

PSYCHOPHARMACEUTICAL ACTION OF LIBRIUM IN LABOUR *

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Apprehension, fright, uncontrolled emotions and unreasonable lack of co-operation to follow instructions are often the observations of the obstetricians of their patients in labour. The aim of the obstetrician is to produce such a change in the personality of the woman that she is capable of bearing the pains of labour with fortitude and capable of co-operating in spite of pain. Zillboorg (1957) believed that in so-called natural childbirth the aim is to be able to let the pain be weaved with the ecstasy in the act of giving birth so that pain becomes a part of a pleasurable experience, perhaps a masochistic experience, which is a psychobiologically necessary part of healthy parturition. He fully agreed that physical pain plays a beneficial psychological roll in labour and drugs used to kill pain completely may have an unfavourable psychological action

on the woman and on her attitude towards her child and future childbirth.

The psychoprophylactic approach of Read (1944) to achieve voluntary muscular relaxation by a regimen of exercises is impractical in our overcrowded antenatal clinics. Advent of the tranquilizers did give a new hope for the long awaited agent that could produce the desired neuromuscular relaxation. Kuntze and Sison (1957) presented a study of the beneficial and effective action of promezine in labour. Wegryn and Marks (1958) advocated its use as synergist to pethidine.

The psychosedative properties in experimental animals of a new compound, chlorodiazepoxide (later trade named Librium) were described by Randall et al (1960). Chemically the active substance is 7-chloro-2-methylamino-5-phenyl-3H-1, 4-benzodiazepine 4-oxide hydrochloride. Its calming muscle relaxant and sedative properties were noted to be effective in doses considerably less than those producing sleep. Tobin and Lewis (1960) presented their observations on oral administration of the drug on anxiety and related symptoms with 80.2 per cent effectivity.

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The present work was undertaken with this motivation that chlorodiazepoxide may be a trophotropic and anxiolytic drug of choice in labour. It may lessen the emotional sensibility and the tension state created by labour pains and produce a muscular relaxant action on the body and thereby on the pelvic floor and perineum.

Material and Methods

The study was undertaken in three series. The first series included 164 random obstetric patients in labour admitted to the M. Y. Hospital, Indore, to whom the drug was administered intramuscularly only. A collateral second series of observations were made on 16 private patients, using the drug orally and intramuscularly. Finally, a further observation was made on 20 patients, using a double blind technique.

A record of each labour case was maintained in detail. The following conditions were specially noted, viz. stage of cervical dilatation, emotional balance of the patient, expectancy of labour and foetal condition.

The emotional status of the patient was assessed after studying the intensity of the pain felt, the desire or otherwise to bear this pain, the condition of apprehension, anxiety and muscle tension, the desire to relax and to doze off into sleep in between contractions, and the loss of control, crying, screaming and hysterical behaviour during the intensity of painful contractions. The assessment was made after 15 minutes of initial observation as: A — Unmanageable; B — Manageable with difficulty; C — Easily manageable.

The effects of the drug were observed on the relief of emotional imbalance if present and was classified as: Poor — no effects and restless, showing marked reaction to pains; Fair — awake but relaxed, showing minor reaction to pain; Good — composed or asleep in between pains, active co-operation during pains by relaxing or bearing down as instructed, without reacting to pain.

The effects were also observed on the process of cervical dilatation, duration of labour after administration of the drug, perineal muscle relaxation and on neonatal respiration. Perineal relaxation was noted physically in primiparous labours. Neonatal condition was assessed as a score at 5 minutes after birth according to the Apgar method (1953). An observation was also maintained on the development of rashes, constipation, persistent drowsiness and ataxia noted to be toxic effects of the drug.

Medication in the first series of 164 patients was started at random irrespective of emotional status, degree of pain or cervical dilatation. Nine patients were discharged undelivered, of whom four were primigravidas. Of the 155 who delivered 77 were primiparas and 78 were multiparas. An initial dose of 50 mg. of Librium was injected intramuscularly to 85 patients, and 13 were given a further 50 mg. Seventy-nine were given an initial dose of 100 mg. Eleven had additional 50 mg. after 3 hours. Two patients with lack of emotional control after the first dose were given a second injection of 100 mg. and one of them had a third dose of 50 mg., a total of 250 mg. Seven patients required operations to end labour. Four

had caesarean sections for cephalopelvic disproportion and in three of these the operation could be completed as planned under local anaesthesia. One had toxæmia, got relaxed after Librium but had three convulsions in rapidity during the second stage and required manual rotation and forceps delivery for a deep transverse arrest. Another toxæmic primipara also ended in forceps delivery. One case was admitted with obstructed labour with no foetal heart beats and ended in a craniotomy.

The second series of 16 patients were all under the senior author's personal antenatal supervision, at least from the twentieth week, the majority from earlier weeks. All had to some extent practised psychophysical exercises. They had also taken 10 mg. Librium tablets three times a day for 3 to 10 days before the onset of labour. There were 6 primiparas and 10 multiparas, all delivered spontaneously and one was a breech labour. All received 100 mg. Librium intramuscularly when first seen in labour and all at that time had a dilatation of two fingers or slightly more. Two required a further 100 mg. injection after 4 hours. Intermittent trilene was given

by a Friedmann inhaler during the second stage contractions, and 10 patients required infiltration of perineum with novocaine.

Further observations were made on a third short series of 20 patients with a double blind technique. Ten had Librium 100 mg. intramuscularly and 10 were only given the diluent supplied for use with Librium. The preparations were numerically labelled in identical sterile vials and at the time of administration neither the patient nor the doctor knew the contents of the solution administered. One patient who had the placebo remained undelivered. In the placebo series there were 4 other primiparas. In the Librium series there were 6 primiparas. In emotional status, none belonged in this series to category 'C'. All 19 delivered normally, one had twins.

Results

Series I. For the initial purpose of study 9 undelivered patients and 7 operated patients are not included. Further 8 whose sedative therapy was modified by additional morphia or pethidine are also omitted. The effects on emotional response and on neonate are tabulated in Table I.

TABLE I

Emotional status on admission	No.	Total dose of Librium	No.	Effects on emotional status			Per cent poor results	Neonatal Apgar Score below 6
				Good	Fair	Poor		
A	23	200 mg	1	—	1	—	21.7%	—
		150 mg	4	3	1	—		1
		100 mg	18	5	8	5		—
		150 mg	3	2	—	1		—
B	60	100 mg	41	10	19	12	41%	—
		50 mg	16	—	4	12		—
C	57	100 mg	10	7	3	—	0%	—
		50 mg	47	7	40	—		—

A = Unmanageable; B = Manageable with difficulty; C = Easily manageable.

All 155 deliveries were studied for effects on progress of labour by averaging the injection-delivery interval under various conditions of cervical dilatation as shown in Table II.

pared with oral Librium.

All had excellent perineal relaxation. Table IV shows the injection-delivery intervals in relation to cervical dilatation in Series II.

Series III. Table V shows compara-

TABLE II

	No. of cases	Average Interval	Minimum	Maximum
		Hrs. Mts.	Hrs. Mts.	Hrs. Mts.
A. Irrespective of cervical dilatation	155	6 . 23	0 . 25	45 . 00
B. Cervical dilatation:				
One finger	13	11 . 00	2 . 00	24 . 00
Two fingers	57	8 . 43	1 . 10	45 . 00
Quarter	44	4 . 56	0 . 25	16 . 45
Half	26	3 . 05	0 . 50	7 . 30
Three quarters	13	3 . 58	0 . 32	19 . 45
Full	2	0 . 30	0 . 30	0 . 30

Perineal muscle relaxation could be studied in 60 primiparas. It was good as observed physically in 42, though 20 required an episiotomy and two had first degree perineal tears. Eleven patients had firmer perineums and required episiotomies and 7 had first or second degree perineal tears.

It was obvious at an early date in this investigation that those who came with controlled emotional status at an early stage of labour remained well controlled with Librium. It was noted that a single ampoule of 50 mg. was not very effective in primiparas in group 'B'.

Series II. Table III shows the results on 16 patients previously pre-

tive differences in 19 patients observed under a double blind control initiated to study if personal or objective errors occur to judge effects on emotional status.

Though the study is small, Table V shows that both subjectively and objectively a deviation of correct assessment can occur. It is regretted that this study was not more extensive.

General Observations

Better results with comparatively shorter duration of labour and quicker cervical dilatation were observed when 100 mg. Librium was administered early in labour when the cervix was only a quarter or less

TABLE III

Emotional status on admission	No. of cases	Total dose of Librium	Effects on emotional status			Per cent poor results	Neonatal Apgar Score below 6
			Good	Fair	Poor		
A	2	200 mg.	1	1	—	0%	—
B	4	100 mg	2	2	—	0%	—
C	10	100 mg	8	2	—	0%	—

TABLE IV

	No. of cases	Average Interval	Minimum	Maximum
		Hrs. Mts.	Hrs. Mts.	Hrs. Mts.
A. Irrespective of cervical dilatation	16	5 . 38	0 . 45	9 . 08
B. Cervical dilatation:				
Two fingers	12	5 . 45	2 . 00	9 . 08
Quarter	4	4 . 12	0 . 45	6 . 35

TABLE V

Injection	Emotional status on admission	No. of cases	Effects on emotional status			Per cent poor results	Neonatal Apgar Score below 6
			Good	Fair	Poor		
Librium	A	6	2	3	1	—	
100 mg	B	4	2	2	—	10%	
Placebo	A	5	—	2	3	—	
	B	4	1	3	—	33%	

dilated. When no obstetric factor was involved Librium had no adverse effects on uterine contractions. One patient in the first series, a primipara, had severe atonic postpartum haemorrhage to which no cause was attributable. She had 100 mg. of Librium; she belonged to emotional status 'A' and the effects of Librium were considered 'fair'.

Comments

In the present study the observations on tranquilization and muscle relaxation are made with the use of the testing drug only. Using concomitant phenothiazines in labour, Stewart (1961) reported 62 to 75 per cent good to excellent results. In the dose used by us there were no amnesic and hypnotic effects of the drug. This is in agreement with subsequent observations made by Randall (1961). Keats et al (1961) state that sleep is not necessarily associated with pain relief when they studied the potentiation of meperidine by promethazine. Mody (1959) also

admits in his report of 20 labour cases delivered under hypnosis that hypnosis is unpredictable and for no apparent reason fails to relieve pain in some cases.

Berger (1961) has suggested the use of Librium 400 mg. intramuscularly to stop uterine contractions in threatened abortions in the early weeks of pregnancy and in placenta praevia in the later weeks. With the dosage used by us there has been no slowing of the rhythm of uterine contractions.

Masson (1962) quotes Lasagna's dictum that while analgesic test on patients is not as difficult as some sceptics would believe, it is harder than some advocates would propose. For subjective estimation the time interval between administration of the drug and the questions asked by the observer becomes important. In retrospect we can say that our judgements were made more by observations of objective signs.

Conclusion

To make a patient in labour

rationally manageable so that she co-operates and follows the instructions of the obstetrician and later remembers the experience without regret was the object to be achieved in this work. A high percentage of poor results is shown in Series I, viz. 41 per cent. Comparing this with the better results in Series II, amongst private patients who as a rule are more apprehensive, the conclusion that can be drawn is that Librium given orally a few days before labour did potentiate the effects of the drug during labour, that an initial large (100 mg.) dose should be administered and that a maximum of 300 mg. may not prove harmful if required.

Our conclusion is still subject to criticism. The effects of tranquilizing drugs vary as a result of synergistic effects or counter-effects produced by sympathetic and confident or non-sympathetic and diffident approach of the attendants, respectively.

Summary

A need for a trophotropic and anxiolytic drug in labour that should not affect the uterine contractions and tone and cause no respiratory depressant effect on the neonate led to a clinical trial of a new agent, chlorodiazepoxide.

A total of 200 patients was included in this study in three groups. The last group consisted of 20 observed under a double blind technique.

An appreciable effect of the tested drug was noted when an initial injection of 100 mg. was used and particularly if the dose was potentiated by the use of the same drug orally for a week before the expected date of labour.

No complications occurred, except one postpartum haemorrhage that could be attributed to the use of Librium.

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