

COMPARATIVE STUDY BETWEEN  
EPIDURAL BUPIVACAINE AND  
BUPIVACAINE-VERAPAMIL IN THE  
CONTROL OF POSTOPERATIVE  
PAIN

Thesis

*Submitted for Partial Fulfillment of  
MD Degree in Anesthesiology*

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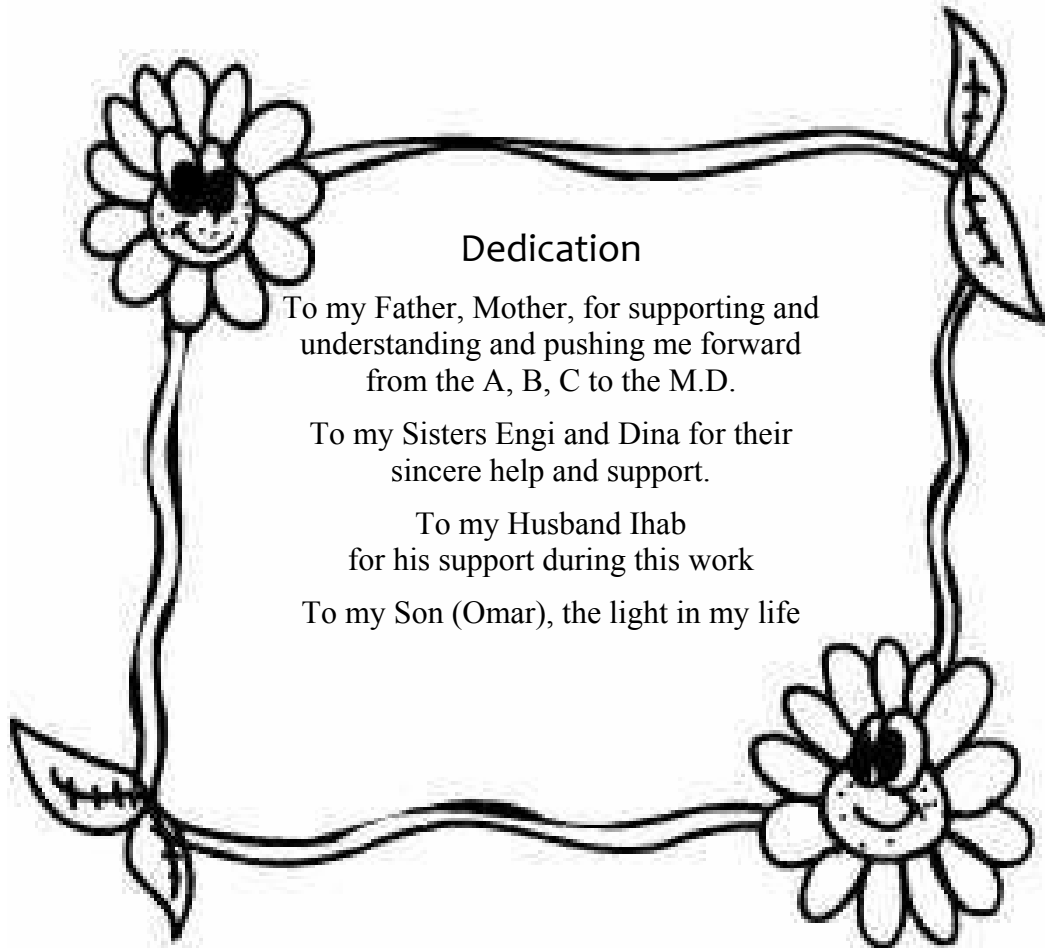
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## LIST OF ABBREVIATIONS

<b>ant.</b>	: Anterior nuclei
<b>AV</b>	: Atrioventricular
<b>cAMP</b>	: Cyclic adenosine monophosphate
<b>CCBS</b>	: Calcium channel blockers
<b>cGMP</b>	: Cyclic guanosine monophosphate
<b>cm</b>	: Centromedian
<b>CPP</b>	: 3-(2carboxypiperazin-4-yl) proyl-1 phosphoric acid
<b>DH</b>	: Dorsal horn
<b>DHPs</b>	: Dihydropyridines
<b>dm</b>	: Dorsomedial nucleus
<b>GABA</b>	: Gamma-aminobutyric acid
<b>GI</b>	: Gastrointestinal
<b>iml</b>	: Internal medullary lamina
<b>JCAHO</b>	: The joint commission on accreditation of health care organizations
<b>LC</b>	: Locus coeruleus
<b>ld</b>	: Lateral dorsal
<b>lp</b>	: Lateral posterior
<b>NK</b>	: Bradykinin neurokinin
<b>NMDA</b>	: N-methyl-D-aspartate
<b>NO</b>	: Nitric oxide
<b>PB</b>	: Parabrachial nucleus
<b>PKA</b>	: Protein kinase A
<b>TENS</b>	: Transcutaneous electrical nerve stimulation
<b>TTX</b>	: Tetrodotoxin
<b>va</b>	: Ventral anterior nucleus
<b>VAS</b>	: Visual analogue scale
<b>vl</b>	: Ventral lateral
<b>vpm</b>	: Ventral posteromedial nucleus

## INTRODUCTION

Provision of sedation, analgesia and amnesia during the intra and postoperative period is one of the most challenging problems facing the anesthesiologist. The physiologic consequences of undertreated postoperative pain may adversely influence perioperative outcome. The stress of pain may cause hypertension, tachycardia and may contribute to development of myocardial ischemia. Treatment of postoperative pain is accomplished by epidural analgesia by means of epidural narcotics, local anesthetics or their combinations. Narcotics can be administered by bolus or infusion, their adverse effects are the same as those of I.V narcotics (*Grager et al., 2003*).

As the side effects of opioids cannot be ignored especially respiratory depression and urinary retention, the thinking of alternative drugs as verapamil begins (*Berti et al., 2000*).

As calcium plays an important role in pain physiology at spinal cord level so recent studies show that calcium channel blockers including verapamil potentiate antinociceptive effects of local anaesthetics at spinal cord level by preventing intraoperative nociceptive impulses from reaching the spinal cord.

So epidural verapamil and bupivacaine are combined in an effort to provide better analgesia with lower risk of adverse effects of use of higher doses of postoperative narcotics or local anesthetics (*Choe et al., 1998*).

## AIM OF THE WORK

The aim of this study was to evaluate and compare the analgesic effects of epidurally administered verapamil alone or added to bupivacaine or bupivacaine alone given before skin incision in combination to general anesthesia in different surgical or orthopedic surgeries.

## PHYSIOLOGY OF PAIN

Understanding the anatomy and physiology of pain transmission systems is important for pain management specialist.

This chapter focuses on ability of the nervous system to transmit and modulate nociceptive stimuli.

### **Pain**

#### *Definition and prevalence*

The Joint Commission on Accreditation of Healthcare Organizations (JCAHO) has recently found new pain management standards for all patient care organizations accredited by JCAHO.

The experience of pain includes the patient's emotional reaction to it and is influenced by many factors, including the patient's prior experiences with pain, the meaning of the pain, emotional stress, and the influence of family and culture. Pain is a subjective phenomenon, and clinicians cannot reliably detect its existence or quantify its severity without asking the patient directly. A useful means of assessing pain and patient to rate the degree of pain along a numerical or visual pain scale (Table 1-1) (*Russo and Brose, 1998*).