

Evaluation Of 0.5% Hyperbaric Bupivacaine for Subarachnoid Block: A Review of 50 Cases.

Dr Asha Bansal, MBBS, MD

*Assistant Professor, Dept of Anaesthesia
Govt Medical college , Ambikapur , chattishgarh 497001*

Abstract

Date of Submission: 02-12-2019

Date of Acceptance: 18-12-2019

I. Introduction:

Spinal anesthesia is used very commonly to produce analgesia for surgery below umbilicus .The advantages of spinal analgesia are well known and are widely accepted in the developing countries .Various local anaesthetics have been tried and few of them established a good reputation .

First spinal anaesthesia was given by corning in 1885, and was first used deliberately by Bier in 1898 . Bier injected 3ml of 0.5% cocaine . Hyperbaric lignocaine hydrochloride 5% is extensively used for subarachnoid block . But it is not useful for prolonged surgery ,as its effect were off within one to one and half hour.

Search for the agent with longer duration of action was carried out .Vasoconstriction like adrenaline added to the local anaesthetic Solution found to prolong the action and also reduce systemic toxicity of local anesthetic.

AIMS: The aim of the present study was to find out 1.duration of analgesia 2.level of analgesia and its spread.3.degree of motor blockade 4.effect of cardiovascular system. .

0.5% hyperbaric bupivacaine was given intrathecally in abdominal hysterectomies 3.5 ml and lower limb surgeries 3ml.

II. Material and Methods:

The present study was taken on 50 cases undergoing abdominal hysterectomy and lower limb surgery at govt medical college ,Nagpur , during feb 1990 to may 1991. Age of the patient varied between 21 to 60 yrs.

All the patients were examined on the day prior to operation . The patient with any systemic disease or skin disease etc were excluded from the study . Routine investigation i.e haemoglobin percentage and urine examination was done .In the patients with age more than 40 yrs , Xray chest and ECG was done . The nutritional status of the patients was average and most of the patient s had mild to moderate anaemia as the patients coming to the hospital were from poor socio economic strata.

No premedication was given in the study . On operation table the patients were again examined and pulse and blood pressure were recorded . i.v infusion started with ringers lactate solution . Patients were placed in right or left lateral position without any tilt to the table and lumbar puncture was performed with all aseptic precautions .

In this study drug used for spinal analgesia was hyperbaric 0.5% bupivacaine with 5% glucose which was supplied in single dose ampoule and marketed as "sensorcaine spinal 0.5% heavy " by ASTRA-IDL Limited . The specific gravity of the solution quoted by by ASTRA-IDL limited was found to be 1.026 at 20c

Each patient for abdominal surgery received 3.5 ml of 0.5% bupivacaine hyperbaric without barbotage. While those for lower limb surgery received 3ml of drug . Speed of injection was 0.3 to 0.35 ml/sec . The pt were kept in left lateral position with table horizontal. The time was noted immediately after the injection of the drug and pt was turned to supine position .A pillow was kept under head .

The onset of analgesia was noted as the loss of sensation to pin prick on the dorsum of foot .The time was noted .The time between the intrathecal injection of drug and the analgesia at the dorsum of foot was taken as the time for onset of analgesia .

In the same way maximum height of analgesia was also noted as loss of anaesthesia to the pin prick on corresponding dermatome and the time in minute were noted . The time interval between the intrathecal injection of the drug and the time for maximum height of analgesia was taken as the time for complete analgesia .

At the same time patient was asked to lift the leg without bending knee joint against gravity and thee degree of motor blockade was determined as follows

A/c to Bromage's scale 0-3

0-ability to raise the extended legs against the gravity .

1-inability to raise the extended legs

2-inability of flex the knee

3-inability to flex ankle (complete motor block)

Blood pressure and pulse rate were recorded each minute for first 10 min after intrathecal injection of the drug and then at 5 mins interval till the operation is completed .

The patients were sedated with i.v diazepam 10 mg and Pentazocine 30 mg . If needed after maximal level of analgesia was reached . The pt where analgesia was inadequate or where the effect started wearing off were supplemented with general anaesthesia . Induction with i.v thiopentone ,suxamethonium for intubation and maintainance on O2 ,halothane and pavulon in semiclose circuit with circle absorber on controlled ventilation . Interavenous fluids were given as per need .Operative procedures required 1-3 hrs.

After complete regression of sensory and motor blockade patients were shifted to the wards and were followed for 24 hrs and watched for any of the complications:

1. Headache
- 2.hypotension
- 3.bradycardia
- 4.shivering.

III. Results

The present work include 50 patients undergoing abdominal surgery and lowe limb surgery at GMC Hospital , Nagpur during feb 1990 to may 1991. All the pt were operated under general anaesthesia with 0.5% bupivacaine

Demographic details are given in Table 1.

	Number	%
Gender		
Male	13	26
Female	37	74
Total	50	
Age group		
21--30	5	10
31--40	24	48
41- 50	16	32
51--60	5	10
Total	50	100

Table 1: Shows age of patients varied from 21 to 60 yrs and also 37 female included in study and 13 male pt include.

Patients above 60 yrs of age were excluded because of increased chances of the higher level of analgesia and marked cardiovascular changes with 0.5% hyperbaric bupivacaine when given intrathecally .

S.NO	TYPES OF OPERATION	NO OF CASES
1.	LOWER LIMB SURGERY	15
2	VAGINAL HYSTERECTOMY	3
3	TUBOPLASTY	1
4	ABDOMINAL HYSTERECTOMY	31
Total		50

Table 2: Showing type of operation

Dose in ml	Types of operation	No of pt
3ml	Lower limb surgery	15
3.5 ml	Abdominal, vaginal and surgery	35
		50

Table 3: showing onset oof analgesia at the dorsum of the foot

Time in min	Group 1	Group 1 %	Group 2	Group 2%
1	0	0	0	0
1.5	0	0	0	0
2	0	0	4	11.42
2.5	9	60	15	42.85
3	6	40	16	45.73

Table 3 shows that none of the patient in either of the group had onset of analgesia within 1.5 mins. In group 1 mean onset of analgesia within 1.5 min . In group 1 mean onset of analgesia is 2.7 min and in group 2 pt total 4 had analgesia at 2.0min and 16 pt had analgesia at 3 min.

Table 4 : Showing duration for onset of motor block and degree of motor block and degree of motor lock

Degree of motor block	Duration	Group 1 No of cases	Group 1 %	Group 2 No of cases	Group 2 %
Grade 3	0-2	0	0	0	0
Grade 3	3-5	1	6.67	19	54.29
Grade 3	6-8	6	40	13	37.14
Grade 3	9-11	8	53.33	03	8.57

Table 5 shows that there was no intraoperative complications like hypotension , bradycardia,shivering ,level t4 , vomiting and respiratory insufficiency in group 1 . In group 2 12 patients 34.29% had hypotension and required treatment with i.v atropine .

complications	Group 1	Group 1	Group 2(No of cases)	Group 2%
Hypotension	--	--	12	34.29
bradycardia	--	--	8	22.86
shivering	--	--	--	--
Level t4	--	--	--	--
vomiting	--	--	--	--
Respiratory insufficiency				---

Table 6 shows that in group 1 duration for 2 segment sensory regression found to range between 61-120 min . 4 pt had 2 sensory regression within 61-70 min.

Time in min	Group 1 No of cases	Group 1 %	Group 2 No of cases	Group2 %
61-70 min	4	26.67	4	11
71-80 min	0	0	4	11.4
81-90 min	3	20.00	7	20
91-100 min	5	33.33	13	37.14
101-110 min	1	6.67	1	2.86
111-120 min	2	13.33	3	8.57
121-130 min	0	0	2	5.71
131-140 min	0	0	1	2.86
141-150 min	0	0	0	0

IV. Discussion

Spinal anaesthesia is used most commonly for surgeries below umbilicus . Advantages of spinal anaesthesia are :

1.it gives good muscle relaxation of abdomen together with small contracted bowel which is advantageous to surgeons. 2. Wound bleeding is less 3. Intestinal function returns early.4.it is cheap as compared to general anaesthesia .

The time for maximum height of analgesia in the present study was found to be between 5 to 20 min , with mean 15.66 in group 1pt.

From our study it can be concluded that both groups duration for complete regression of motor blockade was found to be range between 150-220 min . indicating that increase in the dose of the drug from 3-3.5 ml has no significant effect on the duration of blockade . Wide range of duration of regression was observed .

V. Conclusion:

No definite correlation between the age and the sex and level of analgesia observed . Drug was injected in lateral horizontal position without any tilt in the table.

3.5 ml of 0.5% of hyper baric bupivacaine intrathecally can be used for abdominal and vaginal hysterectomies lasting upto 2 hrs with cardiovascular changes .

References

- [1]. P. Mudd, J.G. Smith, A.Z. Allen, *et al.* **High ideals and hard cases: the evolution of opioid therapy for cancer pain** *Hastings Cent Rep*, 12 (1982), pp. 11-14
CrossRefView Record in ScopusGoogle Scholar
- [2]. Rodgers, N. Walker, S. Schug, *et al.* **Reduction of postoperative mortality and morbidity with epidural or spinal anesthesia: results from overview of randomised trials** *BMJ*, 321 (2000), p. 1493
View Record in ScopusGoogle Scholar
- [3]. Mokri **Brief overview of the status of drug abuse in Iran** *Arch Iran Med*, 5 (2002), pp. 184-190
View Record in ScopusGoogle Scholar
- [4]. H. Narenjiha, H. Rafiey, M. Jahani, *et al.* **Substance-dependent professional drivers in Iran: a descriptive study** *Traffic Inj Prev*, 10 (2009), pp. 227-230
CrossRefView Record in ScopusGoogle Scholar
- [5]. A. Dabbagh, M. Dahi-Taleghani, H. Elyasi, *et al.* **Duration of spinal anesthesia with bupivacaine in chronic opium addicts undergoing lower extremity orthopedic surgery** *Arch Iran Med*, 10 (2007), pp. 316-320
View Record in ScopusGoogle Scholar
- [6]. P.R. Bromage **Epidural analgesia** (1st ed.), WB Saunders, Philadelphia (1978), p. 144
View Record in ScopusGoogle Scholar
- [7]. G. McLeod, C. McCartney, T. Wildsmith (Eds.), *Principles and practice of regional anaesthesia*, OUP, Oxford (2012)
Google Scholar
- [8]. M. Vosoughian, A. Dabbagh, S. Rajaei, *et al.* **Duration of spinal anesthesia with 5% lidocaine in chronic opium addicts compared with no addicts** *Anesth Analg*, 105 (2007), pp. 531-533
CrossRefView Record in ScopusGoogle Scholar
- [9]. V.H. Ross, C.H. Moore, P.H. Pan, *et al.* **Reduced duration of intrathecal sufentanil analgesia in laboring cocaine users** *Anesth Analg*, 97 (2003), pp. 1504-1508
View Record in Scopus Google Scholar
- [10]. N.F. Rogers, E.E. El-Fakahany **Morphine induced opioid receptors down-regulation detected in intact adult brain cells** *Eur J Pharmacol*, 24 (1986), pp. 221-23
- [11]. Prevention Department, State Welfare Organization, Ministry of Health, IR of Iran and United Nations International Drug Control Program (1999)
Google Scholar
- [12]. A. Rahimi Movaghar, E. Razzagi **Trend of drug abuse situation in Iran: a three-decade survey** *Hakim*, 5 (2001), pp. 171-181
Google Scholar

Dr Asha Bansal. "Evaluation Of 0.5% Hyperbaric Bupivacaine for Subarachnoid Block: A Review of 50 Cases." *IOSR Journal of Dental and Medical Sciences (IOSR-JDMS)*, vol. 18, no. 12, 2019, pp 26-29.