UTERINE RUPTURE AFTER INTRAMUSCULAR "PITOCIN"

BY

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A case is described of rupture of the pregnant uterus in a patient who was not in labour. Rupture followed upon a medical induction, which included the administration intramuscularly of 5 units of "pitocin" (oxytocin) in two divided doses.

Case Report

The patient, Mrs. P., was a gravida-3 aged 31. Her previous pregnancies had been uneventful, and there was nothing of note in her past medical history.

She was booked for a home confinement. The pregnancy progressed uneventfully until March 5, 1958, when she was one week overdue. A medical induction was therefore given, the sequence of events being as follows:

1 p.m.—2 oz. (57 ml.) of castor oil was given by mouth, followed by a hot bath.

5.15 p.m.—2.5 units of pitocin was injected intramuscularly, followed by an enema.

5.30 p.m.—The enema was returned normally.

5.45 p.m.—A further 2.5 units of pitocin was given.

6 p.m.—The midwife was recalled and the general practitioner notified because the patient had been having very severe lower abdominal pains. She was found to be pale, cold, and sweating; blood-pressure 70 systolic; pulse 80 and of poor quality. Very strong uterine contractions were felt.

6.30 p.m.—The flying squad arrived, and the patient was seen to be desperately ill and clearly bleeding intraperitoneally. As she was too ill to be transferred to hospital, she was rapidly transfused with 2 pints (1,140 ml.) of dextran and 2 pints (1,140 ml.) of group O rhesus-negative blood, oxygen being administered at the same time. Despite these measures her condition did not improve. It was therefore decided that her only chance of survival lay in immediate transfer to hospital, where a laparotomy could be performed immediately.

9.45 p.m.—The abdomen was opened and found to contain 10 pints (5.7 litres) of blood and liquor. A rupture of the left side of the uterus extended from the vaginal vault, through the lower segment, and into the back of the uterus. Because the patient was almost pulseless an intra-aortic blood transfusion was set up and a caesarean hysterectomy performed. Unfortunately she died just before the operation was completed.

Post-mortem Report.—Death was due to shock and to haemorrhage after rupture of the uterus. The laceration in the uterine wall was on the left side; it was about 8 cm. long and extended upwards from the vaginal vault through the lower uterine segment. No other abnormality was found.

Discussion

The reasons for publishing this case history are two-fold. The first reason is because similar cases, when they do occur, are rarely published. A search through the literature has failed to reveal an instance in which uterine rupture has occurred after the administration of intramuscular pitocin in the absence of a scar and before the onset of labour. The second reason is to draw attention to the dangers of undiluted intramuscular injections of pitocin for the induction of labour, and, more particularly, for the stimulation of an inert labour. The fact that uterine rupture did occur before labour

became established should serve as an added deterrent to those who would wish to give it for hypotonic inertia.

"Full" medical inductions, as they have been called, are still used extensively both in hospital and in domiciliary midwifery despite the introduction of the oxytocic drip. This is not surprising in view of the fact that some of the most modern textbooks of obstetrics still recommend the reinforcement of the simple medical induction of castor oil, enema, and bath. This reinforcement consists of half-hourly injections of 2.5 units of pitocin until a maximum of six doses have been given, or, alternatively, until labour should start. Unfortunately, as a result of this teaching there are some who look upon the use of pitocin in this way as an accepted practice. It is to be hoped that this article will discourage even those who have used this method for many years and have had the good fortune to avoid a similar catastrophe.

Uterine rupture is not the only danger. There is a very real risk of amniotic-fluid embolus. Wrigley (1959) draws attention to the occurrence of subsequent uterine atony, particularly in the third stage of labour. Furthermore, there is a real chance of producing foetal asphyxia. There is by no means universal acceptance of oxytocic therapy as the choice of treatment for hypotonic inertia. Equally good results can be obtained in the majority of cases by the simple expedient of waiting (Lewis, 1956).

Feeney and Barry (1956), in discussing their series of uterine ruptures, draw attention to the dangers of pitocin and state that great care should be exercised in the use of oxytocin in the grand multigravida. Carey (1959) has listed some important facts concerning intramuscular pitocin, which he says "is frequently ineffective and potentially dangerous." He notes that uterine tone is raised for 10 to 15 minutes in a proportion of cases with doses of 2.5 units, leading to slowing of the foetal heart. Other points which he mentions are the cumulative action of half-hourly injections, the risk of giving an accidental intravenous injection, and the unpredictable response of the patient. In almost all published series the authors emphasize the need for the most careful and constant attention to the patient by an experienced obstetrician.

Chassar Moir (1959) has outlined the work carried out since 1922 to produce a reliable method of standardizing pituitary extract. Despite the introduction of the international unit dosage the action is still so erratic that many obstetricians will use an oxytocin sensitivity test such as that recommended by Nixon and Smyth (1957) before administering a pitocin drip.

The recommended dose of undiluted intramuscular pitocin for induction of labour is generally 15 units in six spaced doses over a period of two and a half hours.

Holmes (1955) has described the use of diluted oxytocin as a continuous intramuscular injection, and states that the average case of hypotonic inertia requires 0.2 units of oxytocin per hour. This figure more than any other should show the danger in administering over ten times this dose in a single injection.

Greenhill (1945), in discussing uterine rupture, stated that a common cause of rupture was the use of pituitary extract but that warnings seemed to be of little use. Ten years later he stated that administration of pituitary extract by intravenous drip was far safer than intramuscular injection (Greenhill, 1955-6).

The danger of producing an amniotic-fluid embolus as a result of the greatly increased uterine contractions has been proved. Barno and Freeman (1959) discussed 15 cases of maternal death due to amniotic-fluid embolus. In seven of these pitocin had been administered, twice by intravenous drip and five times by intramuscular injection.

The use of intramuscular pitocin undiluted, in single or divided doses, for the induction or stimulation of labour should cease. If pitocin has to be used it should be given as an intravenous or intramuscular drip. Owing to the time and attention required by these drips it would seem unlikely that there is any place for them in domiciliary obstetrics. Whenever they are contemplated, it is worth while bearing in mind some of the following contraindications described by Greenhill (1945). Pitocin should never be administered where there is any possibility of obstructed labour, in malpresentation, or after a previous caesarean section. If it is given in labour it should only be for a true hypotonic inertia. It should be avoided in severe toxæmias and should never be used in a patient who has had more than four deliveries. Under no circumstances should a patient be left alone after the administration of pitocin. If contractions are prolonged or too frequent, or there is a change in the foetal heart rate, the administration of pitocin should be stopped, and it may be necessary to give a general anaesthetic in order to diminish the strength of the contractions.

The most recent condemnation of intramuscular pitocin took place at the British Congress of Obstetrics and Gynaecology in July, 1959. To quote Wrigley (1959): "This Congress would render no disservice to the community if it declared its complete condemnation of the practice of administration of pitocin by the method of repeated intramuscular injections."

Summary

A case is described of uterine rupture followed by maternal death. Rupture occurred shortly after a medical induction which included two intramuscular injections each of 2.5 units of "pitocin" (oxytocin). The dangers of such treatment are discussed and a plea is made for the abolition of single or spaced injections of pitocin for the induction of labour and for the stimulation of hypotonic inertia.

I am indebted to Mr. Gwilym Evans for permission to publish this case.

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Mr. JOHN DODD, as honorary secretary of the British Hospitals Contributory Schemes Association, has accepted invitations from a number of medical, social service, and public administration graduate schools in American universities, including Columbia, New York, and Cornell, to lecture on the survival of voluntary effort in Great Britain under State medicine. Mr. Dodd will take part in discussions on medical care with faculty members and students, and will address some leading Blue Cross organizations in the eastern States.

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IN VITRO INVESTIGATIONS OF TWO TYPES OF LUPUS ERYTHEMATOSUS PLASMA FACTOR

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Our previous experiments on dog and man confirmed the probable existence of two types of lupus erythematosus plasma factor, one transferable and one non-transferable (Bencze *et al.*, 1959). As proved by further studies, it is not the amount transfused which accounts for the incidence of the two types of lupus erythematosus plasma factor (Bencze *et al.*, 1960).

This paper reports on *in vitro* investigations with the lupus erythematosus (L.E.) cell. In comparative tests the patient's and a normal subject's leucocytes were added to plasma obtained from several patients with systemic lupus erythematosus (S.L.E.) in order to find out whether any difference could be detected *in vitro* between the two types of plasma factor.

Methods

S.L.E. Plasma + Patient's leucocytes.—Blood was taken under sterile conditions (with heparin added) from S.L.E. patients; the examination for L.E. cells was made by Zinkham and Conley's (1956) rotation method. This was used as the control test.

S.L.E. Plasma + a Normal Subject's Leucocytes.—A known amount of plasma obtained from S.L.E. patients was added to a normal subject's leucocytes (blood was taken from normal individuals under sterile conditions and heparin added, the layer of white blood cells being pipetted off). Examination for L.E. cells was by the rotation method of Zinkham and Conley.

S.L.E. Plasma Transfer Experiment.—By methods described in earlier publications, plasma from cases of S.L.E. was transfused into patients with neoplastic diseases and into dogs (Bencze *et al.*, 1958; Bencze and Ludányi, 1960).

Results

Examination for L.E. cells were made on several occasions and at different times with plasma obtained from 16 S.L.E. patients, adding to the plasma the patient's own or a normal subject's leucocytes. Many L.E. cells were observed in all 16 patients when their own leucocytes were used. The results of our *in vitro* L.E.-cell investigations are listed in the Table, and the results of *in vitro* and *in vivo* experiments are compared.

Discussion

Eight samples of S.L.E. plasma (non-transferable type) were treated *in vitro* with leucocytes of normal subjects. No L.E. cells were found when the plasma of three S.L.E. patients was treated with leucocytes of normal subjects; many L.E. cells, however, could be found in every case when the patient's own leucocytes were added to the plasma. With the other five samples of