USE OF "SYNTOMETRINE" IN THE THIRD STAGE OF LABOUR

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Intramuscular injection of ergometrine before completion of the second stage of labour is now recognized as a useful routine measure for the control of post-partum haemorrhage. It suffers however from the disadvantage of a long latent period of approximately seven minutes (Embrey and Garrett, 1958) before the uterus responds. The advantage of ergometrine lies in the prolonged and firm contraction of the uterus which follows.

Oxytocin, on the other hand, has been shown to have a shorter latent period of two and a half minutes after intramuscular injection, but its duration of action is shorter than that of ergometrine. It seemed that if these two oxytocics could be combined both rapid and prolonged uterine contraction would be obtained. A combination of synthetic oxytocin, "syntocinon," and ergometrine is now available in the form of "syntometrine," and the present study describes a comparison of the activity of this product with that of ergometrine alone. The difficulty of oxytocin assay in the presence of ergometrine has been overcome by the method of Berde and Stürmer (1962). In this the effect of the oxytocin on the blood-pressure of the rooster is assessed; this is only slightly affected by ergometrine, except in high dosage.

Material

At Ronkswood Hospital, Worcester, during the past eight months, a comparative study has been made. Syntometrine containing 5 units of syntocinon and 0.5 mg. of ergometrine was used for control of the third stage of labour in 500 consecutive deliveries under the care of one of us (group 1). As a control, ergometrine 0.5 mg. was used during the same period for 430 cases under the care of the other consultant of this unit (group 2). Seven cases treated with intravenous ergometrine because of previous third-stage difficulties, including retained placenta and post-partum haemorrhage, were excluded from group 2, but corresponding cases in group 1 were treated with intramuscular syntometrine. Because syntometrine contains 5 units of oxytocin in addition to the 0.5 mg. of ergometrine used in group 2, it is felt that a fairer comparison between the two preparations could be made if the dose of ergometrine were doubled, and therefore in a third group of 190 cases ergometrine 1 mg. was given intramuscularly (group 3).

Duration of Third Stage.—In general the time of action of both syntometrine and ergometrine was in conformity with the figures given by Embrey (1959, 1961), the average duration of the third stage being 5.7 minutes in group 1, and 9.4 minutes in group 2. Group 3 gave a figure of 8.7 minutes.

Results

Blood Loss.—The average loss in group 1 was 6.92 oz. (196 ml.) as compared with 9.13 oz. (274 ml.) in group 2 (see Table). The difference in the figures appears to be significant at the 4% level. In group 3 the blood loss was 8 oz. (227 ml.), and here again the figure for syntometrine appears to be better. A comparison of the

incidence of post-partum haemorrhage (blood loss more than 20 oz. (570 ml.) again shows a marked reduction in group 1 as compared with group 2, and a less marked reduction as compared with group 3. Cases with a loss between 10 and 20 oz. (285 and 570 ml.) show little difference between the three groups, but the percentage of cases with a loss less than 10 oz. (285 ml.) is slightly greater in group 1 than in the other two groups. The advantage in the figures for group 1 might well have been greater had all cases of ante-partum haemorrhage, multiple pregnancy, and previous post-partum haemorrhage been included in groups 2 and 3; such cases in this series were, however, given intravenous ergometrine and were therefore excluded. Group 1 includes all cases; no patient under the care of this consultant was treated with an intravenous oxytocic.

Retained Placenta.—The placenta was retained for one hour or more in 3.4% of group 1 cases, as compared with 1.9% in group 2 and 3.15% in group 3. An analysis of the cases with this complication showed contraction ring to be present in 5 of the 17 cases in group 1; of the remainder, bicornuate uterus was noted in three, one of whom had suffered from a post-partum haemorrhage in a previous pregnancy and had then required manual removal of the placenta. In another case it was noted that a bilobate placenta was adherent at the fundus, although the uterus was not clearly bicornuate. In these four cases, and in the remaining

Details of Blood Loss

	No. of Cases	Blood Loss				Retained Placenta (%)
		> 20 oz. (%)	10–20 oz. (%)	< 10 oz. (%)	Average (oz.)	
Group 1. Syntometrine	500	4.6	22.8	72.6	6.92	3.4
Group 2. Ergometrine 0.5 mg.						
Group 3. Ergometrine 1 mg.	430	8.65	23.7	67.65	9.13	1.9
	190	6.30	25.25	68.45	8	3.15

eight cases of group 1, no evidence of contraction ring was found, and in all of them the placenta was found to be adherent. In group 2 contraction ring was present in only one case, in which case also the uterus was noted to be bicornuate, but the placenta was adherent in the six remaining cases of this group. In three cases in group 3 the placenta was adherent, and in one of these contraction ring was also present.

Discussion

For some years it has been our custom in this unit to use ergometrine 0.5 mg. routinely by intramuscular injection with the delivery of the head. This, in general, has proved satisfactory. Where there has been a previous history of post-partum haemorrhage, and in cases of ante-partum haemorrhage and multiple pregnancy, ergometrine has been given intravenously.

In group 1 syntometrine was given with the delivery of the anterior shoulder, and the figures quoted represent

the results achieved by administration at this stage. In discussion with our midwifery staff it has become clear that the single-handed midwife in domiciliary conditions would find it easier to inject an oxytocic after the head has been delivered.

We have not found it necessary to modify our management of the third stage of labour when using syntometrine, but in general have followed the same routine as with ergometrine alone. In the absence of bleeding we have waited for signs of separation of the placenta before attempting to aid its expulsion, either by expression or by the Brandt-Andrews method.

Conclusions

Intramuscular syntometrine (0.5 mg. of ergometrine plus 5 units of syntocinon) is more effective in controlling blood loss in the third stage of labour than intramuscular ergometrine 0.5 mg., though there is a less marked advantage when compared with intramuscular ergometrine 1 mg. There is a suspicion that the risk of retention of the placenta is greater in cases treated with syntometrine than in those treated with 0.5 mg. ergometrine, although this is significant only at the 20% level. Compared with cases treated with 1 mg. of ergometrine there is little difference in the incidence of this complication.

In general, we can confirm the findings of McGrath and Browne (1962) on the value of syntometrine in reducing third-stage complications, and believe that when injected intramuscularly it is a more effective preparation than ergometrine alone. The present study suggests therefore that intramuscular syntometrine should replace ergometrine in the routine management of the third stage of labour.

Summary

Three series of patients who were given intramuscular syntometrine, ergometrine 0.5 mg., or ergometrine 1 mg. at the completion of the second stage of labour are compared with respect to blood loss and the incidence of retained placenta.

Blood loss was reduced significantly in the syntometrine group.

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CLINICAL TRIAL OF "SYNTOMETRINE" IN THE THIRD STAGE OF LABOUR

BY

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Recently a new oxytocic preparation, "syntometrine," became available, containing 5 I.U. of "syntocinon" and 0.5 mg. of ergometrine in 1 ml. ampoules in stable combination. Embrey (1961) demonstrated tocographically that this preparation had both the speedy onset of oxytocic action known to "pitocin" and syntocinon, and the slower but more persistent action of ergometrine. His results showed that the onset of uterine contraction occurred two and a half minutes after intramuscular injection of syntometrine compared with seven minutes for ergometrine 0.5 mg. intramuscularly and four and three-quarter minutes for intramuscular ergometrine 0.5 mg. with hyaluronidase. He showed also that intravenous ergometrine 0.5 mg. caused uterine contraction to begin in 45 seconds, thus confirming that the intravenous method is the one of choice in the initiation and maintenance of uterine contraction. In many instances it is not possible to use the intravenous technique, and for this reason an oxytocic which can be given intramuscularly and still act rapidly would be of great value in the management of the third stage of labour.

The present study was done to assess the practical value of syntometrine in this regard, using ergometrine 0.5 mg. intramuscularly as a control.

Method

Patients in this trial included all women admitted to the labour ward, except those who had instrumental delivery and those who had a previous history of post-partum haemorrhage. No account was taken of parity

or age. Management of the third stage of labour remained unaltered apart from the use of oxytocic drugs which had not previously been given at St. Mary's Hospitals. The drugs were given in each case at the time of delivery of the anterior shoulder. The length of the third stage was measured on a stopwatch from the time of injection until the expulsion of the placenta. This time was taken to the nearest minute. The total loss was carefully measured in ounces from the time of the baby's delivery so that intrapartum haemorrhage was excluded. Any contamination by liquor or urine was included in the final measurement, as there was no way of accurately excluding it. Post-partum haemorrhage was classified as any loss greater than 20 oz. (570 ml.) occurring within 24 hours of delivery. Placentae were classified as retained if manual removal was required for their delivery.

The first 100 patients received ergometrine, the second 100 syntometrine, and a third group of 54 ergometrine again. The results are shown in the Table.

Comparison of Results

	Intramuscular Syntometrine 1 ml.	Intramuscular Ergometrine 0.5 mg.	Significance of Difference
Mean length of third stage of labour	7.8 ± 1.2 min.	10.5 ± 1.4 min.	P = 0.20-0.10
Mean total of post-partum blood loss	6.0 ± 0.8 oz.	8.3 ± 1.1 oz.	P = 0.10-0.05
Incidence of post-partum haemorrhage	2% (2 cases)	7% (11 cases)	P = 0.10-0.05
Incidence of retained placenta	—	2% (3 cases)	P = 0.30-0.20
Total number of cases	100	154	—