. and F. 80 per min.
Heart sounds pure and closed in all areas.
B.P. 130/80. (Patient very nervous.)

Respiratory System:

N.A.D.

General:
Movements intensified by emotional stress. Impossible to take Wassermann Reaction.


Height of Fundus: Up to umbilicus.

Position and Presentation:

Head free.
F. H. H.

TREATMENT and PROGRESS.

22-1-32. Patient to have rest in bed.
          Full diet.
24-1-32. Movements not so marked to-day.
          OSTELIN and PARATHYROID (Glaxo) 1 tab.
          t.i.d., p.c.
3-2-32. Improvement continued. Patient appears very well.
4-2-32. Patient allowed up
          Condition satisfactory. Movements absent.

Urine N.A.D. T.P.R. = N.A.D. B.P. 110/60.
31-3-32. READMITTED.

History.

Patient states that she has felt much better since she left hospital, and continued to do so till about the middle of February, when the movements became very bad again.

She has had a WHITLOW on her finger, which was opened and the nail removed in the Royal Infirmary, Edinburgh on 18th March 1932.

Condition on Examination.

General Appearance:

Generalised twitching of limbs and body.

Cyanosis: slight. No oedema or jaundice.

Cardio-vascular System: N.A.D.

Respiratory System: N.A.D.

Measurements: I.C. 10". I.S. 8\frac{3}{4}".

Trans. of Outlet = 3\frac{1}{2}".

Post. Sagitt = 3\frac{3}{4}".

Height of Fundus: 2 fingers below Ensiform Cartilage.

Position and Presentation:

Vertex L.O.A.

Head engaging F.H.H.

B.P. 98/70

Urine: N.A.D.

TREATMENT /
TREATMENT and PROGRESS.

1-4-32. Rest. Full diet.

Mist. Pot. Brom. 35 ss. t.i.d.

2-4-32. Ostelin and Parathyroid, 2 tablets, t.i.d., p.c.

Patient gradually improved again, and went into labour 8-5-32.

She was given "Twilight Sleep" and was delivered of a healthy female infant, after a normal labour lasting 10½ hours.

She was very excited after labour, but the puerperium was normal and uneventful. On discharge the choreiform movements had almost ceased. The movements completely disappeared 3 weeks after delivery.

1933. FURTHER HISTORY.

Patient had a normal, full-term pregnancy in 1933. She had a spontaneous delivery of a 7½ lb. child. There was no evidence of chorea.

1-6-34. Readmitted to Royal Maternity and Simpson Memorial Hospital.

PAST HISTORY: See above.
Case No.IX - B

PRESENT PREGNANCY.


History.

Jerky movements began 5 days ago, after patient had taken two purgative pills.

Pain in joints, moving from ankles to knees, for last 5 days.

Sore throat 3 weeks ago, for a few days.

Headaches began 2 weeks ago, and were very severe.

Giddiness occasionally, for last 3 weeks.

Specks before eyes occasionally, for last few weeks.

Vomiting, heartburn and constipation throughout pregnancy.

No frequency. No dysuria. No leucorrhoea.

No Bleeding.

Pain in left side of chest for last 3 days.

Condition on Examination.

General Appearance: Flushed, and making generalised uncontrolled choreic movements.

Otherwise N.A.D.

Height of Fundus: 1\(\frac{1}{2}\)" below umbilicus.
TREATMENT and PROGRESS.

Isolation and complete rest in bed.
Choreiform movements were reduced to an occasional twitch when patient took her own discharge on 18-6-34.

3-9-34. Readmitted to Royal Maternity and Simpson Memorial Hospital.
Choreic movements very marked.

TREATMENT and PROGRESS.

3-9-34. No T.PiR.
Urine: clear.
B.P. 120/80.
Pot. Brom. and Choral Hydrate 4-hourly.

5-9-34. Morphine gr.½ and Mag. Sulph. 2 c.c. (40%) I.M.

6-9-34. Aspirin gr.xv, t.i.d
7-9-34. Aspirin gr.x, t.i.d.
Pot. Brom. and Choral, nocte.

5-10-34. Stop aspirin.
Patient had gradually improved.

11-10-34. 7 p.m. Membranes ruptured. Leg brought down and 1 lb. weight attached.

11 p.m. Delivery of healthy female child, Breech L.S.A.

12 /
12-10-34. 1.20 a.m. H.I. Morphine gr. $\frac{1}{4}$.
To ensure a good rest.

Puerperium: Uneventful.

Choreic movements greatly improved.
Case No. X

Mrs. HENRIETTA JONES. Age: 22 years.

22-4-32. Admitted to Royal Maternity and Simpson Memorial Hospital.
26-4-32. Discharged.

PAST HISTORY.

Previous Illnesses:
Chorea at age of about 11 years.

Family History:
Father and Mother, alive and well.
Brother, alive and well.

Obstetrical History:
Primipara.
Menstruation \(\frac{3}{28}\) regular.
No dysmenorrhoea.
No leucorrhoea.

PRESENT PREGNANCY.


History.
She has had transient attacks of chorea since the age of 11 years. The last attack began about August 1931, and has continued ever since. It has become much aggravated since she became pregnant. On 20th April, 1932, she had no power in her right arm all day. Twitching of her right hand is more evident /
evident, even to herself, than that of her left hand.

She has had morning sickness during the whole of the last three months.
No other symptoms.

**Condition on Examination.**

*General Appearance:* Good. Twitching of face and hands most marked on right side.
No cyanosis, jaundice or oedema.
Tongue, clean.
Teeth and gums, fair.
Tonsils, N.A.D.

*Cardio-vascular System:*  
Presystolic murmur at mitral area.
All other sounds pure and closed.
Pulse, 86 per minute.

*Respiratory System:* N.A.D.

*Urine:* N.A.D.

*Measurements:* I.S. 8\(\frac{\pi}{2}\)". I.C. 10\(\frac{1}{2}\)".
Height of fundus: 1-2 fingers below umbilicus.

**Treatment.**
Rest in bed.
Full diet.
Salicylates.

26-4-32. Patient took her own discharge against advice, and was not delivered in this hospital.
Condition on discharge: I.S.Q.
Case No. XI

JANE SCOTT. Age: 17 years.

First admitted to Royal Infirmary, Edinburgh. 5-7-32.
Discharged to Convalescent Home. 9-8-32.

Complaint:
Restlessness. Duration
Twitching of limbs. 1 month.
Dropping of articles, e.g. cups.

Previous History:
Rheumatism in both knees, age 13 years.
No other illness of note.

Family History: N.A.D.

Diagnosis:
Chorea (Sydenham's)

TREATMENT.
Rest.
Diet -
NIRVANOL .3 Gm. daily till 3.6 Gm. taken
On the 10th day there was the usual febrile reaction, followed by an uninterrupted convalescence.

25-2-35. Patient reported that her condition was satisfactory and that she was still in good health.

Summary /
Summary.

Fairly severe chorea, afebrile apart from reaction to drug.

 Pulse never above 80 per minute.
 No cardiac lesion (Prof. Ritchie).
 Urine: N.A.D.
 No evidence of chorea on discharge.

 Age: 21 years.

Summary.

A case of chorea with established mitral stenosis, in a girl who had previously been in the ward with chorea (heart unaffected), 4 years ago. The patient herself could think of no factor which might have precipitated a recurrence, but on examination "There was more than a suspicion of early pregnancy" (4 months). Despite this, however, she was transferred to the Astley Ainslie Institution, 25-9-36.

 Urine: N.A.D.

27-11-36. Discharged from A.A.I.

TREATMENT.

 Rest in bed.
 Full diet.
 Occupational therapy.

Condition /
Condition on discharge.

Greatly improved.

No movements.

Heart: I.S.Q.

Ascheim-Zondek Test negative on 2 occasions.

Abdominal swelling ? ovarian cyst.

No other signs of pregnancy.

25-12-36. Admitted to Royal Maternity and Simpson Memorial Hospital.

Condition on Examination.


Period of gestation: 28 weeks.

T.100 P.150 R.46

Urine: Acid. Albumen --

Acutely breathless and cyanosed with rising pulse.

Generalised choreic movements, more marked in upper half of body.

Patient very distressed.

No oedema.

Cardio-vascular System:

Advanced mitral stenosis.

Respiratory System:

Coarse crepitations at both bases.

TREATMENT /
TREATMENT.

11.20 a.m. Pot. Brom. gr.xx
Luminal gr. i

1 p.m. Digoxin .5 mgm. in 20 c.c. sterile normal saline
Luminal 1 c.c. I.M.
H.I. Hyoscine gr. 1/100
Adrenaline 1 c.c. intracardiac
Oxygen

1.40 p.m. Died.

POST MORTEM REPORT.

Confluent broncho-pneumonia.

Advanced mitral stenosis.
Case No. XII
Mrs. MARIE SHORT. Age, 19 years.

1 Quarry Street, Kingscot, Dunfermline.

30-8-32. Admitted to Royal Maternity & Simpson Memorial Hospital.

5-9-32. Discharged home.

PAST HISTORY.

Previous Illnesses:
Scarlet fever in childhood.

Family History:
Father and Mother, alive and well.

Obstetrical History:
Primipara.
Periods $\frac{4-5}{30}$, regular.
No dysmenorrhoea.

PRESENT PREGNANCY.


History.
Patient has had morning sickness for past four months. No headaches. Patient noticed her left hand, left arm, left leg, and face becoming very jerky about one week ago. She was unable to hold any article in her left hand without dropping it.

No pain in joints.
No sore throats.

Condition /
Condition on Examination.

General Appearance: Good. Twitching of left side of face.
No cyanosis, jaundice or oedema.
Tongue, fairly clean.
Teeth and gums, good.
Tonsils, N.A.D.

Cardio-vascular System:
B.P. 118/78
Heart N.A.D.

Respiratory System: N.A.D.
Height of fundus: 2 fingers above umbilicus.
Presentation and Position: Vertex L.O.L.
Head free.
F.H.H.

Treatment.

Rest in bed.
Full diet.
Sod. Salicylate gr.x 4-hourly.

5-9-32. Discharged cured.

No evidence of choreic movements.
Case No. XIII

Mrs. MARY BERMINGHAM. Age: 21 years.

16-10-32. Admitted to Royal Maternity and Simpson Memorial Hospital.

26-10-32. Discharged home.

PAST HISTORY.

Previous Illnesses:
- Zymotic diseases of childhood.
- Chorea at age of 7, 9, 11 years.

Family History:
- Husband healthy.

Obstetrical History:
- Primipara.

PRESENT PREGNANCY.


History.

During this pregnancy she has occasionally suffered from frequency of micturition, constipation and heartburn, sometimes severe. Occasionally she has had severe headaches.

Condition on Examination.

General Appearance:
- Good. No cyanosis, jaundice or oedema.
- Tongue, clean.
- Teeth, caries.
- Tonsils, nil.

Cardio-vascular /
Cardio-vascular System: Heart apparently healthy.
Respiratory System: N.A.D.
Other Systems: N.A.D.
Urine: N.A.D.
Height of fundus: 2" below xiphisternum.
Presentation and Position:
    Vertex L.O.A.
    Engaged.

Record of Labour.

Commenced 16th October, 1932, at 9 a.m.

Choreiform twitchings were noticed while patient was in labour. These were not apparent before.

At 3-55 p.m. She was delivered spontaneously of a healthy female infant.

Weight, 6 lbs 3 oz.

Duration of labour 6 hrs. 55 mins.

The labour, apart from these involuntary twitchings, which necessitated the administration of Choral Hydrate gr.xx at 2-30 p.m., was normal.

The chorea disappeared under treatment with rest, and sedatives during the puerperium, which was otherwise uneventful. Patient required H.I. Morphine at 7-30 p.m. on date of delivery.


It /
It will be noted that, from the dates, the maturity of the child is only 34 weeks.
However, weight 6 lbs 3 oz.
length 18"
head measurement 12½".
Case No. XIV

JEAN INKSTER. Age: 21 years.

27 Hendry Road, Kirkcaldy.

28-12-32. Admitted to Royal Maternity and Simpson Memorial Hospital.

2-2-33. Discharged.

PAST HISTORY.

Previous Illnesses:

Scarlet fever. Measles.

Has never had rheumatic fever or growing pains.

Never had chorea before.

Family History:

Mother, alive and well.

Father, dead. Cause unknown.

Obstetric History:

Primipara.

Menstrual history, N.A.D.

PRESENT PREGNANCY.


History.

Patient's right hand started to twitch 3 weeks ago. This gradually became worse, till all the extremities and face became involved. According to a friend, the irregular, purposeless movements have become worse since Christmas.

The condition is attributed to worry.

over /
over her mother, who has sciatica, and the fact that the patient now has to look after 5 lodgers.

**Condition on Examination.**

**General Appearance:**
Perpetual, purposeless movements of the whole body, arms, legs and face.
No cyanosis, jaundice or oedema.
Tongue: clean and moist.
Teeth: N.A.D.
Tonsils: N.A.D.

**Cardio-vascular System:**
Pulse regular in T. and F. 84 per min.
Heart: systolic murmur at mitral area.
Otherwise, N.A.D.
B.P. 120/70.

**Respiratory System:** N.A.D.

**Urine:** Acid. No albumen.

**Height of Fundus:** 2 fingers below umbilicus.

**TREATMENT and PROGRESS.**

28-12-32. Patient to have rest in bed.
Full diet.
To be kept quiet.

**Drugs:**
(i) Ostelin & Parathyroid 1 tab. t.i.d.
   (Each tab contains: Ostelin Miii
   Parath.sicc. gr. \( \frac{1}{1000} \)
   Calc.Glyceroph.gr. ii

(ii) Pot. Brom. gr.xx, t.i.d.
29-12-32. Patient much quieter.

30-12-32. Luminal gr.i, b.i.d.

1-1-33. Luminal gr.i, nocte.

6-1-33. Patient quieter.

7-1-33. Patient much more restless.

Luminal gr.i

10-1-33. R Aspirin gr.x, t.i.d.

Patient much quieter and more rational.

15-1-33. Patient much better.

Hardly any movements now.

28-1-33. Patient up, and quite well.

2-2-33. Discharged.

Condition very satisfactory.

No movements.
Case No. XV

Mrs. ANNIE PETERS.  Age: 20 years.

Ellen's Glen, Stenhouse.

17-2-33. Admitted to Royal Maternity and Simpson Memorial Hospital.

3-3-33. Discharged.

PAST HISTORY.

Previous Illnesses:

Chorea at 9 years of age, and patient still has choreic movements.
Frequent sore throats.
Patient is slightly abnormal mentally, and history is difficult to obtain.

Family History:

Father and Mother: alive and well.

Obstetric History:

Primipara.

PRESENT PREGNANCY.


History.

Her last full period was in September.
Since then the patient has lost a little at times corresponding to each suppressed period.
Two weeks before admission and again the day before admission, she had fairly sharp haemorrhages and lost quite large clots.

During /
During the bleeding, the patient had pains starting at the back and radiating round to the abdomen.

Patient does not think the chorea is worse since the onset of pregnancy.

**Condition on Examination.**

**General Appearance:**

Except for the mild choreic movements, the patient looks healthy.

No cyanosis, jaundice or oedema.

Tongue clean.

Teeth carious.

Tonsils, N.A.D.

Cardio-vascular System: N.A.D.

Respiratory System: N.A.D.

Urine: N.A.D.

Height of Fundus: 2" below umbilicus.

Vaginal Examination: No bleeding.

Os closed.

**TREATMENT and PROGRESS.**

17-2-33. Rest in bed.

Aspirin gr.v. t.i.d. for chorea.

19-2-37. Slight loss during night.

Morphine gr. 1/2. 10 p.m.


No further treatment.

There were no further bleedings, and the patient was discharged 3-3-33.

There was no change in the choreic condition, for better or for worse.
Case No. XVI

Mrs. MAY. Age: 24 years.
56 Northfield Crescent, Piershill.

25-3-35. Admitted to Royal Maternity and Simpson Memorial Hospital.

PAST HISTORY.

Not available.

PRESENT PREGNANCY.


History.
Para I.
No chorea with first pregnancy.

Condition on Examination.
Head on perineum.
Having spasmodic, jerky, choreiform movements.

Progress of Labour.
25-3-35. 5.00 p.m. Pains commencing.
9.55 p.m. Membranes ruptured, and child born.
Premature. Wt. 5 lbs. 11 oz.
10.15 p.m. Placenta born.
Patient very restless, and given Hyoscine gr. $\frac{1}{200}$ after delivery.

PUERPERIUM /
PUERPERIUM.

Uneventful.

Patient was put on bromides, and the choreic movements had almost disappeared on discharge, 3-4-35.
Case No.XVII

SARAH JOHNSTONE. Age: 22 years.

20-6-35. Admitted to Royal Maternity and Simpson Memorial Hospital.

26-7-35. Discharged home.

PAST HISTORY.

Previous Illnesses:

No history of scarlet fever.

Chorea 1928.

No history of rheumatic fever, but often away from school with "rheumatic heart".

Family History:

Father and Mother healthy.

Brother died of rheumatic fever.

Previous Obstetric History:

Primipara.

Periods regular, 3-7/28

PRESENT PREGNANCY.


History.

Five weeks before admission there was a sudden onset of chorea, affecting the right side of the body. Patient was treated by rest and sedatives in Ward 24, Royal Infirmary, Edinburgh.

She complained of lower abdominal pain which lasted for 24 hours, three days before admission.

There was no haemorrhage.

State /
State on Admission.

No cyanosis, jaundice or oedema.
Tongue clean.
Teeth bad.
Tonsils, N.A.D.

Cardio-vascular System:
Heart not enlarged.
Forceful apex beat.
Presystolic murmur at mitral area.
Also aortic systolic murmur propagated down left border of sternum.
Numerous extra-systoles
B.P. 130/80.

Respiratory System: N.A.D.

Central Nervous System:
No choreiform movements now.
Hyperextension of both wrists.
Reflexes exaggerated on right side.
No tongue tremor.

Wassermann Reaction - negative.
Ascheim-Zondek - (done in R.I.E.)
Progress and Treatment.

21-6-35. Heart = Aortic regurgitation.
   Aortic diastolic murmur.
   Definite presystolic murmur at mitral area.
   Possibly recent endocarditis.

28-6-35. Fundus, 2 fingers below E.C.
   No foetal heart.
   ? Quickening to-day.

Vaginal Examination:
   Cervix small and hard.
   Uterus = size of 16-18 wks. pregnancy.

3-7-35. Patient catheterised.
9:30 a.m.  H.I. Morphine gr.$\frac{1}{4}$
   Hyoscine gr.$\frac{1}{100}$

Operation:
   Anterior hysterotomy under local anaesthesia, $\frac{1}{2}$\% Novocaine being used.
   Foetus, placenta and membranes intact.
   H.I. Morphine gr.$\frac{1}{6}$ given after the operation.

6-7-35. Pot. Brom. gr.xv t.i.d.
   Despite further large doses of Potassium Bromide, patient still very hysterical.

Patient gradually made a satisfactory recovery and was discharged home on 26-7-35.

Condition /
Condition on Discharge:

Abdominal wound - satisfactory.
Puerperium - uneventful.
B.P. satisfactory, 130/80
Condition satisfactory.

28-8-35. Patient returned for further examination.

On examination, condition found to be satisfactory.

Uterus antverted.

No evidence of chorea.
Case No.XVIII

Mrs. JESSIE DONALDSON. Age: 25 years.

23-9-36. Admitted to Royal Maternity and Simpson Memorial Hospital.

30-9-36. Discharged home.

PAST HISTORY.

Previous Illnesses:

Measles. Scarlet fever. Frequent sore throats as a child.
Chorea started when periods began.
12 years ago, according to her doctor, to whom I wrote.
Had influenza followed by chorea, age 17 years, and was in Ward 33, R. I.E., for 3 months.

Family History:

N. A. D.

Previous Obstetric History:

Periods regular, $\frac{3}{28}$. Loss normal.

Para III.

Labour and puerperium normal.
Child (F) alive and well.


Chorea was present during these three pregnancies, and was not exaggerated by them.

PRESENT /
PRESENT PREGNANCY.


History.

Patient always suffers from very mild twitchings, and has done so since her periods began 12 years ago. The twitchings became more severe following influenza at the age of 17 years, but after treatment they greatly improved.

They did not become worse during her previous pregnancies.

On this occasion, however, when the patient was 1 month pregnant, the choreiform movements became very troublesome, chiefly on the left side of her body.

She is unable to do housework, and cannot hold articles in her hands.

She loses the power of speech at intervals.

She sleeps badly, and her tongue is constantly moving.

No cough or breathlessness.

No morning sickness.

Condition on Examination.

General Appearance: Healthy.

No cyanosis, jaundice or oedema.

Tongue, clean. Bowels regular.

Teeth, edentulous.

Tonsils, N.A.D.

Cardio-vascular /
Cardio-vascular System:
Heart: N.A.D.
B.P. 120/76

Respiratory System: N.A.D.

Urine: No frequency or dysuria.
No albumen.

Uterus: About the size of 9 weeks gestation.

Treatment and Progress.
24-9-36. Rest in bed.
Full diet.

Drugs: Mist.Sod.Sal.gr.xx, 4 hrly.
Luminal gr.i, m. et n.

Polymorphs 75%
Lymphocytes 20%
Eosinophils 1%
Mononuclears 4%

Discharged home to attend own doctor.
Case No. XIX

Mrs. AGNES FAWCETT. Age: 22 years.

5-11-36. Admitted to Royal Maternity and Simpson Memorial Hospital.

18-11-36. Discharged.

PAST HISTORY.

Previous Illnesses:

Sore throats quite frequently.

"Growing pains" in childhood.

Has had chorea since she was 6 months old.

Family History:

N.A.D.

Previous Obstetric History:

Primipara.

Periods regular, $\frac{3}{30}$.

PRESENT PREGNANCY.

L.M.P. End of May, 1936.


History.

Patient was quite well till June, when she noticed that the twitchings of her face and hands, which she had always had, were becoming worse.

She can sew and do her housework quite well.

No difficulty with feeding herself and drinking.

No breathlessness or cough.

Had /
Had early morning sickness during first 3 months.

During the last 3 weeks she has been kept awake at night by the twitchings.

Condition on Examination.

General Appearance:
Looks healthy.
Marked choreiform movements of hands face and tongue. Also present in the shoulders.
No jaundice, cyanosis or oedema.
Tongue: Clean. Movements uncontrolled
Bowels open regularly.
Teeth and gums: Bad.

Cardio-vascular System:
No abnormality noted.
B.F. 120/80.

Respiratory System:
N.A.D.
Urine: Trace of albumen.
Microscopically - N.A.D.

Height of Fundus:
Half-way between umbilicus and xiphisternum.

Presentation and Position:
F.H.H.
Vertex
Head free.
22 weeks +

Treatment /
Treatment and Progress.

6-11-36. Rest in bed.
Full diet.

W.B.C. = 11,720
B.P. 120/80
Trace of albumen in urine.
Microscopically negative.


8-11-36. Urine free from albumen.

Sleeps well.
No sign of any other nervous disorder (Friedreich's Ataxia excluded).

B.P. 118/70

14-11-36. Trace of albumen in urine.
Cleared up next day.

17-11-36. B.P. 100/60.

18-11-36. Choreiform movements only very slight.
Urine clear.
Heart, N.A.D.

Discharged home.
Case No. XX

Mrs. PORTEOUS. Age: 25 years.


4-12-36. Discharged.

PAST HISTORY.

Previous Illnesses:

- Hysteria in childhood.
- No rheumatic fever, scarlet fever or diphtheria.
- Chorea in June 1935. Was confined to bed for 10 months, then cured.

Family History:

- N.A.D.

Previous Obstetric History:

- Primipara.
- Periods regular, $\frac{3}{30}$

PRESENT PREGNANCY.

- E.D.D. Beginning of April, 1937.

History:

Patient noticed twitchings of hands in the first 2 months of pregnancy and seemed to "lose her grip". She can feed herself and walks and balances quite well, but has difficulty in fastening buttons, etc.

She /
She suffers from occasional headaches.
She suffers from breathlessness at night, or on going upstairs.
She can do her own housework and washing.
She has had a slight cough at night for the past 2 weeks.
Heartburn has been bad recently.
No vomiting.

**Condition on Examination.**

Patient was seen to have coarse, uncontrolled choreiform movements of tongue, face, hands and body. Healthy appearance.

Tongue, slightly atrophic. B.O.R.
Teeth, edentulous.
No cyanosis, jaundice or oedema.

**Cardio-vascular System:**
Heart not enlarged.
Systolic murmur at all areas.
Reduplicated 2nd round at mitral area.

**Respiratory System:** N.A.D.

**Urine:** N.A.D.

**Fundus:** 1 finger above umbilicus
= 22 wks. pregnancy.

**Measurements:** I.S. 9½". I.C. 10¼"

Spleen: not palpable.

Progress /
Progress and Treatment.

16-11-36. Patient put to rest in bed.
Bowels kept regular.
Full diet.

Drugs: Luminal gr. ss t.i.d.
Pot.Brom.gr. xv

W.B.C. 11,400. B.P. 125/60

17-11-36. Urine - trace of albumen.
(No further evidence of this.)

Sleeps well. B.P. 115/45
Luminal and Bromide discontinued.

To have: - Calcium Aspirin gr. x t.i.d.

23-11-36. B.P. 100/40
Improving gradually.

26-11-36. B.P. 100/50

30-11-36. B.P. 100/60. Much improved.

4-12-36. Condition satisfactory.
Patient discharged home.

T.P.R. Normal throughout.
Case No. XXI

FLORENCE RACKHAM. Age: 20 years. Date of Birth, 9 - 12 - 16.
39 Lonsdale Road, Bayswater.

PAST HISTORY.
Previous Illnesses:
Rheumatic fever and chorea, age 12 years.

Family History:
Nothing to note.

Previous Pregnancy:
This pregnancy was complicated by chorea.

PRESENT PREGNANCY.
Amenorrhoea since last pregnancy.
1-3-37. Admitted from Out Patient Department to Ante-natal Ward.

History.
Perfectly well till one week ago, when she developed twitching of left arm and left side of face.

Condition on Examination.
Well developed
Looks pale and anaemic.
Slight twitching of left arm and head.

Central Nervous System:
Cranial /
Cranial nerves, N.A.D.
Reflexes: wrist and elbow ++
K.J. and A.J. ++
Plantar ↓↓
Abdomen ♂♀
No clonus.

Motor Functions:
Tremor (coarse) of fingers
Choreiform movements of arms, left -
Jerky movements of head.

Sensory Functions: N.A.D.

Alimentary System:
Teeth, good condition.
Tongue, clean and moist
Appetite, good. Bowels open regularly.

Abdomen:
Uterus, height of 30 weeks.
R.S.A.
F.H.H.

Circulatory System:
B.P. 150/90. High tension pulse. Full and collapsing. Good vessel wall.
Apex beat - not palpable.
Pulmonary artery palpable due to pregnancy /
nancy and diaphragm being displaced upwards.
Triple rhythm with short systolic murmur
heard at all areas.
No characteristic conduction.
Respiratory System:
N.A.D.
Urinary System:
No frequency or dysuria.
S.G. 1032. Acid. Albumen- Sugar- Fus-

TREATMENT and PROGRESS.
2-3-37. Mist Sod. Sal. 3 i, t.i.d., p.c.

Diet:
Mist. Ferri et Ammon. Cit. gr. xxx, t.i.d
Fruit +
Marmite, etc.

Urine:
Epithelial and hyaline casts.
Culture sterile.

Differential Count:
Polymorphs Neutrophils 71%
Eosinophils 1%
Basophils -
Lymphocytes 24%
Monocytes 3%
Stained film Anisocytosis and polychromasia.
R.B.C. = 3,680,000 C.I. -.9
Hb. = 70% W.B.C. = 6,600

3-3-37 /
3-3-37. Marked improvement.

No coarse choreiform movements, as on admission.

Wassermann Reaction negative.

Still choreiform movements of hands and fingers.

8-3-37. R.O.A.

F.H.H.

Head not engaged

No twitching now. Patient can write.

11-3-37. Slight roughing, 1st sound mitral area.

Patient feels well. Choreiform movements stopped.

L.O.A. F.H.H. Head free.

15-3-37. R.B.C. 5,240,000. H.b. 102.4% C.I. 49.

22-3-37. Chorea absent. Patient feels well.

R.O.A. F.H.H. 34 weeks.

5-4-37. Discharged.

To attend Ante-natal Clinic.

ATTENDANCES AT ANTE-NATAL CLINIC.

Routine Examinations:

15-4-37. 1st Attendance.

L.M.P. ? E.D.D. ? May (see above)

History.

Vomiting /
Vomiting: Headache: Vision: Oedema: N.A.D.
Bleeding: N.A.D.
Quickening: November.
Remarks: See above history.
General Condition: N.A.D. Nutrition: N.A.D
Heart: See above.
Lungs: Breast and Nipples: Teeth: N.A.D.
Digestive System (vomiting and constipation) N.A.D.
Varicose Veins: Micturition: } N.A.D.
Vaginal Discharge: Piles: } N.A.D.
B.P. 140/80.
Wassermann Reaction - negative (Taken in Antenatal Ward).
Other Symptoms: N.A.D.
Sugar, nil. Deposit, nil.
Height of Uterus: 36 weeks.
Presentation: R.O.A.
F.H.H.
Relation to Brim:
R.O.F.
Engaging.

Further /
Further Attendances.

<table>
<thead>
<tr>
<th>Date</th>
<th>Ht. of Position Rel'n F.H. Urine B.P.</th>
</tr>
</thead>
<tbody>
<tr>
<td>22-4-37</td>
<td>Acid, nil</td>
</tr>
<tr>
<td>6-5-37</td>
<td>&quot; 100/70</td>
</tr>
</tbody>
</table>

Remarks: No further evidence of chorea.

**READMITTED TO ANTENATAL WARD.** 12-5-37, as patient is near term and it is advisable to give her rest and suitable diet.

12-5-37. Condition good. See above.


17-5-37. Transferred to Maternity Ward.


" " Labour commenced.

7.00 p.m. Membranes ruptured.

" " Cervix full.

7.15 p.m. Child born.

7.25 p.m. Placenta expelled.

Duration /
Duration of Labour: 8 hours 25 minutes.
Character: normal.
Position: R.O.A.
Healthy female infant.
Placenta expelled naturally. Membranes complete.
P.P.H. 3 v.
Liq. Ext. Ergot. 3 i, after 3rd stage.

Routine post-natal treatment with Mist. Pot. Cit.

31.5.37. Discharged.

No further evidence of chorea.
Case No. XXII

ELIZABETH BIERMAN. Age: 22 years. Date of Birth Charcroft House, 17.7.14 Shepherds Bush.

PAST HISTORY.

Previous Illnesses:

Rheumatism.

Nervous breakdown and chorea, age 17 yrs.

Previous Pregnancies:

N.A.D.

Primigravida.

Family History: N.A.D.

PRESENT PREGNANCY.

Antenatal Record:

1st day of L.M.P. 7-9-36.

E.D.D. 14-6-37.

History:

Vomiting: early morning.

Headache: frontal

Vision: N.A.D.

Oedema: N.A.D.

Bleeding: N.A.D.

Quickening: yes. 3rd month.

First /
First Examination. 3-12-36.

General Condition: good.
Nutrition: good.
Heart: roughened systolic murmur.
Otherwise N.A.D.
Lungs: slight cough. Otherwise N.A.D.
Breasts and Nipples: N.A.D.
Teeth: N.A.D.
Digestive System: vomiting in morning. Constipated.
Cedema: Varicose Veins: Micturition: N.A.D.
Headache: occasional frontal.
Vaginal Discharge: scanty white.
Piles: nil.
B.P. 128/68.
Wassermann Reaction negative.
Other Symptoms: N.A.D.
Urine: Reaction acid. S.G. 1020
Sugar, Albumen, Deposit: nil
Height of Uterus: N.A.D.

Measurements:

<table>
<thead>
<tr>
<th>Interspinous</th>
<th>Interosseal</th>
<th>Ex. Conj.</th>
</tr>
</thead>
<tbody>
<tr>
<td>8&quot;</td>
<td>9(\frac{1}{4})&quot;</td>
<td>6(\frac{1}{2})&quot;</td>
</tr>
</tbody>
</table>

Further /
Further Examinations.

<table>
<thead>
<tr>
<th>Date</th>
<th>Uterus of Child to Brim</th>
</tr>
</thead>
<tbody>
<tr>
<td>17-12-36</td>
<td>Acid, 120/60</td>
</tr>
<tr>
<td>31-12-36</td>
<td>nil</td>
</tr>
<tr>
<td>28-1-37</td>
<td>110/62</td>
</tr>
<tr>
<td>25-2-37</td>
<td>128/80</td>
</tr>
<tr>
<td>24 wks</td>
<td>110/60</td>
</tr>
</tbody>
</table>

17-3-37. Patient noted to have generalised involuntary movements, and therefore:

17-3-37:

ADMITTED TO ANTENATAL WARD.

Present History:

Normal pregnancy till one week ago, when patient began to make involuntary twitching movements of the body and limbs. These have become progressively worse, and are worse at night.

Condition on Examination:

Small, under-developed woman.

Pale, looks under-nourished.

 Throws head from side to side with jerky movement.

Arms and body also twitch involuntarily.

Central /
Central Nervous System:
Intelligence below par.
Cranial Nerves, N.A.D.
Reflexes, exaggerated generally.
Motor Functions -
Tremor of fingers.
Generalised purposeless movements of limbs and body.
Cannot carry out fine movements, e.g., writing, fastening buttons.
Sensory Functions - N.A.D.

Circulatory System:
B.P. 120/60
Pulse - regular in T. & F. 90 p.min.
Volume, good.
Vessel walls not palpable.
Heart - not enlarged.
Rough mitral systolic murmur.
P.A. 2nd exaggerated and re-duplicated.

Alimentary System:
Teeth: - N.A.D.
Tongue - clean and moist.
Appetite fair. Bowels open regularly

Abdomen: -
Uterus 28 weeks. F.H.H.

Respiratory /
Respiratory System: N.A.D.
Urinary System: N.A.D.

PROVISIONAL DIAGNOSIS.
1. Sydenham's chorea.
2. Mitral stenosis.
3. Amentia.

TREATMENT and PROGRESS.

17-3-37. T.F.R. - N.A.D.
Mist. Chloral and Bromide gr.xl
on admission.
Patient slept well.

18-3-37. Mist. Sod. Sal. 3 ss, q.q.h.
Diet: Full + fruit.
Calc.Lac. tabs. gr.v, t.i.d.
Vitamins A and D (Advita capsules, 1 t.i.d.)

Urine: (catheter specimen)
Wet film: a few leucocytes.
Culture: scanty growth of staphylococcus albus.
No casts or albumen.

22-3-37. Choreiform movements present but not so severe. Worse at nights.
Pulse still fast - 100 per minute.
F.H.H.
Blood /
Blood Count: R.B.C. 5,200,000
Hb. 90%
C.I. .9
W.B.C. 9,000

25-3-37. Twitching still present.
Patient has been sleeping well, but not last night, due to toothache.

1-4-37. One extraction. L.L.O.
Put on Luminal gr.i, b.i.d.

14-4-37. Patient has improved steadily.
Choreiform movements almost stopped, but still throws arms about and jerks body from side to side of bed.
Uterus: 30 weeks. L.O.A.
Head free. F.H.H.

Patient allowed up.

19-4-37. Patient walks quite well.
Purposeless movements stopped.
Feels very well.
Heart: presystolic murmur at mitral area. Reduplication of 2nd sound.

28-4-37. Patient now feels quite well.
Movements ceased.
Uterus: 32 weeks. L.O.A. F.H.H.
Head not engaged.

3-5-37. Discharged. All drugs stopped.

Further /
Further Examinations at Antenatal Clinic.

<table>
<thead>
<tr>
<th>Date</th>
<th>Ht. of Uterus</th>
<th>Position of Child</th>
<th>Rel'n to Brim</th>
<th>F.H.</th>
<th>Urine</th>
<th>B.P.</th>
</tr>
</thead>
<tbody>
<tr>
<td>19-5-37</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Acid, nil</td>
<td>110/70</td>
</tr>
<tr>
<td>26-5-37</td>
<td></td>
<td>R.O.A.</td>
<td>Head free</td>
<td>F.H.</td>
<td></td>
<td>110/70</td>
</tr>
<tr>
<td>31-5-37</td>
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</table>

READMITTED TO ANTENATAL WARD.

To have further rest and dietetic treatment, as the choreiform movements had returned.

Condition on Examination.

Circulatory System: B.P. 120/80.

Central Nervous System: as above.

Abdomen:

Uterus - 38 weeks. R.O.A.

Head engaging. F.H.H.

Urine: N.A.D.

TREATMENT and PROGRESS.

31-5-37. Full diet.

Calcium lactate. Halibut liver oil.

Marmite. Fruit -.

7-6-37. R.O.A. Head engaging. F.H.H. 38 weeks.

Choreiform movements still present, but less marked. B.P. 120/70.

Trace of albumen in urine.

9-6-37 /
9-6-37. No further albuminuria.

8:30 p.m. Slight show. ? Membranes ruptured
10.00 p.m. Rectal Examination:
   Os - 2 fingers dilated.
   Having slight irregular pains.
   Very restless and excitable.
   Sheet tied across bed to restrain patient.
   Choreiform movements very marked.
   B.P. 134/94
   H.I. Morphine gr. 1/4
   Atropine gr. 1/100

Transferred to Labour Ward.

13-6-37. Patient slept well and woke up at 5 a.m.
   Pains had passed off. Chorea less marked
6.00 a.m. S.W. Enema.
12 mid-day. Pains present again.
12.10 p.m. Vaginal Examination:
   L.O.A. Head engaging.
   Os closed.
   No liquor draining.
   Os dilated to 2 fingers, and membranes separated from lower segment. Membranes artificially ruptured. 3 x drawn off.

2.00 p.m. /
13-6-37. 2.00 p.m. Labour commenced.
12.10 p.m. Membranes ruptured.
5.00 p.m. Cervix full.
5.30 p.m. Child born.
5.40 p.m. Placenta expelled.

Duration of Labour: 3 hours 40 minutes.
Pains started to recur at regular intervals throughout the afternoon, from 2 p.m. onwards.
These became more severe, but patient was not exceedingly restless and, without further sedative treatment being found necessary, had normal delivery of a female infant at 5.30 p.m.

Perineum: intact.

Placenta: normal at 5.40 p.m.
Membranes complete.
Infant: Weight 5 lbs. 2 oz.
Length 20½".
Circ. of Head 12½".

Liq. Ext. Ergot. 3 i - Pit 1 c.c. after 3rd stage.
P.F.H. - 3 xv Ergometrin i c.c. given I.V.

Discharged: 28-6-37.
Chorea cleared up immediately after labour, and did not recur.
Case No. XXIII

Mrs AGNES LAWSON.  Age: 30 years.

11-5-37. Admitted to Royal Maternity and Simpson Memorial Hospital.

Complaint:
Spasmodic uncontrollable twitchings of feet and hands.

PAST HISTORY.

Previous Illnesses:
No previous history of rheumatic fever or chorea.
Scarlet fever with first pregnancy.

Family History:
Father and Mother: well
Husband: healthy.

Previous Obstetric History:
Para III
1933. Full-time pregnancy, complicated by scarlet fever.
Child alive and well.
Child alive and well.

PRESENT PREGNANCY.

L.M.P. End of October 1936.

History.
Patient's husband said she was quite well /
well till the New Year, when he noticed "a nerve twitching at the side of her head". Five weeks ago she began to make spasmodic twitchings of her feet and hands. She was seen then by her own doctor and advised to rest in bed.

Admitted here 11-5-37 as a case of Chorea Gravidarum.

History confirmed by her doctor.

**Summary.**

11.5.37: Patient admitted with severe choreic movements and a considerable degree of mental excitement. She was slightly cyanosed. No jaundice or oedema.

Height of Fundus: 2 fingers above umbilicus.

The movements were absolutely uncontrolled and became so severe that in order to prevent the patient injuring herself it was necessary to keep her constantly under morphine and hyoscine, and in addition to make a padded bed on the floor with mattresses. The condition became rather worse than better, and it was decided to terminate the pregnancy by Caesarean section.

13.5.37 /
13-5-37. Classical Caesarean section by Dr. Sturrock.
General anaesthetic: Gas, oxygen and ether.
Premedication: Paraldehyde viii in saline per rectum,
followed by H.I. Morphine gr.1/6
H.I. Hyosc. Hydrobrom. gr.1/100

Summary.
Termination of pregnancy by Caesarean section on account of very severe chorea of pregnancy.
The child, though viable was very toxic and survived only about half an hour.

Puerperium.
Previous to the operation the patient had been almost uncontrollable. She had been placed on 5 mattresses on the floor and kept quiet with rectal paraldehyde, morphine and hyoscine.

After the operation the patient was much more easily controlled, and it was found that hyoscine in small doses was quite sufficient.

During the first 4 days following the operation, there was a steady improvement and she became /
became gradually more lucid, and eventually spoke and answered questions intelligently.

However, following the progressive improvement, complications set in.

18-5-37. The temperature began to swing and gradually rise, and the pulse rate began to rise out of all proportion to the temperature. From this time the improvement was no longer maintained, and the patient went gradually downhill.

Some degree of cyanosis appeared, and a diagnosis of Acute Endocarditis was made.

Towards the end, the patient was completely comatose and doubly incontinent, with severe, foul-smelling diarrhoea and albumen in the urine.

21-5-37. Patient died.

TREATMENT.

Rest in bed.

12-5-37. Fluids. xx Glucose etc. orally.

   viii Glucose - saline rectally.

Drugs.

10.30 a.m. Aspirin gr.xv
3 p.m.    Aspirin gr.xv
8 p.m.   Luminal I.M. gr.iii
9.35 p.m. Luminal I.M. gr.iii

13-5-37 /
13-5-37.

Fluids orally.

12.30 a.m. H.I. Morphine gr.1/6
Hyoscine gr.1/100

7.15 a.m. Repeated.

4.10 p.m. Paraldehyde vi in vi saline rectally.
H.I. Morphine gr. 1/6
Hyoscine gr.1/100

Classical Caesarean section under general anaesthesia, as noted above.

8.30 p.m. Chloral Hydrate gr.xxx.
Pot. Brom. gr.xL

14-5-37.

Fluids -

12.20 a.m. Morphine gr.1/6
Hyoscine gr.1/100

2 a.m. I.V. Saline 700 c.c.

3 a.m. Paraldehyde vi in vi olive oil, rectally.

9.30 a.m. Morphine gr.1/6
Hyoscine gr.1/100

2.45 p.m. Morphine gr.1/6
Hyoscine gr.1/100

9.15 p.m. Morphine gr.\frac{1}{4}
Hyoscine gr.1/100

15-5-37 /
15-5-37. 1.10 a.m. Omnopor gr. 1/3

      Hyoscine gr. 1/100

6.15 a.m. Morphine gr. 1/4

7.15 a.m. Hyoscine gr. 1/100

12.15 p.m. Paraldehyde vi in olive oil (returned).

1.15 p.m. Hyoscine gr. 1/200

6.50 p.m. Luminal, I.M. gr. iii

7.00 p.m. H.I. Hyoscine gr. 1/100

12.00 m.n. Morphine and Hyoscine

16-5-37. Fluids with addition of milk.

Drugs: Aspirin and Phenacetin found to be enough.

17-5-37. Above treatment continued.

18-5-37. Prontosil was tried

19-5-37. Coramine was used at the end.

20-5-37.

21-5-37.
ALICE WILLIAMS. Age: 22 years. Date of Birth 30. 9. 14
31 Gildersome Street,
London, S.E.18.

PAST HISTORY.

Previous Illnesses:
Measles as a child.
Age 14, chorea following dislocation of shoulder - duration 4 months.
Age 17, chorea - duration 6 weeks.
Age 19, chorea - duration 2 months.
Age 18, tonsilitis, followed by tonsillectomy.

Family History:
Father had chorea. Now quite well.
Mother - weak heart, asthma.
Brother - alive and well.

Previous Pregnancies:
N.A.D.
Primipara.

PRESENT PREGNANCY.

L.M.P. ? End of May. E.D.D. February
Admitted 29-12-37 from Out-Patient Department to Ante-Natal Ward.

Complaint: Twitching of hands, fingers and head.

Present /
Present History: Perfectly well till 1 month ago when she noticed clumsiness of her fingers, which gradually became worse. Hands and head affected.

Condition on Examination:
Well developed young woman. Moderately severe choreiform movements of hands, fingers, head.

Central Nervous System:
Cranial Nerves - N.A.D.
Pupils equal and react to L. & A.
Reflexes brisk. Plantar ++
No clonus.

Motor Functions:
Tremor of hands.
Writes with difficulty.

Sensory Functions: N.A.D.

Circulatory System:
Pulse regular in T. & F. 90 per min.
B.P. 145/102.
Heart not enlarged. Both sounds closed in all areas.
Respiration: N.A.D.
Urine: N.A.D.

Alimentary /
Alimentary System: Teeth good, except L.R. molar.
Tongue, clean.
Bowels, constipated.
No flatulence or vomiting.

Abdomen: Height of Uterus - 30 weeks.
R.S.A.
F.H.H.

TREATMENT and PROGRESS.

29-12-36. B.P. 130/90.
Tab. Phenobarbitone gr.ss, b.i.d.

30-12-36. Copious green vaginal discharge.
Both legs round vulva very tender and inflamed. Very long vagina.
Cervix high, and posterior cervical swab not obtained, but swab of pus taken from posterior fornix.

Direct film: Much pus and many microorganisms. No G.C.
Culture: Staphylococcus albus.
B.P. 145/100.

Calvert's Urea Concentration Test:

<table>
<thead>
<tr>
<th>Specimen</th>
<th>Time</th>
<th>Volume passed</th>
<th>% Urea</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>7.00</td>
<td>22</td>
<td>1.3</td>
</tr>
<tr>
<td>B</td>
<td>9.00</td>
<td>18</td>
<td>1.2</td>
</tr>
</tbody>
</table>

Diet: Fish, restricted chlorides.
Calcium, Marmite, Cod liver oil

Patient /
Patient given Devagan Tabs. ii daily.

Mist. Sod. Sal. gr.xx, 3 hourly.

1.1.37: Urine - wet film: Many epithelial cells.

A few hyaline casts and some R.B.C.s.

Culture: sterile.

3.1.37: Movements less pronounced.

B.P. 160/106.

4.1.37: **Calvert's Urea Concentration Range**

<table>
<thead>
<tr>
<th>Specimen</th>
<th>Time</th>
<th>Volume passed</th>
<th>% Urea</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>7.00</td>
<td>16 oz.</td>
<td>1.6</td>
</tr>
<tr>
<td>B</td>
<td>9.00</td>
<td>26 oz.</td>
<td>1.1</td>
</tr>
</tbody>
</table>

6.1.37: Discharge very much less.

Irritation improved - practically clear.

Patient can write without difficulty.

No evidence of chorea now.

Salicylates stopped.

Breech R.S.A. causing some pain in right hypochondrium. Also causing some pain in back.

Otherwise N.A.D.

Attempt made to turn child, but without success.

Good deal of pain and guarding of abdominal muscles.

F.H.H.

8.1.37:
8-1-37. Discharge, slight.
General condition, excellent.
Blood urea, 46 mgm. per 100 c.c.
W.R. and Kahn - negative.
No sign of toxaemia except for occasional headaches.

9-1-37. R.O.A. Head engaging.
F.H.H. 34 weeks.

13-1-37. Calcium gluconate 10 c.c. I.V.


28-1-37. Tooth extracted under local anaesthesia.
L.O.A. Head engaging. 36 weeks. F.H.H.
B.P. 128/90.

4-2-37. Calcium gluconate 10 c.c. I.V.

No evidence of chorea.
L.O.A. Head engaging.
37 weeks. F.H.H.
To return to A.N.C. next week.

10-2-37. Admitted to Labour Ward at 10 a.m.
Pains for last two hours.

Condition on Examination:
B.P. 130/90.
P.R. - Os = 4 fingers dilated.
Having regular pains. Vertex L.O.A.
10-2-37. 8.00 a.m. Labour commenced.
Membranes ruptured
11.00 a.m. Cervix full.
11.25 a.m. Child born.
11.40 a.m. Placenta expelled.

Duration of Labour: 3 hours 40 mins.

L.O.A.
Normal delivery of healthy male child.
Weight at birth, 5 lbs.
Length, 20".
Circ. of head, 13 1/2".
Apparent age, 38 weeks.

Puerperium normal.

No further evidence of chorea.
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