Original Research Paper Anaesthesiology

Subcutaneous Injection of Sterile Water Over The Sacrum for Labour Analgesia

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KEYWORDS

INTRODUCTION –

Labour pain when unrelieved can have adverse effects on course of labour as well as on the fetal wellbeing.various techniques such as inhaled nitric oxide, inhaled anaesthetics, regional blocks ,parenteral opioids, and alternative therapies [including acupuncture, hydrotherapy or transcutaneous electrical nerve stimulation] have been employed to lessen the pain and trauma of painful labour, But all these techniques have their own drawbacks.

We studied effectiveness of Subcutaneous injection of sterile water over the sacrum for labour analgesia and assessed pain by visual analogue score and changes in haemodynamics at 0, 10, 45, 90 min also APGAR score was noted at 1 min after delivery.

MATERIAL AND METHOD-

randomized prospective interventional double blinded case control study was conducted in labour room of our institute after ethical committee clearance and obtaining written informed valid consent on 150 primigravida patients.

pregnant patients aged 20-35 year with gestational age 37-42 weeks willing for labour analgesia and having onset of active phase of first stage of labour were included in study.

Patients <20 years or >35 years, gestational age <37 or >42 weeks, in latent phase of labour, contraindicated for spontaneous vaginal delivery , having infection at injection site and having medical disease such as diabetes mellitus, maternal hypertention, neurological diseases, blood disorder were excluded from study.

Women were randomised in two groups { each 75} comparable in demographic parameters.

Group 1 received 4 subcutaneous injections of 0.5 ml sterile water in sitting position on posterior superior iliac spine on both sides and second injection at 1 cm medial and 1-2 cm inferior to first point on both sides using insulin syringe.

Group 2 received 0.5 ml of isotonic normal saline in same regions as mentioned above.

All injections were made by first anaesthesiologist while second anaesthesiologist was blinded to solutions used.. All injections were given by two anaesthesiologist simultaneosly on each side after onset of labour contractions.

PROCEDURE-

-In labour room, NBM status confirmed,written informed valid consent was obtained. Procedure explained to patient in her own language. All resuscitative measures were kept ready.

- Women were given position in which sacral region was easily accessible and patient was comfortable. First injection sites i.e. posterior superior iliac spines bilaterally identified and second injection sites 1 cm medial and 1-2 cm inferior to first point on both sides were marked.

All sites cleaned with alcohol wipes.

Two anaesthesiologist completed two injections each containing 0.5 ml of sterile water simultaneously on each side. same procedure was repeated using 0.5 ml of isotonic saline on both sides.

EVALUATION OF PARAMETERS

1] pain assessment was done by visual analogue score at 0,10,45,90 minutes after giving injections. Pain was assessed by second anaesthesiologist who was blinded to injected solution.

VAS scale 1-10, 0 being no pain , 10 being worst pain.

2]Haemodynamic parameters in the form of heart rate , systolic blood pressure, diastolic blood pressure, mean blood pressure were recorded at 0,10,45,90 minutes after giving injections . record was kept by second anaesthesiologist who was blinded to injected solution.

3] Time for delivery was assessed by senior obstetric residents on duty.

4]APGAR score of neonate was noted at 1 min after delivery.

Stastistical Analysis

All the observations for above mentioned parameters were collected in the duly filled proforma obtained from 150 patients and data was collected in master chart. Demographic parameters were analysed by student's t-test.

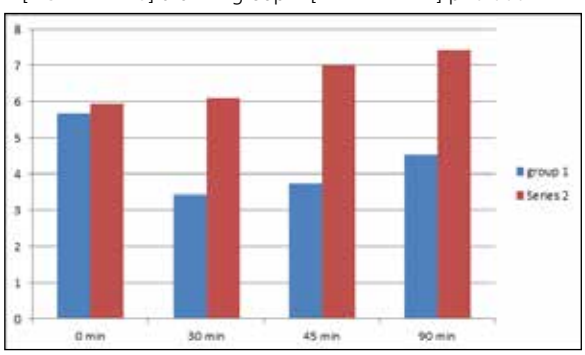
For finding Stastistical significance between two groups un-

paired t-test was applied. To ascertain the magnitude of difference p value p <0.05 was considered as significant and p value <0.001 was considered as highly significant.

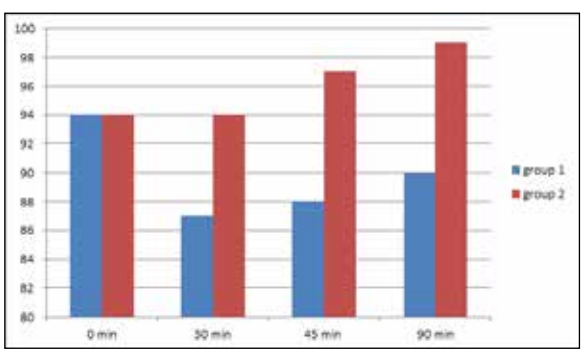
RESULTS-

The variables in demographic data did not show a statistically significant difference between two groups with respect to age ,weight,visual analogue score, heart rate, systolic blood pressure, diastolic blood pressure, mean blood pressure.

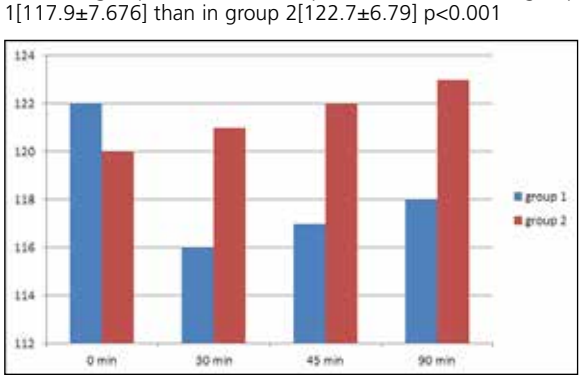
There was significant reduction of pain by VAS score at 10 min. in group 1[3.427±2.662 at 10 min. in group 1 [6.093±1.883] p<0.001,at 45 min. in group 1 [3.733±2.952] than in group 2 [6.987±1.714] p= 0.000 at 90 min. in group 1 [4.547±2.718] than in group 2 [7.427±1.741] p=0.000



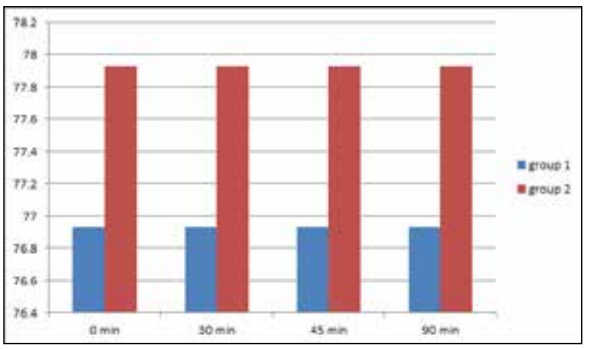
There was significant reduction in heart rate [beats per minute] at 10 min. in group 1 [87.09±13.1] than in group 2 [94.67±12.47] p<0.001at 45 min. in group 1 [88.56±10.46] than in group 2 [97.36±12.85] p <0.001 at 90 min. in group 1 [90.09±11.49] than in group 2 [99.39±13.77] p<0.001



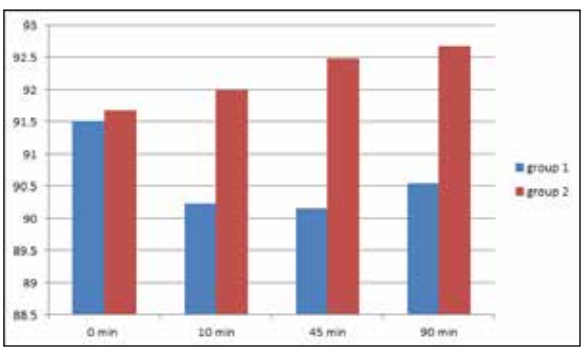
There was significant reduction in systolic blood pressure [mmhg] at 10 min. in group 1 [115.9±8.18] than in group 2[120.9±7.471] p<0.001 at 45 min. in group 1 [116.5±8.357] than in group 2[122.3±6.923] p<0.001at 90 min. in group 1[117.9±7.676] than in group 2[122.7±6.79] p<0.001



There were no change in diastolic blood pressure [mmhg], it was [76.93±4.642] in group 1 and [77.73±4.215] in group 2 with p value 0.271 at 0 min ,10 min , 45 min , 90 min.

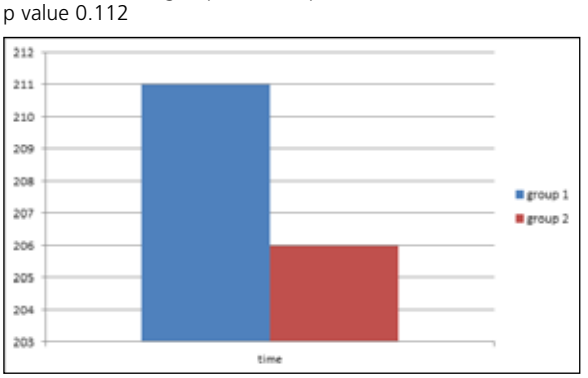


There was significant reduction in mean blood pressure [mmhg] at 10 min. in group 1 [90.23±5.101] than in group 2[91.99±4.613] p<0.028 at 45 min. in group 1 [90.15±5.17] than in group 2[92.48±4.639] p<0.004 at 90 min. in group 1 [90.54±5.069] than in group 2[92.68±4.557] p<0.007

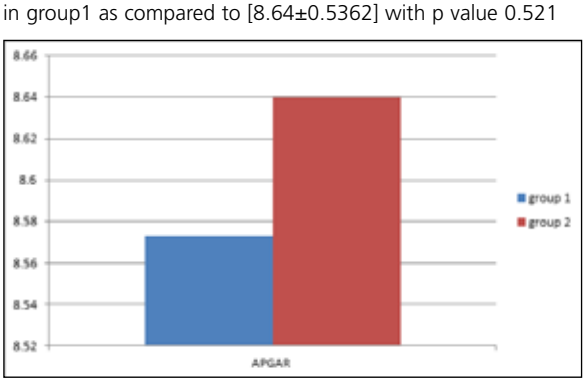


There was increase in time of delivery [in minutes]

[211.6±13.64] in group 1 as compared to [206.5±24.14] with p value 0.112



There was decrease in APGAR score at 1 min [8.573±0.7199] in group1 as compared to [8.64±0.5362] with p value 0.521



DISCUSSION

Labour pain is a unique visceral pain associated with a wonderful and meaningful life event – the birth of a baby. uterine contractions are felt as back pain because rami of T10-L1 suppliying uterus also supply skin over lumbosacral region. The

cutaneous branches of lumbar and lower thoracic nerves covers considerable caudal area. They transmit reffered pain from uterus to skin over the vertebrae L3-S2.

We gave sterile water injections over michaeli's rhomboid [area between four injection sites] because in this area reffered pain from uterine contraction is felt. Mechanism of action can be described by following-

1] gate control theory, in which afferent stimulation affecting interneurons in the dorsal horn of the spinal cord inhibits traffic in the other afferent systems.

2] counter irritation theory in which pain can be relieved by irritating the skin in dermatomal distribution with either hot, cold, scratchy or electrical stimulus. The sterile water injections are thought to cause distension In skin , which stimulates nociceptors and mechanoreceptors.

In present study we used 0.5 ml in stead of 0.1 ml as volume of injection because of the contention that it was very difficult to exactly pinpoint the exact point of injection which we tried to overcome with large volume .

Sterile water injections are safe to administer and cost effective , it can be administered by paramedical staff or midwives and are relatively free from any fetal side effects.

Limitation –
study was limited by fact that the duration of study of pain was restricted to 90 minutes only and the maximum duration of pain relief could not be studied.

Conclusion-
sterile water injections given subcutaneously seems to be safe, easy to administer, efficient, cost effective and simple method of labour analgesia free from maternal and foetal side effects.

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