only remain speculative. The absence of deafness and tinnitus makes it unlikely that the disturbance of function is arising primarily in the labyrinth, and it would seem more probable that it results from a biochemical disturbance operating on the temporal lobes; weight is lent to this view by the cortical stimulation work of Penfield and Rasmussen (1950), who found that a feeling of "dizziness" could be produced by stimulation in various parts of the brain, especially when this was subcortical, and they concluded that movement of the whole body in space is "represented" in the first temporal convolution. Penfield and Jasper (1954) made further references to the same experiments in cortical stimulation and described a patient in whom clockwise rotatory vertigo associated with nystagmus was produced by stimulation of the parieto-occipital cortex, though in this case there were associated visual hallucinations. I have not had the opportunity of observing a patient during an attack of vertigo, and it is therefore impossible to say whether there was nystagmus or ataxia of the limbs in these examples.

Conclusions

It is apparent both from personal observations and from a study of the literature that the clinical manifestations of hypoglycaemia are protean. It has usually been accepted that humoral mechanisms would operate on the central nervous or any other system in a symmetrical fashion, but it is clear from observations in hypoglycaemic states that this is not always true. Himwich (1951) suggested that the effects of hypoglycaemia are largely centred on phylogenetically new parts of the nervous system, but this is not strictly accurate, and it seems that lowering of the blood-sugar concentration has varying effects which cannot be simply interpreted in terms of physio-anatomical "levels" or concepts of "localization" as we understand them to-day.

Summary

The aetiology of endogenous hypoglycaemia (as the essential factor in the production of symptoms) is considered under three main headings; thus it may result from islet-cell tumours, as a sequel to gastric surgery, or from psychosomatic mechanisms.

The terminology and criteria for diagnosis are briefly discussed. Twenty case histories are outlined, and an attempt has been made to analyse and group the neurological manifestations observed.

All these patients experienced disturbance of consciousness at some time, though varying in degree from confusion to deep and prolonged coma; sudden loss of consciousness and major epileptic fits occurred.

Many episodes suggestive of disturbance of function arising in the temporal lobe were encountered, including psychomotor seizures (often with automatism and amnesia), hallucinations of vision, taste, and smell, lip-smacking, circumoral paraesthesiae, and vertigo.

Both pyramidal and extrapyramidal syndromes in the form of transient hemiparesis and choreo-athetosis were observed.

Cerebellar manifestations (which are sometimes mistaken for alcoholic intoxication) may arise, and also visual disturbances such as diplopia and hemianopia.

Perhaps the most significant finding is that rotatory vertigo was determined by endogenous hypoglycaemia, sometimes as the presenting symptom, and the probable physio-anatomical basis is suggested.

I am grateful to several members of the consulting staff of the Leeds General Infirmary, and especially Dr. Hugh Garland, to Dr. A. Cumming, of Hull, and to Dr. J. A. Price, of Bradford, who have allowed me to examine patients and to use their records.

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PREGNANCY COMPLICATED BY DIABETES MELLITUS

A REVIEW OF 119 CASES

BY

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When insulin was introduced it was confidently hoped that there would be a decrease in both maternal and foetal mortality in diabetes mellitus. This hope has only been partially fulfilled. The number of maternal deaths has shown a marked decline, and death of a pregnant diabetic woman seldom occurs to-day. In contrast, the foetal mortality, while showing some improvement, still remains discouragingly high. Henley (1947) reviewed the reports in the world literature of 1,269 cases of diabetic pregnancies. The total foetal mortality was 37.6%. White (1952) collected 640 cases from the literature since 1940. The average foetal mortality was 34.8%; it varied from 8% (in a very small series) to 70%.

It has been my impression that the chances of foetal survival could be appreciably increased by more careful and detailed supervision, and with this idea in mind a review of a series of diabetic pregnancies treated in the Royal Maternity Hospital, Belfast, during the years 1940-55 was carried out.

The records of this hospital show that during the 16 years mentioned 89 women with diabetes mellitus had 119 pregnancies (Table I).

TABLE I

	Pregnancies	Primigravidae	Multigravidae
1940-50	67	18	49
1951-5	52	15	37
1940-55	119	33	86

The Royal Maternity Hospital is attached to a large teaching hospital (Royal Victoria Hospital), which provides a diabetic clinic treating over 400 new patients a year. Practically all pregnant diabetics attending this clinic are referred to the Royal Maternity Hospital.

Review of the literature suggests that the number of pregnant diabetics is increasing. There would appear to be little impairment of fertility in adequately treated diabetic women. In the present series, 37 patients out of a total of 40 who were known diabetics at the time of marriage conceived within two years; 26, or 70%, conceived within one year. My experience would agree with that of White (1952), who claims that "the diabetic

woman who requires investigation for sterility is the exception rather than the rule."

Antenatal Management

The management of pregnant diabetic patients was not entrusted to one particular consultant; each patient was admitted under the care of the various members of staff in the usual way. "Booked" cases numbered 101 and emergency admissions totalled 18. The term "booked" implies that the patient has attended the antenatal clinic on at least two occasions. Of the "booked" cases only 33 were seen before the 14th week of pregnancy. No fewer than 16 were not seen until the 28th week or later. The remainder, 52, were first seen between 14 and 24 weeks. Half of the unbooked cases were 32 weeks mature or more when they first attended hospital. These figures of antenatal attendances are not satisfactory. One would have expected an improvement during the last five years, but, whilst there were fewer emergency admissions, 8 (15%) "booked" cases were not seen for the first time until the 24th week or later.

At the patient's first antenatal visit the usual physical examination was made. In the case of a patient who was not attending the diabetic clinic of the Royal Victoria Hospital an appointment was made for her to do so. Following the first antenatal attendance, return visits were usually made at the same intervals as in the case of an uncomplicated pregnancy. The patient was also expected to attend the diabetic clinic at intervals requested by the physician. These attendances were less frequent than those at the antenatal clinic. In some cases patients were admitted from the diabetic clinic to a general medical ward for stabilization. Quite a number had to be admitted to our antenatal ward for stabilization on one or more occasions. Whilst a proportion of patients were admitted at the 34th and 35th weeks, many more were not brought into hospital until the 36th week or later. The patients' notes described the diabetic condition as mild in 10 and severe in 22 cases. Control by diet alone was sufficient in four of the mild cases. Diabetes had been present for five years or less in 66 patients, for between six and nine years in 22, and for 10 or more years in 23. The diagnosis of diabetes was first made during pregnancy in nine patients.

Of the 119 pregnancies in this series, seven were complicated by hyperglycaemic coma; intrauterine death followed in five of these cases. The sixth patient went into coma at 22 weeks and again at 23 weeks, but she eventually obtained a living baby. In the seventh case the mother died undelivered in diabetic coma. Although it is stated that diabetic coma usually occurs in the later months of pregnancy, over half the cases of coma in this series occurred before the 28th week. Hypoglycaemia occurred in one patient at 36 weeks and again at 38 weeks. The foetus survived. The number of cases is admittedly small, but these findings indicate that hyperglycaemia in the mother has an unfavourable effect on the foetus and may well precipitate its death.

The incidence of toxæmia of pregnancy is said to be increased in diabetics. If a reading of 140/90 is taken as the upper limit of normal blood pressure, then 19 cases suffered from this condition (16%). Out of these 19 pregnancies 14 babies survived. Figures quoted in the literature vary considerably, doubtless on account of the varying standards accepted by different writers. Peel (1955a) gives the average incidence of toxæmia in the region of 20%. Six of the cases with toxæmia were associated with hydramnios, one ending in intrauterine death.

The tendency to formation of excess liquor in diabetic pregnancies is well known. In the present series excess liquor was recorded in 37 cases, an incidence of 31%. This compares with Macafee's (1950) figures of 1.25% for all pregnancies. In a series of 58 diabetic pregnancies studied by Barnes and Morgans (1949) hydramnios was present in 29% (17 cases). Peel (1955a) claims that there is a gross degree of hydramnios in about 25% of diabetic pregnancies. In 12 (32%) of our cases the amount of liquor was recorded

as being excessive. The presence of this complication is generally thought to carry a poor prognosis for the foetus, especially if toxæmia is also present. Foetal death occurred in 13 pregnancies—nine deaths *in utero* and four neonatal deaths—giving a foetal mortality of 35%. The association of hydramnios and congenital abnormalities is well known. It is thought that the incidence of congenital abnormalities in diabetic pregnancies is also increased. Foetal abnormality was present in seven pregnancies, an incidence of 5.8%. This is higher than the figure for pregnancies in general. Hydramnios was present in only two of the cases, the excess fluid in both being small in amount. From the practical point of view the absence of hydramnios does not exclude a malformed foetus, nor does it follow that gross hydramnios is necessarily associated with an abnormal foetus.

An interesting feature of many of these cases is the high incidence of abnormalities of the limbs. Experimental work by Duraiswami (1950) has shown that malformation of limbs of chickens can be produced by insulin injections. Such findings suggest some defect in mesenchymal tissue. In the human embryo limb buds appear about the 32nd day. If a metabolic disturbance does play a part in human maldevelopment it is difficult to understand why its effect should be limited to this particular time.

Time and Method of Delivery

Study of our case records shows that the general principle has been to terminate pregnancy prematurely in the hope of reducing the incidence of intrauterine death (Table II).

TABLE II.—*Maturity at Time of Delivery*

Week	1940-50. No. of Cases	1951-5. No. of Cases
32	1	—
33	2	—
34	1	—
35	4	3
36	11	17
37	5	11
38	11	4
39	4	1
40	4	1
40+	2	1

Premature termination has been thought to offer the best chance of a living baby, notwithstanding the risk of neonatal death from prematurity. For reasons which are discussed later, delivery by caesarean section has been considered the method of choice in the majority of cases (Table III). The

TABLE III.—*Foetal Loss (Viable Foetuses Only) in Relation to Method of Delivery*

	Total	Babies Alive	Stillbirths Fresh and Macerated	Neonatal Deaths	% Foetal Loss
Spontaneous labour	30	9	18*	3	16.6
Induced	20	17	2	1	15.0
Caesarean section	63	56	2	5	11.1

* 16 were dead before onset of labour.

factors which influenced the obstetrician to induce labour or to wait spontaneous onset rather than delivery by caesarean section are not always clear from the notes. Table IV gives details of five pregnancies in which foetal death occurred. It seems to me, in retrospect, that delivery by caesarean section was indicated in all five cases, and in four of them this should have been brought about at an earlier stage of pregnancy.

Foetal Loss

In spite of much research and clinical investigation pregnancy in diabetes is still associated with a high foetal loss. The results of the 119 pregnancies are shown in Tables V and VI, and bear out this statement. Table VI compares the foetal loss during the first 11 years with that for the last five years (1951-5).

The total foetal loss amounts to 37. This gives a foetal mortality of 30.8%. As there was one twin pregnancy the mortality rate has been calculated on 120 foetuses. A foetal

TABLE IV

Case No.	Age in Years	Parity	Previous Pregnancies	Duration of Diabetes	Maturity in Weeks	Nature of Delivery	Result	Weight		Additional Details
								lb. oz.	g.	
4	27	4	1st—N/D alive and well 2nd—S/B 3rd—Caesarean section alive and well	6 years	40	Normal	I.U.D.	5 0	2,270	Booked case. First seen at 36 weeks
6	30	3	1st—N/D alive and well 2nd— " " " "	4 "	37	Forceps	"	11 6	5,160	Booked case. Hydramnios. A.R.M. I.U.D. 20 hours later (before onset of labour). I-D interval 61 hours
7	21	1	—	Diagnosed during pregnancy	39	Embryotomy	S/B	11 7	5,190	Booked case. Pre-eclamptic toxæmia. Spontaneous onset of labour. Duration 18 hours. Fresh S/B
19	23	1	—	7 years	32	Normal	I.U.D.	4 4	1,930	Booked case. Hydramnios. A.R.M. for pre-eclamptic toxæmia. I.U.D. 24 hours later. Duration of labour 64 hours. I-D interval 48 hours
23	35	7	1st—N/D alive and well 2nd— " " " " 3 abortions 1 S/B	4 "	37	"	"	6 0	2,720	Booked case. First seen at 32 weeks

N/D=Normal delivery. A.R.M.=Artificial rupture of membranes. I.U.D.=Intrauterine death. S/B=Stillbirth. I-D interval=Induction/delivery interval.

TABLE V.—Maternal and Foetal Survival in 119 Pregnancies

Results to Mother				Results to Foetus (Calculated on Total of 120, as there was One Twin Pregnancy)											
Alive		Died		Alive		Death Before 28 Weeks		Death After 28 Weeks and Before Labour		Death During Labour		Neo-natal Death		Foetal Loss	
No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%
88	98.8	1*	1.1	83	69	6	5	20	16.6	2	1.6	9	7.5	37	30.8

* Died undelivered.

TABLE VI

	1940-55	1940-50	1951-5
Total babies	120	68	52
Babies alive	83	44	39
Neonatal deaths	9	8	1
Death after 28 weeks	22	13	9
" before 28 "	6	3	3
Total foetal loss	37 (30.8%)	24 (35.4%)	13 (25%)

mortality rate of 30.8% is in keeping with many published figures. Nevertheless, it is far from satisfactory, although a slight improvement has taken place during the past five years.

Foetal Death Before 28 Weeks

There were six foetal deaths in this category: four were spontaneous abortions, giving an incidence of 3.3%; hysterotomy was performed on one patient at 26 weeks because of severe diabetes and impaired renal function; and the sixth foetal death occurred in the mother who died undelivered.

Further study shows that the 89 women in this series have had altogether 265 pregnancies. In 168 pregnancies the patient was a known diabetic: abortions in this group numbered 17, or 10%. Of the pregnancies which occurred before the onset of diabetes (97) 13, or 13.4%, ended in abortion. Peel and Oakley (1949) claim there is no definite evidence to suggest that abortion is more common in diabetics. Barnes and Morgans (1949) give an incidence of 10.9% in 64 diabetic pregnancies. They compare this with a figure of 11.8% for a series of non-diabetics. According to DeLee and Greenhill (1943) the abortion rate has fallen from 22% to 16% since the introduction of insulin.

The foetal loss rate in the present series includes abortions because it has not yet been conclusively proved that at least some abortions are not the result of diabetes.

Foetal Death After 28 Weeks

The time of intrauterine death is shown in Table VII. A study of the cases of intrauterine death reveals a number of

TABLE VII.—Time of Foetal Death in Utero

Week of Pregnancy	1940-50	1951-5
28	—	1
29	1	—
30	—	1
31	—	—
32	1	1
33	3	—
34	1	1
35	2	1
36	1	—
37	1	4
38	1	—
39	1	—
40	1	—
Total	13	9

factors which almost certainly have an adverse influence on foetal survival. Firstly, six (almost 20%) of them were emergency admissions; of these, two were not seen until term. In both cases the foetus was dead. The important point to note is that both were alive at 37 weeks and would probably have survived had pregnancy been terminated then. A third patient was admitted in coma; the foetus was dead. The fourth patient was admitted with an intrauterine death at 34 weeks and did not have any antenatal care at all, and the fifth patient was admitted with a prolapsed cord. She should have been booked for confinement in hospital as she was a known diabetic. Secondly, in the "booked" cases intrauterine death occurred in three patients at 37 weeks, in one at 39 weeks, and in one at 40 weeks.

In a further two cases there was considerable delay in the onset of labour following artificial rupture of the membranes. Hence, in five cases there would seem to be an avoidable factor on the part of the patient or patient's doctor. In a further five cases it is probable that foetal death could have been prevented by earlier termination of pregnancy. Admittedly, this line of treatment may increase the risk of neonatal death, but surely this is preferable to allowing death *in utero* to occur.

Maternal Management

The introduction of insulin has largely removed the danger of maternal death, provided the mother co-operates with her physician and obstetrician. Foetal loss, however, remains high.

Considerable interest is now being taken in the alterations of hormone levels in pregnancy. The work of Smith and Smith (1938) is well known in this field of investigation, and, on the basis of their findings, White (1947) has given the sex hormones stilboestrol and progesterone to a large series of pregnant diabetic patients. In these patients the foetal loss (excluding abortions) has been reduced to 10% and the incidence of toxæmia to 5%. White's results are impressive; she attributes the improvement to correction of hormonal imbalance. In view of these results the Medical Research Council (1955) conducted a clinical trial into the use of

hormones in pregnant diabetics. The trial showed that oral stilboestrol and ethisterone did not reduce foetal mortality. The care and supervision of White's patients have been of such a high standard that this, apart from hormonal treatment, would, I believe, result in a substantial lowering of foetal mortality.

In planning the management of pregnant diabetics the following facts must be borne in mind: (1) the foetus is liable to die *in utero*; (2) the risk of intrauterine death increases as term approaches; and (3) toxæmia, diabetic coma, and a persistently poorly controlled diabetic state have a harmful effect on the foetus.

Skilled antenatal supervision is essential for mother and baby. The management and care of the patient should be undertaken by a team consisting of obstetrician, physician, and paediatrician. The physician must be interested not only in diabetes but in diabetes associated with pregnancy, so that he is familiar with the obstetrical problems as well as those produced by diabetes. Likewise, the obstetrician must interest himself in the details of controlling diabetes because, in my opinion, the overall responsibility for the patients' welfare must rest with the obstetrician. I feel he should take a more active share with the physician in day-to-day care of the diabetic patient while she is in hospital. Liaison between physician and obstetrician is equally important when the patient is attending the antenatal clinic. All treatment, whether out-patient or in-patient, should be carried out under the control of the maternity hospital.

Typically, the renal threshold for glucose is lowered during pregnancy, and this renders testing of urine for sugar of little value in such circumstances. Frequent and often urgent blood-sugar estimations are required if the patient is to be kept properly stabilized. In view of the need for urgent biochemical tests patients should be attended and confined only at hospitals where these facilities are available. Indeed, a sound case can be made out for referring all pregnant diabetic patients to special centres.

Every pregnant diabetic should attend an antenatal clinic not later than the end of the first trimester and preferably earlier. The majority of the patients are known diabetics who should be attending either a diabetic clinic or their own doctor. Hence, early reference to an antenatal clinic should be possible. Early attendance also impresses upon the mother the need for regular visits and strict adherence to instructions received at the diabetic clinic.

No less than 15% of our cases were unbooked, and 16% of the "booked" cases were first seen at 28 weeks or later. Of foetal deaths, 17% were in unbooked cases. A further point is that antenatal attendance was not as frequent as it should have been in a considerable number of "booked" cases. To give but one example.

A 5-para aged 30, a known diabetic for one year, first attended the antenatal clinic at 24 weeks. She was seen again at 28 weeks, but did not attend again until full term, when intrauterine death was diagnosed.

The patient must be seen at weekly intervals by both the obstetrician and the physician. This may appear to make excessive demands on the patient, but it is necessary if adequate control of the diabetes is to be maintained. Stabilization in pregnancy is difficult and ketosis develops readily and often rapidly. The one maternal death in this series could have been avoided by more frequent attendances at the diabetic clinic.

From the 28th week onwards the patient should be in hospital. If stabilization is difficult then earlier admission still will be necessary. Early admission allows better control of the diabetic state. In addition, careful observation may detect evidence of foetal embarrassment when a timely caesarean section may forestall intrauterine death. It is possible that if those patients in whom intrauterine death took place at the 34th, 35th, or 36th week had been under observation in hospital evidence of foetal distress might have been noted.

Professor Gray's work at King's College Hospital suggests that "if intrauterine death is impending, an abrupt and progressive drop in the excretion of pregnanediol and allied chemical components in the urine occurs between 30th and 32nd weeks of pregnancy" (Peel, 1955b). Confirmation of this work might enable us to prevent intrauterine death by termination at an earlier stage than usual.

When a patient has a bad obstetric history, stay in hospital for most of her pregnancy may be necessary. One patient in the present series was in hospital for 24 weeks. Similarly, in the case of a patient living at a distance from the hospital it would be preferable to admit the patient from an early date.

In view of the increased incidence of congenital abnormalities it is prudent to radiograph the foetus before delivery. The presence of an abnormal foetus may influence the method of delivery.

Method and Time of Delivery

Most authorities agree that the risk of intrauterine death increases as full term approaches. We have no reliable means, as yet, of knowing when or in which cases intrauterine death will occur. In view of these facts the majority of authorities advocate premature termination of pregnancy, usually at the 36th or 37th week. A study of Table VII would suggest that even earlier delivery should be practised; by advancing the time of delivery to the 35th week it should be possible to forestall many of the intrauterine deaths. Table VII shows that during the period 1951-5 three intrauterine deaths occurred before the 35th week. In each case foetal death followed hyperglycaemic coma. Thus good control of maternal diabetes and delivery at the 35th week might have averted seven of the nine intrauterine deaths. These findings suggest, therefore, that such measures will lead to a significant reduction in intrauterine deaths. Of course, it may be necessary in some cases to terminate pregnancy even earlier; for example, when toxæmia is also present or when foetal distress becomes evident. Hydramnios may be another indication for delivery before the 35th week.

The results of the past five years show that premature delivery need not result in a rise in the neonatal death rate. Our experience has been confirmed by Pease, Smallpeice, and Lennon (1951). Although they practised termination of pregnancy about the 36th week no baby died in the neonatal period in a consecutive series of 25 pregnancies. The care of the premature infant has made notable progress in the last few years, and to my mind the risk of death from prematurity is less than that of death *in utero* if termination is postponed.

Labour

Labour presents certain problems in the diabetic mother. The foetus does not stand the stress of labour well and intra-partum death is apt to occur. Secondly, the large size of many diabetic babies leads to disproportion (well illustrated in Case 7, Table IV) and prolonged labour. Thirdly, it is difficult to keep the mother stabilized and to avoid ketosis. These difficulties can be avoided by caesarean section. In my view, this is the method of choice in primigravidae and in the majority of multigravidae. Caesarean section eliminates the induction-delivery interval which follows rupture of the membranes. In multigravidae, however, each case must be judged individually, and surgical induction may be considered when the previous obstetric history has been good; when the diabetes is mild and control by diet alone is sufficient; and when the cervix is favourable and it is thought likely that the induction-delivery interval will be short.

However, if surgical induction is decided upon, a time limit of 12 hours must be made and caesarean section performed should labour not have started by the end of this period.

To some it may appear rather drastic to give the patient only 12 hours to start off in labour before advising caesarean

section. In support of this policy one can cite two cases in this series in which surgical induction of labour was carried out, onset of labour was delayed, and intrauterine death occurred within 24 hours of the membranes being ruptured.

Neonatal Period

Nine infants died in the neonatal period, six within the first 24 hours. This is a typical finding in babies of diabetic mothers. Their hold on life is slender during the first 72 hours, but if they survive this critical period, progress is usually satisfactory.

Post-mortem examination was performed in six of the nine infants, and it is interesting to note that hyaline membrane formation was found in three infants delivered by caesarean section and two delivered vaginally. This disease has been the most frequent finding in neonatal deaths in White's (1952) cases. Peel (1955b) found the condition in 85% of neonatal deaths in infants of diabetic mothers.

In the past, rearing of babies of diabetic mothers has presented a difficult problem. While all the difficulties have by no means been solved the outlook has improved. Formerly, foetal hypoglycaemia was blamed for many neonatal deaths. However, considerable doubt is now being cast on this view. Blood-sugar estimations taken during exchange transfusion for rhesus incompatibility have shown that very low levels are quite in keeping with survival (W. A. B. Campbell and O. D. Fisher, personal communication).

Many of the babies of diabetic mothers weigh much more for the period of gestation than those of non-diabetic mothers. Notwithstanding their increased weight they still behave as premature infants and must be treated as such. Most babies are oedematous and lose a considerable amount of fluid through diuresis in the first few days. In addition, pulmonary oedema is an ever-present risk leading to cyanotic attacks and pneumonia. In view of these considerations it is wise not to give fluids orally or subcutaneously for the first 48 hours of life.

Since about 1951 the care of these babies has been along the lines detailed below.

Immediately after delivery the air passages are adequately cleared. Once respiration is established satisfactorily, gastric aspiration is carried out. All babies are transferred to the premature nursery unit and, if necessary, placed in an oxygen tent. The baby is turned from side to side at regular intervals. Fluids are withheld for the first 48 hours unless this deprivation causes distress, in which case small amounts of glucose-water are given. In all other respects these infants are nursed in the same way as ordinary premature babies. Only one neonatal death has occurred in the last five years. This took place, following operation, in a baby with a meningocele. Great credit must be given to the paediatricians and nursing staff for such excellent results. Skilled nursing is the most important single factor in the survival of these infants.

When we are asked to undertake the care of a pregnant diabetic patient we should remember and take hope from the following saying of Seneca: "There is nothing which effort and unceasing and diligent care cannot overcome."

Summary

The 119 diabetic pregnancies treated in the Royal Maternity Hospital, Belfast, during the past 16 years are reviewed.

The results of foetal survival in this as in most series are unsatisfactory.

The figures for the present series are: total foetal loss, 30%; total foetal loss, excluding abortions, 25%; total foetal loss for past five years, 25%; and total foetal loss, excluding abortions for past five years, 19%.

Hormone therapy in its present form does not appear to be of any value.

There is at present no known method which will prevent intrauterine death and allow pregnancy to go to term.

Avoidable factors that have contributed to the high foetal mortality are discussed.

It is concluded that, if a substantial reduction in foetal loss is to be achieved, management of the pregnant diabetic patient should be along the following lines: (a) Team-work by obstetrician, physician, and paediatrician must be of the highest order. (b) Accurate control of maternal diabetes is essential. This implies very strict antenatal care from the beginning of pregnancy. (c) Admission to hospital at the 28th week, or earlier if stabilization is unsatisfactory. (d) Premature delivery at 35 weeks, or earlier if indicated. (e) Delivery by caesarean section in all primigravidae and all but a very few multigravidae. (f) Skilled nursing in a modern nursery unit.

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CLINICAL HISTORIES OF INFANTS REPORTED TO CORONER AS CASES OF SUDDEN UNEXPECTED DEATH

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Sudden and unexpected death forms an increasing proportion of deaths in the first few years of life, and in this country about 600 (446 to 911) infants are annually "found dead in bed" and registered as cases of accidental mechanical suffocation (Swinscow, 1951).

The fashions in pathological diagnosis of the cause of death in these infants reflect our basic lack of knowledge. Until relatively recently almost all were ascribed to an inherent inborn weakness, characterized by "status thymaticus." Many unexpected deaths were thought to be due to overlying—a diagnosis recorded in the Old Testament (1 Kings iii, 19) but, with changes in sleeping habits and the greater numbers of cots, it would seem that deaths which would previously have occurred in bed now occur with the child alone in a cot. Davison (1945) thought that most of these deaths were due to