Appropriate Analgesia for Breast Surgery By Paravertebral Anesthesia

Ebrahimy M[1], Moradi AR[2]

Abstract

Introduction: Due to the increasing number of breast masses and a more precise attention to them, a greater number of patients refer to clinics for biopsy or resection of breast and axillary lymph nodes. An appropriate anesthesia method can decrease hospitalization time, its expenditure and postoperative complications. Paravertebral anesthesia [1] is a simple and feasible method in most cases and can provide a very suitable analgesia for biopsy and operation and postoperative analgesia.

Method: Paravertebral block was used for analgesia for 15 women having breast masses who were candidates for biopsy and pathology examination by frozen section. Biopsy was performed only by a single paravertebral injection (we did not insert catheter for continuos analgesia) with sedation. The patients' satisfaction and analgesia were evaluated postoperatively. First pain complaint and burning which demanded opioid prescription was considered at the end of analgesia of the block. The patients were evaluated for analgesia for 24 hours.

Results: Paravertebral block provides an appropriate analgesia for breast surgery, and with good technical performance it offers a high rate of success. Average duration of analgesia was 17 hours and the patients did not need opioid in this period; 60% of the patients (9 people) were discharged at the same day of the surgery in the afternoon. Those patients requiring mastectomy following the biopsy were anesthetized with tracheal intubation and atracurium muscle relaxant, and no opioid drug was used in their surgery. All the patients (15people) expressed their satisfaction with paravertebral block.

Conclusion: Breast surgeries with paravertebral block were performed with a high rate of analgesia and patients' consent, a good reduction in patients' expenditure and much lower incidence of complications and early ambulation of patients. Other regional methods like thoracic epidural block, intercostals block and local infiltrations are also used for these surgeries. However, as the duration of surgeries differs from one another, a safe and comprehensive method is important, and paravertebral block has these characteristics.

Keywords: mastectomy, paravertebral, analgesia

1. Anesthesiologist- Shahid Beheshti University (MC), Shohada Hospital
2. Anesthesiologist. Milad Medical Centre, Tehran- Iran

Corresponding Author:
Masih Ebrahimy
Tel: 0098 21 22718001
Email: masihed@yahoo.com

IJCP 2009; 1: 55-58

Introduction

Postoperative pain is a common complaint of patients after breast surgery. These patients are usually middle aged, and surgery causes many physical and psychological discomforts for them [2]. Decreasing postoperative pain helps the patients to tolerate the injuries better and have a better admission for the other therapies.

Using opioid and nonopioid analgesics in the postoperative period cause complications and need special attention; they also affect patients' hospital stay [9-5]. Paravertebral anesthesia causes analgesia with the least complications in postoperative hours and leads to patients' satisfaction postoperatively. This method is used as a complete and effective way for biopsy and even mastectomy operation as it causes postoperative analgesia for many hours.

This study is a postoperative survey for the effective duration of the block with bupivacaine in patients who referred to the hospital for biopsy and mastectomy operation. The average duration of analgesia in these patients was 17 hours and all the patients were pain free for the first 8 hours after the operation in this method.

This method of analgesia is very easy, and coagulation disorders are the only contraindication of using this method.

Materials & Methods

Eighteen women (30 -62 years old) were chosen from Milad hospital for this study. These patients were hospitalized for breast masses and had surgery for biopsy and even mastectomy with axillary lymph node resections in the first two months of the summer of 2008.

These patients were admitted from anesthesia clinic and were in the first or second ASA* class; no contraindications for surgery with paravertebral block were observed.

After explaining the plan to the patients and obtaining their consent, the block was performed through second, fourth and sixth thoracic vertebral region with 0.25% Bupivacaine with adrenaline. The block was performed in the sitting position and leaning forward, and the site of injections (second, fourth and sixth thoracic vertebras) were pointed with a marker (2 centimeter from spinous process and above or below the transverse process of the affected side of the thoracic vertebra [6].)

Using antiseptic on the site and local infiltration of 1% liodocaine, spinal needle number 22 was inserted to the skin directly. After the tip of the needle touched the transverse process of the affected side of the vertebra, the needle was drawn back and conducted upward or downward tangential with transverse process 1 cm to the front side.

Seven cc of the 0.25% of marcaine with adrenaline was injected for every site. Affected dermatoms in these surgeries from 2nd to 8th thoracic dermatoms were blocked with the injections and after 30 minutes, the surgery was started with examining the block and a mild sedation (0/05mg/kg of midazolam and 2 mc/kg fentanyl). Those patients who needed mastectomy were anesthetized with Propofol induction (2mg/kg), Atracurium 0.5 mg/kg and tracheal intubation to decrease their psychological stress.

Propofol 150-200 mc /kg/min and atracurium were repeated every 40 minutes with 1/4 times of the first dose to maintain anesthesia. At the end, reverse of muscle relaxant was done by prostigmin and atropine.

During the surgery with sedation we asked about the pain. Two patients had mild discomfort which was stopped with increasing the dose of sedatives.

The patients' heart rate and blood pressure were checked every 10 minutes.

All the patients were asked about the pain of the region of the surgery after the procedure; all had satisfactory analgesia.

Acetaminophen + Codeine were prescribed for those patients who were dismissed. They were asked to take these medications if their pain started.

***Table 1**: Patients characteristics and the result of analgesia from paravertebral block*

No	age	ASA	PR*	BP*	Type of operation	Time of operation min	Discharge time day	Duration of painlessness hour	Co existing disease
1	30	I	80	135/75	SM+	165	3	12	healthy
2	36	I	78	125/76	BIOPSY	65	OD	16	healthy
3	39	I	83	123/80	MRM^	150	4	24	healthy
4	44	II	84	146/87	RM^^	160	4	24	High BP
5	45	I	75	115/75	BIOPSY	60	OD	24	healthy
6	49	II	74	117/68	MRM	145	6	10	hypothyroid
7	51	I	76	124/72	RM	155	5	24	healthy
8	51	II	77	147/85	BIOPSY	55	OD	12	High BP
9	53	I	80	112/70	MRM	155	5	20	healthy
10	54	II	68	145/89	BIOPSY	50	OD	8	High BP
11	56	I	67	128/67	SM	145	2	12	healthy
12	56	II	66	138/85	BIOPSY	55	OD	24	hypothyroid
13	57	II	87	114/69	BIOPSY	45	OD	10	Diabetic
14	59	I	74	155/82	BIOPSY	52	OD	24	healthy
15	62	II	77	135/85	SM	135	4	16	High BP

BP = Average blood pressure measurement during operation*
PR = Average pulse rate measurement during operation*
SM+=simple mastectomy
MRM^=modified radical mastectomy
RM^^ = Radical mastectomy
OD = Day of operation
ASA = American society of anesthesiologists

Pethidine was prescribed for the hospitalized patients in case of the onset of painful feelings.

The hospitalized patients were asked about pain and their need for analgesia for 24 hours, and the dismissed patients were asked about the pain's starting time and their need for analgesia; the following table shows the results.

Results

The block was successful in 15 patients and 3 patients were excluded from the study due to block failure, technical problems or psychological discomfort.

In 7 out of 15 patients (46.6%) the surgery with biopsy concluded because the pathology was benign and 8 patients (53.4%) needed mastectomy who were anesthetized for decreasing patients psychological stress.

The average time of the mastectomy operations with wasted time for appearance of complete analgesia and receiving pathology results was 152 min.

The average time of sedation was 55 minutes and the pathology result was received.

Those patients who had only Biopsy could be dismissed 2 or 3 hours after the surgery. One patient remained two more hours in the recovery due to nausea, and 10 mg of metoclopramide was injected for that patient intravenously.

One of the mastectomies patients experienced bleeding in the recovery and had a second arrival to the operating room for hemostasis; and because of enough remained analgesia of the first block, the procedure was done with the very first block with no additional analgesia or sedation.

1/3 of the patients were quite pain free up to 24 hours and didn't need analgesia.

Eighty percent of the patients were pain free up to 12 hours and 20% had their first pain complaint after 8 to 10 hours.

All the patients were pain free in the first 8 hours.

All the patients who had only Biopsy procedure were dismissed on the same day of the surgery. Even two patients who had mastectomy were dismissible concerning general condition and postoperative situation, however, were not dismissed for antibiotic therapy and wound control.

Discussion

Breast surgery with paravertebral block is done successfully considering patients' analgesia and comfort.

In this method, the patients' pain is decreased and there is no need for opioid drugs and the first few postoperative hours are comforting for patients.

By using paravertebral catheter, this analgesia method can provide analgesia up to drain catheter extraction time.

Although this method is introduced as a complete anesthetic way for mastectomy and axillary lymph node excisions, this procedure can be used prior or after the general Anesthesia [9].

When patients remain pain free after surgery and there is no discomfort of general anesthesia and opioid drugs, the time of hospital days and their expenditure[4] will decrease and they can be ambulated rapidly[3,8] and there would be much less complication.

Other regional methods including thoracic epidural [12] block and intercostals [11] block and local infiltrations are used for those surgeries.

Every method has its advantages and disadvantages. Thoracic epidural anesthesia has bilateral sympathetic ganglion block. However, paravertebral [10] block has less hemodynamic changes because it is unilateral, and sympathetic ganglions on the other side remain unblocked.

Local infiltration has limited use because of the variable extent of incision needed in different surgeries.

Since absorption of local anesthetic drugs from this space is delayed because of its low vascularization, analgesia time will be longer with paravertebral block.

We did not observe any complications in these surgeries like those (pneumothorax, local anesthetic drug poisoning, subarachnoid puncture or intravenous injection) which have been reported for this method of analgesia [10].

No contraindication has been reported for this method except coagulation disorders. Using this method caused no problems for surgery or biopsy taking. Above all, the paravertebral block was comfortable for all the patients and they expressed postoperative satisfaction.

The patients, with or without axillary dissection, may experience prolonged chronic postoperative pain [7]. Therefore, additional studies are recommended to investigate the probable effects of this type of analgesia on long term pain management.

Acknowledgement

The authors acknowledge the contribution of all the nurses and medical staffs at Milad hospital who helped us in conducting this study.

References

1. Klein SM, Bergh A, Steele SM, Georgiade GS, Greengrass RA. Thoracic paravertebral block for breast surgery. Anesth. Analg.2000;90:1402-5.

2. Greengrass R, Steele S. Paravertebral blocks for breast surgery. Tech. Reg. Anesth. Pain Man. 1998;2:8-12.

3. Cohen, AM; Schaeffer, N; Chen, ZY; Wood, WC. Early discharge after modified radical mastectomy. Am J Surg. 1986 Apr;151(4):465–466.

4. Edwards, MJ; Broadwater, JR; Bell, JL; Ames, FC; Balch, CM. Economic impact of reducing hospitalization for mastectomy patients. Ann Surg. 1988 Sep;208(3):330–336.

5. Orr, RK; Ketcham, AS; Robinson, DS; Moffat, FL; Tennant, ND. Early discharge after mastectomy. A safe way of diminishing hospital costs. Am Surg. 1987 Mar;53(3):161–163.

6. Richardson, J; Sabanathan, S. Thoracic paravertebral analgesia. Acta Anaesthesiol Scand. 1995 Nov;39(8):1005–1015.

7. Kirvelä, O; Antila, H. Thoracic paravertebral block in chronic postoperative pain. Reg Anesth. 1992Nov; 17(6):348–350.

8. Weltz, CR; Greengrass, RA; Lyerly, HK. Ambulatory surgical management of breast carcinoma using paravertebral block. Ann Surg. 1995 Jul;222(1):19–26.

9. Mackenzie, J. Pre-operative paravertebral block for peri-operative analgesia. Anaesthesia. 1992 Apr;47(4):353–354.

10. Lönnqvist, PA; MacKenzie, J; Soni, AK; Conacher, ID. Paravertebral blockade. Failure rate and complications. Anaesthesia. 1995 Sep;50(9):813–815.

11. Huang, TT; Parks, DH; Lewis, SR. Outpatient breast surgery under intercostal block anesthesia. Plast Reconstr Surg. 1979 Mar;63(3):299–303.

12. Nesmith, RL; Herring, SH; Marks, MW; Speight, KL; Efird, RC; Rauck, RL. Early experience with high thoracic epidural anesthesia in outpatient submuscular breast augmentation. Ann Plast Surg. 1990 Apr;24(4):299–303.