STUDY OF POST-THORACOTOMY CONSUMPTION OF MORPHINE IN PATIENTS UNDERGOING LOBECTOMY

Gohar Ali, Rahat Sultan Sahibzada

Department of Anesthesia
Postgraduate Medical Institute
Lady Reading Hospital, Peshawar

ABSTRACT

Objective: Adult patients undergoing thoracotomy for lobectomy have been studied for post-operative pain management in the Intensive Care Unit of Cardio-thoracic Department, PGMI/LRH, Peshawar.

Material and Methods: 40 patients were divided in two groups, each comprising of 20 patients. Patients in both groups "A" and "B" were comparable in age and procedure and had received the same pre-medication and anasthesia. Patients in group "A" received boluses of I.V. Morphine 3 mg 4-6 hourly while patients in group "B" received pre-incisional Bupivacaine 0.25% via intercostal infiltration which was repeated 12 hourly, group "B" also received I/V Morphine when severity of pain demanded so. Pain was scored using Visual Analogue Score (VAS). Patients were nursed I.C.U. propped up in beds receiving 5 L of humidified O_2. Study period extended over 48 hours.

Results: Mean Morphine consumption in group "A" was 36 mg (range 35-37 mg) while in group "B" it was 23 mg (range 20-25 mg).

Conclusion: In conclusion patients of Bupivacaine group consumed less Morphine (36.1%) preserving good oxygenation, and pulmonary functions.

Key words: Morphine, Post thoracotomy, Bupivacaine.

INTRODUCTION

Thoracotomy wound causes severe post-operative pain and marked impairment of pulmonary function. Incisional pain in the early post-thoracotomy. period is the major factor responsible for inefficient ventilation, ineffective cough and impaired ability to breathe deeply, leading to atelectasis, hypoxemia and infection.[1] These changes are more exaggerated in elderly, obese, smokers and those with pre-existing cardio-pulmonary diseases. There are multiple sources of

perceived pain in thoracotomy wound which in addition to surgical incision, include disruption of ribs and intercostal nerves, crushing of the pulmonary parenchyma or pleura and placement of single or multiple thoracotomy drainage tubes.[2] Morphine is traditionally used to alleviate post-operative pain but it has its own unwanted

side effects of nausea, vomiting and respiratory depression.

The purpose of the study was to see if intercostal block with local anaesthesia Bupivacaine 0.25% is a useful adjunct to systemic opioids so as the amount of Morphine consumption in post-operative can reduced with its attending side effects.

MATERIAL AND METHODS

Total of 40 adult patients undergoing lobectomy at Department of Cardio-thoracic Surgery, Postgraduate Medical Institute, Lady Reading Hospital, Peshawar were studied.

The study was conducted from June 1996 to July 1997. Patient suffering from bronchiectasis and were scheduled for lobectomy were divided into two groups "A" and "B" each consisting of 20 patients. Age ranged from 18-70 years and mean age was 32 years. Male to female ratio was 7:3.

Patients in both groups received the same pre-medications (7.5 mg Midazolam orally before induction and Morphine 0.1 mg/ Kg i/v at induction. Left side double lumen tube (DLT) was passed and one lung anaesthesia was given using Halothane 1-2% and 100% O_2. They were extubated at the end of procedure and shifted to I.C.U. where they were nursed in propped up position, breathing spontaneously and receiving 5 liter of Humidified O_2.

Patients in group "A" received boluses of I.V. Morphine 3 mg 4-6 hourly while patients in group "B" received pre-incisional intercostal block with Bupivacaine 0.25%. 3 intercostal spaces, one above and one below the incision were blocked with 3 cc of local anaesthetic at the angle of the rib. The block was then repeated with same concentration 12 hourly. This group also received I.V. Morphine 3 mg when pain demanded so.

Linear Visual Analogue Pain Score (VAS) was used to assess the severity of pain. VAS 0 cm indicates no pain and 10 cm point indicates the severe pain perceivable (0-10 cm). At the same time arterial blood gas analysis and pulmonary function test were recorded.

Any patient who underwent pnemonectomy or went on mechanical ventilation were excluded from the study.

RESULTS

Mean Morphine consumption in group "A" was 36 mg (range 35-37 mg) while in group "B" it was 23 mg (range 20-25 mg).

Mean Morphine reduction per patient in group "B" was 13 mg (36.1%) Table No. 1.

MEAN MORPHINE CONSUMPTION PER PATIENT DURING 48 HOURS OF STUDY

Group "A" (mg)	36 35-37
Group "B" (mg)	23(20-25)
Mean reduction per Patient in group "B" = 13 mg (Bupivacaine group)	36%

TABLE - 1

Data was analyzed by application of "T" test with the help of Mr. Iqbal Hussain, Statistician, PGMI/LRH.

Patients in Bupivacaine group recorded lower pain score (Figure No. 1). There was better preservation of lung function and oxygenation (Table No. 2). Figure No. 2, 3, 4).

THE OVERALL MEAN REDUCTION IN FEV1, FVC, AND PEFR BETWEEN BOTH GROUPS DURING 48 HOURS STUDY PERIOD.

	Percentage Reduction	
Lung Function	Group "A"	Group "B"
FEV1	55.4 (50.7 - 60.1)	47.7 (33.7 – 61.7)
FVC	49.8 (40.9 – 58.7)	44.1 (42.8 – 45.4)
PEFR	47.0 (38.4 – 55.7)	46.0 (39.5 – 52.5)

TABLE - 2

Complications of nausea and vomiting and retention of urine were reduced.

It is thus concluded that infiltration of 3 intercostal spaces with Bupivacaine, reduced the consumption of Morphine in the management of post-operative pain with its attending side effects.

DISCUSSION

Various methods have been used for treatment of post-operative thoracotomy pain, which represents one of the most severe types of pain leading to reduced chest expansion, coughing and ultimate infection.[3]

Systemic opioids are commonly use for post-thoracotomy pain but are potential causes of ventilatory depression.

Mean Morphine consumption in group "A" was 36 mg while in Bupivacaine group it was 23 mg, thus mean reduction was 13 mg. Intercostal block usually produces reliable block of four or more dermatomes around site of infiltration.[4]

In one study administration of Bupivacaine 0.25% by continuous intercostal infusion reduced Morphine requirement after thoracotomy and recorded smaller pain score.[5]

In another study intrathoracic intercostal nerve block with Bupivacaine was performed for treatment of pain after thoracotomy and was as effective as continuous thoracic extradural block or continuous paravertebral block.[6] Studies have also confirmed that interpleural Bupivacaine used to block intercostal nerve resulted in less Morphine consumption.[7]

However continuous infusion produced better pain relief than intermittent bolus doses.[8] Comparable results have been reported by Dryder et al, (1993)[9] and by Sebanthen et al (1990)[10] when pain score were reduced by 60%.

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Address for Correspondence:
Dr. Gohar Ali,
Department of Anaethesia,
PGMI/LRH Peshawar.