A CLINICAL TRIAL OF UNITOCIN (SPARTEINE SULPHATE) IN LABOUR*

by

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Sparteine Sulphate has been known for over a hundred years. Initially it was introduced in clinical practice for the treatment of cardiac irregularities on account of its quinidine like action on the heart. Tamba (1921) observed for the first time its oxytocic property in experimental animals and Kleine (1939) introduced it in clinical practice. The latter found it useful in the management of uterine inertia during the second stage of labour. Unichem Laboratories have made the drug available in India in 1962-63 for investigation under the trade name of Unitocin. Since then many observations have been published by different workers regarding its usefulness as an oxytocic agent in obstetric practice.

Unitocin is available in 1 ml. ampoule containing 150 mg. of Sparteine sulphate in sterile half strength normal saline. Sparteine sulphate is the acid salt of lupamine organic alkaloid obtained from the plant — Spartium Scoparium. It has the empirical formula of $C_{15}H_{26}O_{22}$.

Material and Methods

The drug was tried in the department of Obstetrics and Gynaecology, College of Medical Sciences, Banaras Hindu University, Varanasi, on 30 pregnant women admitted for delivery from the antenatal clinic.

The study comprised of 5 nulliparous and 25 multiparous women in the first stage of labour between the age of 16 and 30 years. The parity varied from 1 to 4 (Table 1). All the patients were at full term with vertex presentations. The head was fixed in all, except in 4 multiparous women. The dilatation of cervix varied from 2 to 3 cm. and it was 50 to 75 per cent taken up. Membranes were intact in all the cases. The previous deliveries were stated to be normal in all multiparous women.

TABLE I

Showing the Age and Parity Distribution

Parity	No. of patients	Age in yrs.
Nullipara	5	16 to 22
Multipara	25	20 to 30

The indication for administration of the drug was uterine inertia in 16 and acceleration of normal labour in 14 cases. The drug was administered intramuscularly in the dose of 150 mg. one hourly. A minimum of one and a maximum of four such doses were administered in the series before delivery. The general condition of the patient, blood pressure, pulse, uterine contractions and foetal heart sounds were noted before and after the administration of each dose.

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Observations and Analysis

When the drug was administered for acceleration of normal labour in 4 nulliparous women in whom the cervical dilatation was 2 cm., the minimum induction. delivery interval varied between 2 to 3 hours, but in one case in whom the cervical dilatation was 3 cm. and the drug was given for hypotonic uterine inertia, it was three fourth of an hour. In this latter case slight postpartum haemorrhage was observed, though the response to the drug was good and placenta took only 5 minutes to expel (Table 2).

When the drug was given for accelerating normal labour in 10 multiparous women, the minimum and maximum induction delivery intervals were 15 minutes and 2 hours, respectively. A maximum of 2 injections were needed to obtain the satisfactory response (Table III). However, in 15 cases of hypotonic uterine inertia in multiparous women, the minimum induction—delivery time following administration of drug was 1¾ hours and maximum 5½ hours except in one case who after showing good response initially, developed secondary uterine inertia delaying the induction—delivery interval to 23¾ hours. In this case, the placenta was expelled after 7 minutes with no postpartum haemorrhage or any other maternal or foetal complication (Table IV). Slight post-partum haemorrhage was, however, observed in one case of this group in which the induction delivery interval was 3½ hours.

TABLE II

Showing Response to Sparteine Sulphate in Nulliparous Women

No. of cases	Indication	Initial cervical dilatation in cms.	No. of injections	Induction delivery interval in hrs.	Response	Remarks
4	Accelaration of normal labour	2	2 to 3	2 to 3	good	—
1	Hypotonic uterine inertia	3	1	¾	good	Slight postpartum haemorrhage

When response of the drug given for acceleration of normal labour in nulliparous and multiparous women is compared (Tables II and III), it is apparent that the induction — delivery interval (¼ to 2 hrs.) and the number of injections given (1 to 2) were less in multiparous than in nulliparous women (2 to 3 hrs. 2 to 3

TABLE III

Showing Response to Sparteine Sulphate Given for Acceleration of Normal Labour in Multiparous Women

No. of cases	Initial cervical dilatation in cms.	Number of injections	Induction delivery interval in hrs.	Response	Remarks
2	2	2	1¾ to 2	good	—
6	3	1	¼ to ½	good	—
2	3	2	1½	good	—

TABLE IV

Showing Response to Sparteine Sulphate Given for Uterine Inertia in Multiparous Women

No. of cases	Initial cervical dilatation in cms.	Number of injections	Induction delivery interval in hrs.	Response	Remarks
2	2	2	1¾ to 2	good	—
5	2	3	3¼ to 3½	good	Slight, postpartum haemorrhage in one case
5	2	4	4½ to 5½	good	—
1	2	3	23¾	Initially good	Developed primary hypotonic uterine inertia
2	3	3	2¼	good	—

injections). However, the response in hypotonic uterine inertia in the two groups cannot be compared because of only one case in the nulliparous series.

On an average the drug took 15 minutes to act. The frequency, force and duration of uterine contractions gradually increased till delivery in all cases except one who developed primary hypotonic uterine inertia. The average time taken for placental expulsion was 5 minutes. No appreciable change in blood pressure, pulse rate and general condition of the patient was observed during and after the administration of the drug.

Discussion

An extensive clinical evaluation of intra—and post-partum use of sparteine was reported by Plentyl and Friedman (1963) with 83.3 per cent success.

Nadkarni & Shah (1964) used the drug for acceleration of normal labour in 26 cases in which the cervix was less than half dilated and observed the average induction—delivery interval as 2 hours 56 minutes, while Subhadra Devi *et al* (1969) found it to be 3 hours 30 minutes. However, in the present series of 14 cases with initial cervical dilatation of 2 to 3 cms. it was 1 hour 20 minutes. Nadkarni & Shah (1964) also studied the effect of Unitocin in 15 cases of uterine inertia and found the average interval between the commencement of treatment and completion of first stage of labour to be 2 hours 24 minutes in 10 cases and 1 hour 10 minutes in 5 cases. In the present series, the average induction — delivery interval was found to be 3 hours 19 minutes in 15 cases of hypotonic uterine intertia, showing a successful response.

Jhaveri *et al* (1963), Kishore *et al* (1966), Anjaneyulu *et al* (1966), Jhaveri *et al* (1966) and Subhadra Devi *et al* (1969) observed the success rate with Unitocin for accelerating labour as 88.4% 87%, 95.9%, 89.7% and 81.9% respectively. However, in the present series, it was found to be 100% (Table V).

Boutselis and Chosy (1964) and Anjaneyulu *et al* (1966) found the success

TABLE V

Showing the Success Rate with Sparteine Sulphate

Indication	Parity	No. of cases	Success	
			No. of cases	Percentage
Acceleration of normal labour	Nulliparae	4	4	100
	Multiparae	10	10	100
Total	..	14	14	100
Hypotonic uterine inertia	Nulliparae	1	1	100
	Multiparae	15	14	93
Total	..	16	15	93.75

rate with Unitocin as 93.6% and 90.47% respectively in cases of uterine inertia. In the present series it was 93.75% (Table V). However, in the series of Apte (1965), the success rate was 84.3% both in 16 cases of uterine inertia and 10 cases of acceleration of normal labour.

The average induction-delivery interval in the nulliparous can not be compared with that in multiparous women of the present series because of the small number of cases studied in the former group.

No foetal or maternal complications were observed in any case except a slight postpartum haemorrhage following administration of the drug for uterine inertia in one nulliparous and one multiparous woman. The response of the drug was good in all except one multiparous woman in whom it was considerably delayed due to primary uterine inertia.

Conclusion

1. The route of administration of the drug is convenient and does not require as active personal supervision from obstetricians as intravenous oxytocic drip.

2. The response to drug is good. It shortens the duration of labour. It is useful in uterine inertia producing coordinated uterine contractions.

3. The minimum and maximum induction—delivery interval is found to be less in multiparous as compared to nulliparous women following administration of the drug for acceleration of normal labour.

4. No maternal or foetal complications were seen but the occurrence of a slight postpartum haemorrhage is to be kept in mind as it occurred in 2 cases of the series.

5. No side effects were observed. No local irritation or discomfort at the site of local injection was encountered.

Summary

Unitocin was tried in 30 women during labour. The response was found to be good except in one case where it was considerably delayed due to primary hypotonic uterine inertia. No maternal or foetal complications were seen except a slight postpartum haemorrhage in two cases.

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