

ON CHOREA IN PREGNANCY.*

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It is our object to-night to invite discussion upon a few problems which arise from a consideration of a series of cases of chorea occurring in association with pregnancy. It is impossible in the time at our disposal to deal with the subject at all fully; we propose therefore merely to raise certain points which still seem to require elucidation. All but one of the cases were patients at the London Hospital; many of them were seen by one or both of us in our capacity as registrars to the Hospital. We have to thank the physicians who had charge of the cases for their kind permission to use the notes.

It has often been observed that the movements of a choreic patient are closely akin to those normally employed in the expression of the emotions. In a young child, before the highest centres have developed co-ordinating control, such movements are alone present; it is only by a process of education that the spontaneous movements of early infancy become co-ordinated, and thus enable voluntary purposive action. Whatever view be taken of the ætiology of the chorea of childhood, it must be admitted that there are strong grounds for the supposition that as Dr. Warner holds, the spontaneous movements represent a reversion to an antecedent stage in the development of the functions of the nervous system, such retrogression being due to the impairment or removal of the more recently developed controlling and co-ordinating mechanism.

It is not necessary here to discuss the reasons for localising the lesion associated with chorea in the cerebral cortex; such a localisation is now almost universally admitted. It is not, however, so clear whether this lesion is irritative or paralytic. An irritative lesion of the motor cortex is conceivable, but it is difficult to explain in this way either the type or the chronicity of the movements met with in chorea. On the other hand a paralytic lesion affecting in the first instance the highest and most recently developed centres, is not only conceivable but also offers an easier explanation of many of the phenomena. The removal of the co-ordinating and controlling mechanism permits the spontaneous activity of the lower centres,

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which is so noticeable before that mechanism has developed. This paralytic theory, as it may be called, explains more plausibly than the irritative theory the resemblance of choreic movements to those normally employed in the expression of the emotions, their long duration, with an ultimate tendency towards recovery, and the fact that at times they become habitual, and may then be improved by re-education. This theory, too, alone offers any explanation for the narrow age limit within which ordinary cases of chorea develop; it is the age during which the stability of these highest centres is being established, and during which their functional activity may very readily be impaired. Chorea, moreover, is not merely a disease of the motor functions of the nervous system; even in the young child it is very noticeable how small is the power to control the emotions, and in older patients there is a great liability to attacks often termed hysterical, or even to outbursts of emotional insanity more usually maniacal than melancholic—conditions to be easily explained by a theory of reversion.

Still more in dispute is the nature of the agent which affects the cortex; the close association of the disease in many instances with rheumatism has suggested that it is truly rheumatic—the result of capillary embolisms as Kirkes supposed, of fibrous new formations as Cheadle suggested, of the local presence of rheumatic micrococci as Paine and Poynton hold, or of the presence of toxins in the circulating blood, or the disease, when associated with rheumatism, may be para-rheumatic, that is the debility of the rheumatic toxæmia impairs the activity of the centres which are most unstable because they are latest developed. This last theory is compatible with the view that though most cases are rheumatic in origin yet some may be associated with other similar depressing influences.

In the endeavour to elucidate the true nature of chorea it was found necessary to investigate those cases which occur outside the ordinary narrow age limit; the result of an investigation into one group of such cases, viz., that in pregnancy, we present to you to-night. In the first instance it has to be decided whether these cases are truly choreic; it seems necessary in most cases to answer in the affirmative. The movements are large, irregular, spontaneous, frequent, not forceful, not repetitive, exaggerated on excitement, but often by a supreme effort of will brought partly under control; in distribution they generally affect the whole body, but often one side in excess of the other. In fact, no distinguishing feature can be determined which points to any difference from the movements of Sydenham's chorea. Emotional attacks are common and sometimes

temporary attacks of emotional insanity occur. Movements of a different type may also occur in pregnancy and for want of a better name are called hysterical; such movements are generally regular and repetitive, requiring some force in their restraint, and are exaggerated on attracting attention to the part; in distribution they are more often monoplegic than hemiplegic or general.

In the second place it is necessary to enquire why pregnant women are more liable to the disease than others of the same age. It is a matter of common observation that during pregnancy a woman has less power to control the expression of her motions than at other times. She is, as it were, temporarily reduced in this respect to the evolutionary stage of childhood. The cause of this reduction is obscure; it has been ascribed to a special toxæmia associated with the pregnant state; for this view, however, there is no favourable positive evidence. The nearest approach to a satisfactory explanation is to be found in the suggestion that during pregnancy the greatest metabolic activity is required elsewhere than in the brain and that therefore the more lately acquired functions tend to be temporarily in abeyance. Granting this hypothesis, that during pregnancy the power of emotional control reverts to the degree found in the child it follows that chorea may be anticipated in circumstances similar to those associated with its occurrence in childhood.

Rheumatism is undoubtedly in the majority of cases associated in some way with the chorea of childhood. So too, during pregnancy, rheumatism may play some part in the ætiology of chorea. Buist found a personal history of rheumatism in 45 out of the 226 cases that he analysed. In our own cases the statistics show that at least 16 out of 37 patients had previously suffered from some form of rheumatism. Twelve more had chorea in childhood without any other rheumatic manifestation. Confirmatory testimony as to the influence of rheumatism can be found in such cases as that of Alice S——, who was in the London Hospital in 1900, under the care of Dr. Stephen Mackenzie; as a child she had four attacks of articular rheumatism and four attacks of chorea. Her first two pregnancies were apparently normal; between the second and third pregnancies she had two attacks of acute articular rheumatism and in her third pregnancy developed chorea.

Buist found that chorea had occurred previously in 66 cases out of 226 individuals. In our own statistics 23 cases out of 37 individuals had previously suffered from the disease.

Antecedent chorea may suggest a rheumatic taint, but cannot be taken as conclusive evidence. Even if it be granted that the first

attack of chorea was rheumatic in origin it is conceivable that subsequent attacks may be due not to a recrudescence of the rheumatism but to a resultant instability of the controlling centres.

In examining cases of chorea in childhood it at once attracts the attention that the majority occur in bright and intelligent children, and in this group of cases a personal history of rheumatism is extremely common. A small majority, however, show signs of mental and physical maldevelopment; in these the mental deficiency may be roughly gauged by the lack of progress at school provided that ill-health has not been responsible for irregular attendance; associated with the mental deficiency some physical defect is not infrequently found; the head may be small, the jaw large, the palate highly arched, the lateral incisor teeth abnormally large, or there may be some more gross developmental error.

So too, in pregnancy, defective mental development seems at times to vie with rheumatism and previous chorea as one of the predisposing factors rendering the patient liable to an attack of chorea.

As an example of this condition may be quoted the case of Lilian L—, who was in the London Hospital recently under the care of Dr. Gilbert Smith. She was 21 years of age, and unmarried. She was microcephalic, the horizontal girth of the head being only 20 inches. Her mother was an epileptic. She left school at the age of 14, and had then only reached the fifth standard. There was no history of rheumatism in herself or in any member of her family. She became pregnant in October, expecting to be married at Christmas; circumstances prevented the marriage, and early in February the movements commenced. There can be but little doubt that the determining cause was anxiety working upon an ill-developed brain.

The determining cause for chorea is not infrequently to be found in worry, for which the pregnancy is the chief cause; in the case quoted the worry was determined by the illegitimacy. In another case seen by one of us with Dr. Marsh, the worry was determined by the fear of a difficult labour; here the predisposing cause was previous chorea, of which she had had two attacks as a child; in her first pregnancy abortion occurred at the sixth month and there was no chorea. During the 5th month of her second pregnancy she was seized with the idea that she would have a difficult confinement, and would not recover. Shortly afterwards choreic movements commenced and soon became very violent, necessitating complete confinement to bed. A thorough examination followed by a dogmatic statement that there was no need for fear, was soon followed

by a diminution in the movements which, however, persisted to a slight degree until about three weeks after delivery at full term.

Another example can be found in the case of A.A., a Jewish girl of 18, who had been forced into marriage against her will. Two months after marriage, when she was $2\frac{1}{2}$ months pregnant, the movements commenced. In this case no history of rheumatism or previous chorea could be traced.

Again, Lucella D. was admitted to the London Hospital in 1893, suffering with her first attack of chorea, which occurred during her seventh pregnancy. There was no personal history of rheumatism, but her mother is said to have died of heart disease. The determining cause seems to have been worry, resulting from the fact that her husband had been out of work for six months, and the consequent dread of increasing an already large family. The case is also of interest in that during the attack she had two brief periods of melancholia, the first lasting three days and the second a week, and during these periods the movements ceased.

If insanity occurs during chorea it seems to be of the emotional type, and more often maniacal than melancholic; intellectual insanity does not seem to be at all common, if it be ever found. Sometimes a violent shock may act instead of a more prolonged worry; thus Alice M. W., a married woman of 24, who had had chorea as a child, developed a second attack when $2\frac{1}{2}$ months advanced in her second pregnancy, as a result of seeing a drunken man attempt to cut his throat.

To conclude, firstly, chorea in pregnancy seems to be determined by mental display, overstrain or shock. Secondly, the determining cause is only effectual when it acts upon a brain whose power of control is somewhat lowered by the pregnant state, and in addition is unstable in consequence of (a) antecedent chorea; (b) antecedent rheumatism or other similar debilitating condition; (c) a defect in development.

ANALYSIS OF 40 CASES OF CHOREA OCCURRING IN 37 PREGNANT PATIENTS.

Chorea occurred in the first pregnancy in 18 cases.

In 10 cases the first pregnancy was not attended by chorea, but chorea occurred in later pregnancies.

In six cases chorea recurred in subsequent pregnancies.

There was a history of previous chorea in 23 patients.

In 11 of these there was no other rheumatic manifestation.

There was a previous history of rheumatism without chorea in five patients.

There was no previous history of chorea or rheumatism in nine patients.
 Month of pregnancy in which movements began :—

1—2	2—3	3—4	4—5	5—6	6—7	7—8	8—9
4	6	4	8	6	6	2	2
10·5%	15·8%	10·5%	21%	15·8%	15·8%	5·2%	5·2%

Five of the 37 women were unmarried.

There were two spontaneous abortions. Both these cases were fatal.
 There were five fatal cases among the 40. In two of these abortion was induced, and in two there was spontaneous abortion.

Usual course of the disease. In the majority of cases pregnancy continues undisturbed and results in natural labour. The tendency to the occurrence of spontaneous abortion has been exaggerated. Barnes' cases, published in vol. x. of the *Transactions of the Obstetrical Society of London*, show that spontaneous abortion occurred in 17·2 per cent. of 58 cases. In Buist's carefully tabulated 255 cases spontaneous abortion occurred in only 24 cases, *i.e.*, 9·4 per cent. In 21 cases, or 8·2 per cent., spontaneous premature labour occurred. According to Dr. Malins, in the April number of this JOURNAL, and also to other authorities, 1 in 6 of all pregnancies (or 16·6 per cent.) terminates in abortion. Some authorities give the proportion as high as 1 in 5. It will be seen, therefore, that in Barnes' cases the percentage of abortions was only a fraction above the normal, 17·2 against 16·6. In Buist's cases the percentage was much below the normal. This may possibly be explained by the facts that in a few cases abortion was induced, and that some of the patients who died early in pregnancy might have aborted if they had lived longer.

In McCann's series of 32 cases in which there was no interference there were six spontaneous abortions, *i.e.*, 18 per cent. In our own series of 40 cases, none of which have been reported previously, there were only two spontaneous abortions, *i.e.*, five per cent.

Where the percentage of spontaneous abortions is very small in a series of cases of chorea in pregnancy it must be remembered that in many cases chorea does not appear until the common time for abortion is past, and also that chorea is most common in primigravidæ. Without wishing to lay stress on the value of statistics, we think that the above facts, so far as they go, tend to show that there is not any great tendency to spontaneous abortion in cases of chorea in pregnancy.

The importance of insanity has, we think, also been exaggerated. Among Buist's 255 cases were only 11 cases of insanity, usually mania. In only two cases was the presence of hallucinations noted. In one only were there delusions, and in this case there was also early

phthisis. Four out of the 11 were fatal cases. Attacks of transitory emotional insanity are probably common, and not of grave prognostic significance. Among the five fatal cases in our series only one was maniacal.

In saying that the importance of insanity has been exaggerated we mean the importance of this complication as an indication for active treatment, or as a guide in forming prognosis.

In subsequent pregnancies there is not necessarily chorea. One patient in our series had no chorea in 11 pregnancies (7 of which ended in abortion) between the 1st and 13th pregnancies, in each of which she had chorea. Another patient had chorea in her 1st and 3rd pregnancies, while in her second pregnancy she was free from chorea.

Treatment. The treatment of chorea in pregnancy, as of ordinary chorea, consists chiefly in insuring quiet and sleep, and providing good nursing and full feeding, especially with carbohydrates. Light massage is in some cases exceedingly useful in procuring sleep, thus doing away with the necessity of giving sedatives. If a cause can be found, such as anxiety or worry, it must be removed, and sometimes by its removal a cure is speedily effected. In one of our cases the patient was extremely nervous about her condition, and her anxiety was increased by the evident alarm of those around her. Impressing on her the facts that she was not dangerously ill, that the movements would in all probability pass off in at most a few weeks, and that her pregnancy would probably continue undisturbed to end in a normal labour, produced great improvement in a few days. One very important practical point, often overlooked, is that the cause of refusal of food is not uncommonly to be found in the presence of an exquisitely tender dental ulcer.

Treatment by bromide of potassium is probably bad altogether. Statistics are not of great value as regards drug treatment, but what evidence there is seems strongly adverse to bromides. It is certainly possible to stupefy the patient or render her paralytic by large doses of bromides, but the good gained by subduing the movements is quite outweighed by the danger to life involved in this method of treatment. If a sedative is needed chloral hydrate or chloralamide are probably the best. These drugs need not be given in large doses as a rule, nor need they be frequently repeated. Opium, as is generally admitted, is unsuitable for use in these cases. Small doses frequently increase the movements without procuring rest, while large doses are dangerous to life. Alcohol is in some cases exceedingly useful, but should not be given if continued doses of arsenic are being ad-

ministered. Of these two drugs we consider alcohol by far the more important.

Induction of abortion or premature labour is recommended in most text-books as the treatment of severe cases. In the cases collected by Buist spontaneous abortion and spontaneous premature labour were followed by death in 33 per cent.; induced abortion and induced premature labour were followed by death in no less than 43 per cent. of cases. At least 5 of the 9 fatal cases of induction died of sepsis. In these cases the abortion or premature labour, instead of having a favourable effect on the case must be looked on as being partly if not largely responsible for the fatal ending. Among our own cases abortion was induced three times. Two of the three patients died. Since 1895 abortion has not been induced for chorea in the London Hospital. It is difficult to judge of the value of induction of abortion from published cases because it is impossible to say what proportion of the cases which died after this method of treatment would have died without it. It is probable that the mortality after induction of abortion will be diminished by more careful antisepsis, but even if this be granted, we contend that this method of treatment is seldom needed and frequently fails to save life. As indicated above we do not consider that mania can in itself be considered an indication for induction of abortion.

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 induction of abortion need not even be considered.

TABLE OF CASES.

Number.	Name.	Physician.	Date.	Age.	Married or Single.	Number of Pregnancy.	Personal History.				Family History.
							Previous Chorea.	Rheumatism.	Other Diseases.	Evidence of Morbus Cordis.	
1	E. B.	Dr. Samuel Fenwick	1886	21	M 5 mos.	1st	Æt 12	0	No note	None	None of Rheumatism, one broth'r Ch're
2	E. B.	Dr. Samuel Fenwick	1891	26	M	3rd	Æt 12 and 21	0	No note	None	One brother Chorea
3	A. T.	Sir Andrew Clark	1886	21	M	1st	0	Æt 20	No note	None	No Rheumatism
4	M. McC	Dr. Samuel Fenwick	1886	20	M	2nd	?with 1st pregn'ncy	0	Smallpox as a child	None	Sister had Fit
5	E. Br.	Dr. Langdon Down	1888	19	?M	?1st	Æt 15	Æt 15	No note	None	No note
6	E. R.	Dr. Gilbert Smith	1888	22	M 2 yrs.	3rd 2 Misc.	6 mos. before	0	No note	None	No Rheumatism
7	C. R.	Dr. Percy Kidd.	1892	28	M	1st	Æt 14	Æt 24	'Rheumatics' Phthisis	Yes	No note
8	L. L.	Dr. Turner	1892	25	M 3 yrs.	2nd	(1) Æt 19 c, sm'l'pox (2) c, 1st pregn'ncy	0	Smallpox Epilepsy	Yes	Mother & Sister Epileptic, no Rheumatism Aunt had Chorea
9	M. C.	Dr. Stephen Mackenzie	1892	23	M 2 yrs.	3rd 1 Misc.	0	0 Tonsillitis	Influenza	None	Mother had Rheumatic Fever 3 times
10	A. M. W.	Dr. Lewers	1893	24	M 4 mos.	1st	Æt 12	0	No note	None	No Rheumatism
11	E. G.	Dr. Hughlings Jackson	1893	22	M 9 mos.	1st	Æt 8 and 21	0	None	None	Sister had Chorea, Father died of morbus cordis sudd'nly

Table of Cases—Continued.

Period of onset (in this pregnant)	Alleged cause.	Complications.	Temperature.	Treatment.	Result.	Remarks.
4th	None given	None	Normal	Feeding, Arsenic, Iron, Cod Liver Oil	Unchanged for 3 weeks, discharged herself	Went to term, child living and healthy
8th	None given	None	Normal	Pot. Brom., Chloral, Paraldehyde, Quinine, Arsenic	Delivered at term living child, Movements continued 5 weeks after delivery	Same patient as No. 1, no Chorea with 2 Pregnancies; attack mania associated with Pyrexia followed third Pregnancy days after delivery
4th	None given	None	Normal, one slight rise	Arsenic, Conium	Recovery in 7 weeks	—
6th	Overlactation (18 mos.), slipped & had a fright—4 days later began to drop things	None	Normal, Pyrexia after abortion	Chloroform, Induction of abortion	Nearly well 6 weeks after abortion	—
3rd	No note	Insomnia	Normal	Arsenic	Cured in 3 weeks	—
4th	No note	Severe vomiting	Normal	Arsenic, Morphia, Bismuth, Ac. Hydrocyan.	Cured in 10 weeks	—
5th	No note	None	Normal	Arsenic, Bromides, Chloral, Feeding, Massage	Cured in 7 weeks, Pregnancy continued	—
2½	No note	None	Normal	Pot. Brom., Arsenic, Chloral, Iron, Morphia	Spontaneous premature labour at 7 mos, child living cured 4 wks. after delivery	First attack with smallpox was given 2nd and 3rd attacks with Pregnancy affected left half body
6th	Influenza	Insomnia	Irregular Pyrexia after delivery	Chloral, Bromide, Paraldehyde, Quinine, Iron, Chloroform	Delivered 10 days after admission, Movements ceased 10 days later	She lived next day to E. B. (No. 1 & 2) previous Pregnancy without Chorea child living; abort 8th month
2½	Fright, saw drunken man trying to cut his throat	None	Normal	Arsenic, Iron, Chloral, Feeding	Recovered after 7½ weeks in bed	—
2nd	None given	None	Normal	Chloral, Bromides, Arsenic	Cured in 2½ weeks	—

Table of Cases—Continued.

Number	Name	Physician	Date	Age	Married or Single	Number of Pregnancy	Personal History.				Family History
							Previous Chorea	Rheumatism	Other Diseases	Evidence of Morbus Cordis	
12	C. S.	Dr. Samuel Fenwick	1893	20	M 6 mos.	1st	Æt 12 and 18	0 Tonsillitis	None Subject to fits	None	Mother had Rheumatic Fever and Morbus Cordis
13	P. H.	Dr. Hughlings Jackson	1893	18	S	1st	0	0	Influenza Æt 15	Yes	No Rheumatism
14	L. W.	Dr. Turner	1893	33	M	7th	0	0	No note General Alopecia 3 mos. ago	None	Mother died of Morbus Cordis
15	M.A.M.	Dr. Stephen Mackenzie	1894	22	M 2 yrs.	2nd	Æt 12	0	No note	?Yes	No Rheumatism
16	A.M.S.	Dr. Gilbert Smith	1894	27	M 6 mos.	1st	Æt 19 and 26	0	No note	Yes	Brother had Rheumatic Fever but no Chorea
17	E. R.	Dr. Stephen Mackenzie	1894	23	M 4 yrs.	3rd	Æt 19 and 22	0	No note	None	No Rheumatism or Chorea
18	L.E.C.	Dr. Sansom	1895	20	M 1 yr.	1st	0	10 mos before	"Fits" æt 5	None	No note
19	P. L.	Dr. Turner	1897	19	?S	?1st	0	0	None	None	No note
20	S. K.	Dr. F.J. Smith	1898	21	S	1st	Æt 10 and 16	0	No note	?Yes	No Rheumatism No Chorea
21	L. J.	Dr. Percy Kidd	1896	22	M	1st	Æt 18	0	Smallpox, Measles	None	No Rheumatism
22	L. J.	Dr. Gilbert Smith	1896	22	M	2nd	Æt 18 and 22	0	Smallpox, Measles	None	No Rheumatism
23	L. J.	Dr. Herman	1900	26	M	3rd	Æt 18 " 22 " 24	0	None	None	No Rheumatism

Table of Cases—Continued.

(In this pregnant)	Alleged cause	Complications	Temperature	Treatment	Result	Remarks
nd	None given	Paresis of left forearm, Insomnia	Normal	Arsenic	Improved 4½ weeks, Pregn'ncy continued	—
1½	"Fright, followed by Amenorrhœa"	Trace of albumen in urine	Normal	Quinine	Cured in 10 days	—
3½	Husband out of work 6 months, Fright from chimney on fire, Inanition	Two attacks of melancholia lasting (1) 3 days, (2) 7 days	Normal	Bromides, Chloral, Iron, Quinine	Improved after 4 weeks, Pregn'ncy continued	The movement ceased during 1 attacks of melancholia, the first at of Chorea occur in 7th Pregnar
5th	Fright 3 weeks before onset	Insomnia	Normal	Feeding, Malt and Cod Liver Oil, Chloral	Improved very much, Pregn'ncy continued	Her first Pregnar was not accompan by Chorea
6th	None given	Insomnia	Normal	Hyoscine, later Arsenic	Relieved after 15 weeks	—
nd	None given	None	Normal	Arsenic	Improved 14 days	Chorea at the age of 19 and 22 with Pregnancy
before pregn'ncy	None given	Slight Arthritis	Normal, Pyrexia after abortion	Abortion Induced	Improved	Chorea 1 month before Pregnancy began
5th	None given	Insomnia	Normal	Arsenic, Bromides, Chloral	Improved 10 weeks	—
1½	None given	Insomnia	Normal	Arsenic, Feeding, Bromides, Chloral	Improved, was in hospital 4 weeks, pregnancy continued.	—
7th	None given	Acute Melancholia for one day. Occasional delusions	Normal	Belladonna, Arsenic, Sulphonal, Paraldehyde	Recovery, 5 weeks	Movements ceased 2 months before delivery
8th	None given	Ulcer of Tongue	Normal	Feeding, Arsenic, Bromides	Improved Pregnancy continued	—
9th	None given	Ulcer of Tongue	Normal	Rest, feeding	Cured	Tonsillitis at onset of this attack. Delivered at term living, male

Table of Cases—Continued.

Number	Name	Physician	Date	Age	Married or Single	Number of Pregnancy	Personal History				Family History
							Previous Chorea	Rheumatism	Other Diseases	Evidence of Morbus Cordis	
24	A. H.	Dr. Herman	1898	19	S	1st	Æt 17	Tonsillitis and joint pains	None	No note	No note
25	C. O.	Dr. Gilbert Smith	1899	25	M	2nd	0	Æt 23 since 1st Child	No note	Yes	Sister had Chorea
26	A. A.	Dr. Gilbert Smith	1899	18	M 5 mos.	1st	0	0 Tonsillitis	None	None	Mother Rheumatic
27	E. B.	Dr. Head (out-patient)	1901	21	M 5 mos.	1st	0	0	Secondary Syphilis	None	Mother Rheumatic Fever
28	M. B.	Dr. Percy Kidd	1900	22	S	1st	Æt 7	0 Quinsies often as a Child	None	None	Sister had Chorea, Brother had Quinsies
29	A. P.	Dr. Herman	1897	23	M 2 yrs.	3rd 2 Misc.	0	4 times 1st Aet 17	No note	Nonote	No note
30	P. M.	Dr. Herman	1885	29	M 15 yrs.	13th	1 during 1st preg.	Æt 7	Smallpox when young	None	No Rheumatism
31	Mrs. T.	Dr. Cecil Wall	1901	21	M 2 yrs.	2nd 1 Misc.	2nd Æt 8 and 16	0	None	Yes	Mother has "Rheumatics," never Rheumatic Fever

Table of Cases—Continued.

Period of onset (months, pregnant)	Alleged cause	Complications	Temperature	Treatment	Result	Remarks
5th	None given	Hysterical Fit	Normal	Arsenic, feeding, rest	Improved, discharged after 10 weeks. Pregnancy continued	—
4th	Worry about her child, who was in hospital	Insomnia	Normal	Arsenic, feeding, rest	Improved, 5 weeks	Chorea ceased entirely when she was 7½ mos. pregnant. Seen 2 yrs. later, no subsequent Chorea, no subsequent Pregnancy; evidence found of Mitral stenosis and incompetence
3rd	Married against her will. Banns put up without her knowledge	Headache	Normal	Arsenic and feeding	Improved in 3 weeks; Pregnancy continued	—
3rd	—	Secondary Syphilis, skin and throat	—	Antisyphilitic	Improved	—
7th	Worry about Pregnancy	Insomnia	Normal	Arsenic, feeding	—	Admitted one mo. after delivery of a 7 mos. still-born child. Movements then violent, improved after 3 weeks
16 weeks	None suggested	Insomnia	Normal	Rest, Nux Vomica, Sulphonal, Bromidia, Morphia	Cured	Admitted to hospital for Pelvic Hæmatocele, due to Ectopic Pregnancy. The movements were definite, but slight
4th	None given	None	Normal	Arsenic, Bromides	Spontaneous labour at 8th mo. Child living. Movements continued 3 weeks later	Chorea in 1st and 13th Pregnancies but not in intervening Pregnancies, 7 of which ended in miscarriages
5th	Worry about approaching Confinement	None	Normal (only taken once)	Iron and rest	Spontaneous labour at 7 mos. Child living. Movements continued 1 mo. after confinement	This patient was not in the London Hospital. No Chorea with 1st Pregnancy, which ended in miscarriage at the 6th month

Table of Cases—Continued.

Number	Name	Physician	Date	Age	Married or Single	Number of Pregnancy	Personal History.				Family History
							Previous Chorea	Rheumatism	Other Diseases	Evidence of Morbus Cordis	
32	H. N.	Dr. Gilbert Smith	1902	22	M	2nd	Æt 17, 19 and 21	0	No note	None	No Rheumat.
33	Mrs. L.	Dr. Head (out-patient)	1902	22	M 12 mos.	1st	Æt 7, 14 and 21	0	None	—	F. had Rheumatism, 1 brother Rheumat. 2 bros. Chorea
34	L. L.	Dr. Gilbert Smith	1903	21	S	1st	0	0	None	None	Mother had fits when young, no Rheumat.
35	A. S.	Dr. Stephen Mackenzie	1900	22	M 4 yrs.	3rd	4 Æt 5, 9, 13, 22	4 5, 15, 22, 22	None	Yes	Mother died of Morbus Cordis, father had Rheum't Fever
36	A. M.P.	Dr. Sutton	1882	21	M	1st	0	0	No note	Yes	No Rheumat. ?Epilepsy in family
37	A. E. B.	Dr. Sutton	1890	21	M	? 1st	3 Æt 12, 15 and 18	0	No note	Yes	No note
38	R. C.	Dr. Langdon Down	1890	28	M	5th	0	0	No note	None	No Rheumat. mother died of Phthisis
39	E. M.	Dr. Samuel Fenwick	1894	23	M	4th	1 Æt 12	0	No note	Yes	No note
40	C. B.	Dr. Lewers	1895	21	M 4 mos.	1st	0	0	Rheumat. pains, Spasmodic ast'ma	Yes	No Rheumat.

Table of Cases—Continued.

Period of onset (mths. pregnant)	Alleged cause	Complications	Temperature	Treatment	Result	Remarks
4th	Alleged fright at onset	None	Normal	Rest, Feeding	Spontaneous Labour at term, living child	Child had super- numerary auricles on the cheek
7th	None given, No worry	Carious teeth Ulcer of tongue	—	Pot. Brom., Arsenic	Spontaneous Labour at term, living child	Movements con- tinued in a very slight degree for 3 or 4 weeks after confinement
5th	Illegitimate Pregnancy, dis- appointment as regards marriage	—	Normal	—	Pregnancy continuing	Girth of head 20in., defective mental development
—	No cause given, became Pregnant while Choreic	Tonsils enlarged	Normal	Arsenic, Ordinary diet	Cured; in Hospit'l 8 days only, Pregnancy continued	1st child æt 3, 2nd child æt 1½—two attacks of Rh'c fever between 2nd & 3rd Preg., no Chorea with two previons Pregnancies
?	Father's sudden death	Insomnia, Delirium, Bedsore	Normal	Arsenic, Brom., Sulphate of Zinc	Aborted, died	Autopsy, Vegeta- tions on mitral valve, decomposing clot in utero
5th	None given	None	Normal, Pyrexia just bef're death	Pot. Brom., Chloroform, Morphia	Aborted spontaneously, died	Autopsy, Vegeta- tions on mitral v'lve lungs very œdema- tous, fœtus 5—6 mths., opium given in large doses for a week before death
5th	None given	Delirium	Normal, Pyrexia at the end	Abortion induc'd, Chloroform, Morphia, Arsenic	Died 14 hours after induction of abortion	No autopsy. Intelli- gence below the av. 5th Preg. but the 1st attack of Chorea large doses of Morph. were given fre- quently before abor- tion was induced
2½	Worry—child fell out of window	Insomnia, Mental Ex- citement	Normal	Arsenic, Sedatives	Became maniac'l, sent to Infirmary after 10 days, died 2 days later	No history of Chorea in earlier Pregnancies
1st	None given	Aphasia	Normal till Induc- tion of Labour	Abortion induc'd, Bromides, Chloral	Temp. steadily rose, death with hyperpyrexia (108°) 7th day after induction	Embolisms of spleen kidney, and left middle cerebral artery, ulcerative endocarditis