STUDY OF CONTINUOUS LUMBAR EPIDURAL ANALGESIA FOR THE PAIN RELIEF IN LABOUR USING MARCAINE

by

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Introduction

Pain relief during labour is most rewarding to the obstetrician. The relief of pain by pharmacological means entails a compromise between the provision of effective analgesia and the avoidance of all risks to mother and child. Narcotic and inhalational analgesic drugs alone cannot ensure a painless cnildbirth nor can they make labour tolerable when pain is exceptionally severe. The need for a more effective method of pain relief was shown by a survey in Sheffield by Beazely *et al* (1967) that despite intensive effort, only 23% of women were painfree during labour and there remained 40% of women whose childbirth was unacceptably painful. More recently, Holdcroft and Morgan (1974) reported that 75% of mothers received little or no pain relief from i.m. pethidine inj., while pre-mixed N_2 $0/0_2$ gave satisfactory relief only in 50% of cases. Apart from limited effectiveness of narcotic and inhalational analgesic drugs, there are other disadvantages which also should be considered. All these agents cross the placenta and cause neonatal respiratory depression. They also prolong gastric emptying time which causes additional risk to G.A. which may be required subsequently for operative delivery. (La Salvia. Steffen 1950). The recently developed method of lumbar epidural analgesia is most effective, gives complete relief in over 80% of cases (Moir D. D. 1968; De Vere 1969) and is in better interest of mother and child.

Of the generally available local anaesthetic drugs, Bupivacaine (Marcaine, Sarabhai Chemicals) is the drug of choice because of its:

1. long duration of action.
2. higher degree of binding to maternal plasma proteins, therefore effect on the fetus is very minimal.
3. does not get accumillated in maternal or fetal circulation therefore side effects are very minimal.

Material and Methods

This study gives result of 55 cases of continuous lumbar epidural analgesia for pain relief in labour using 0.25% Marcaine. On arrival of patient with labour pain detail medical and obstetrical history

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was taken. Clinical examination pertinent to CVS, R.S. and vertebral column was carried out. Careful abdominal and vaginal examination was made to assess the presentation, the position the F.H.R., nature of uterine contractions, dilatation, effacement of cervix, station of presenting part and adequacy of pelvis. The patients selected for epidural analgesia were normal. The age, gravidity and parity were recorded. Details of anaesthetic technique, onset of analgesia, top-up injection required, method of delivery, duration of labour, one minute Apgar score of newborn and any complications were recorded. The patient in active phase of labour with cervical dilatation of 3-4 cm were given the analgesia. The procedure was carried out by the anaesthesist. The G.A. trolly, emergency drugs and I.V. infusions were kept ready prior to each procedure. The whole procedure was carried out under aseptic precautions. The patient was kept in left lateral position with hip and knee flexel as fully as possible and back bowed as much as compatible with reasonable comfort. After cleanising the skin, the Tuohy's needle was inserted into epidural space using loss of resistance test (Moore 1964) with bevel directed upwards. In order that blocg might extend from T_{10}-S_4 the needle was inserted at L 3-4 interspace or alternatively at L 4-5 space. A polythelene catheter was then inserted for a distance of 3-4 cm beyond the tip of needle and needle was then withdrawn carefully and catheter secured in position. Initially, 2 cc of Bupivacaine injected to detect any adverse reaction or occurrence of spina lanaesthesia. In its absence, full dose of 10 cc of Bupivacaine injected slowly. Top-up injection given was through catheter as and when required. The patient and fetus monitored continuously every 5 minutes for 30 minutes of injection and then every 30 minutes interval, till she delivery, at the end of which catheter was removed and checked for its completeness and puncture site was covered with gauze piece and adhesive plaster.

Results

In a group of relatively unselected 55 patients epidural blocks were attempted. The mean age in the study group was 22 years. 52.7% of cases were primigravidae. 47 cases were normal while 8 cases were associated with obstetrical or medical complication. Out of 8 complicated cases, 5 were toxaemia of pregnancy, 1 with breech presentation, 1 with undiagnosed brow presentation and 1 case of heart disease with pregnancy. Satisfactory relief of pain was obtained in 92.7% of cases. The level of analgesia was T_{10}-to-S_4 In 7.3% of cases epidural analgesia failed due to bloody tap and dural tap. The mean duration of action was 3-3½ hours (Table I). The length of

TABLE I
Duration of Action

1. Onset of analgesia	:	12 minutes 2½-3 hours = 25 cases	45.5%
2. Duration of action	:	4 hours = 26 cases	47.2%
3. Epidural falled	:	in 4 hours =	7.3%

duration of first stage of labour was 10 hours and 30 minutes in primiparae and 7 hours in multiparae while duration of second stage was 56 in primi minutes and 30 minutes in multi. 78.48% of cases had delivered spontaneous vaginal delivery, while only 17.3% of cases required outlet forcep. Caesarean section was required in only 3.8% cases. 97.2% of new-borne showed Apgar score of 8-10 while 1.8%

new-borne showed Apgar score of 7 to 10. The overall complication rate was 27%. Hypotension was associated with 4 cases. There were no instances of convalsions, collapse, total spinal anaesthesia, or neurological complication (Table II).

TABLE II
Complications

Hypertension	:	4 Cases
Dural tap	:	2 Cases
Bloody tap	:	2 Cases
Unilateral effect	:	1 Case
Pain in legs	:	2 Cases
Backache	:	4 Cases

Discussion

Lumbar approach for epidural analgesia is more beneficial than caudal because:

1. Lumbar region is anatomically constant than caudal.
2. It is more selective.
3. Required less volume of injection for effective block.
4. Associated with less complication.
5. No risk of puncturing sections.

We found that continuous lumbar epidural analgesia to be a good substitute for great majority of labours and deliveries. However, some thought should be given to patients selection of patients. Contraindications for its include (1) acute obstetrical haemorrhage, (2) bony deformity, (3) skin infection over the lumbar region, (4) patient on anticoagulent thearphy, (5) patient with positive H/o neurological diseases. Previous L.S.C.S., breech presentation, multiple pregnancy though relative contraindications are contraversial indications.

Satisfactory epidural analgesia was obtained in 92.7% of cases. We attribute this high success rate to catheter technique, because difficulty in introducing catheter indicates wrong space, thus avoiding the injection and correcting the spacing of needle. The other factors include (a) strict observance of proper position of patient, (b) strict advancement of needle in sagital plaine, (c) strict observance of proper technique.

The delivery was spontaneous in 78.48% of cases, while only 17.3% of cases required instrumental delivery. The only disadvantage of epidural analgesia was that it invariably leads to instrumental delivery but with introduction of selective epidural analgesia (Doughty 1969) instrumental delivery rate has been reduced considerably. At this stage we would like to stress that increased incidence of instrumental delivery should not cause any concern, because with increased awareness and reliable methods of monitoring, the obstetricians are becoming more aware regarding fetal and maternal acidaemia which dictate them to limit the second stage of labour. As a result, instrumental deliveries are carried out more frequently irrespective of epidural block. An epidural service facilitates the application of this trend in obstetrics and contributes to great comfort and safty of patient during operative delivery.

Epidural analgesia does not affect the fetal physiology adversely. On the contrary it is beneficial to fetus at risk, because it increases the chorio-decidual blood flow (Johnson and Clayton 1950). It also abolishes hyperventilation during labour in response to pain and thus reduces the maternal and fetal metabolic disturbances. In our series, only 1.8% of new-born show Apgar score of 7. This was the new-born who was delivered by emergency L.S.C.S. done under G.A. for severe fall in B.P. following epidural injection. Baby responded well to resusci-

tative line of treatment. There was no fetal morbidity or mortality in our series.

Hypotension is significant cardio-vascular hazard of epidural analgesia. Reduction in cardiac output in presence of reduced peripharal resistance is the real cause for concern. The avoidance of I.V.C. compression and maintainance or restoration of adequate circulating blood volume are the primary measures for prevention and treatment in such episode 3 patients responded to this line of treatment but other case did not respond and after preliminary resuscitation delivered by emergency L.S.C.S. for fetal distress. She recovered well post operatively. There was no maternal morbidity a mortality in our series.

Thus from forgoing discussion we can conclude that epidural analgesia is more complete and does not have any adverse maternal or fetal complications. It is desirable to have services of an anaesthesist to cases like toxaemia of pregnancy, in-coordinate uterine action, where epidural analgesia is more beneficial.

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