INTRODUCTION

Pain is an unpleasant sensory and emotional experience associated with actual or potential tissue damage. Acute postoperative pain management is not only a human feeling, but it is a key aspect of postoperative care, as acute pain, regardless of its site, can adversely affect nearly every organ function, and so affects the postoperative morbidity and mortality **(Morgan et al., 2006).**

The stress response to surgery, anesthesia and other injuries has been considered as the homeostatic defense mechanism, important for the body for adaptation and developing resistance to the noxious insults. But such exaggerated physiological changes in patients especially if associated with coexisting diseases may be life threatening **(Manorama, 2003).**

General anesthesia does not abolish the stress response completely. The local anesthetics when used intrathecally or epidurally, abolishes the response to a great extent, particularly in lower abdominal operations **(Manorama, 2003).**

Regional anesthesia is also influence the early indicators of recovery such as time to consciousness, the incidence of postoperative nausea and vomiting (PONV), return of full cognitive function, these benefits may occur purely as a result of avoiding opioids, also with using regional anesthesia, the quality of analgesia and time to first supplementary analgesic is significantly better than that with systemic opioids **(Dalens and Hasnaoui, 1989).**

Bupivacaine has been in clinical use for more than 30 years. It is widely used for spinal anesthesia but it is associated with a number of side effects, including motor weakness,

cardiovascular and central nervous system toxicity. This has resulted in the continuing search for new and safer local anesthetic agents **(De Beer and Thomas, 2003).**

Ropivacaine (1-propyl 2`6`-pipecoloxylidide hydrochloride monohydrate) is the s-enantiomer of a new amide local anesthetic which has been extensively evaluated in adults and older children **(McClure, 1996).** Recently, it has been used in adults and several studies have reported its clinical efficacy and safety when administered for spinal anesthesia **(Habre et al, 2000).**

Ropivacaine has several properties which may be useful in practice, namely the potential to produce differential neural blockade with less motor block and reduced cardiovascular and neurological toxicity **(McClure, 1996).**

The potency of Ropivacaine in terms of sensory block has now been determined in clicical use, whether for infiltration anesthesia, peripheral nerve block , brachial plexus block, spinal block and lumber extradural block showed that ropivacaine was a long acting local anesthetic which gave surgical anesthesia of good quality **(Gautier et al., 1999).**

The current study was designed to compare the clinical efficacy of hyperbaric solution of ropivacaine with that of commercially available preparation of hyperbaric bupivacaine in spinal anesthesia in TURP.

INTRATHECAL HYPERBARIC ROPIVACAINE VERSUS BUPIVACAINE IN TURP-

COMPARITIVE STUDY

Thesis Submitted for Partial Fulfillment of the M.D. Degree in Anesthesiology

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دراسة مقارنة بين عقار الروبيفاكين عالي الكثافة و عقار البيوبيفاكين عن طريق التخدير تحت الأم العنكبوتية أثناء عمليات استئصال البروستاتا عن طريق مجرى البول

توطئة للحصول على درجة الدكتوراه في التخدير

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List of abbreviations

Aa	A alpha fibers
AAG	Alpha-1-acid glycoprotin
Ab	A beta fibers
Ad	A delta fibers
ANS	Autonomic nervous system
ASA	American society of Anesthesiologists
BB	Beta blocker
Bz	Benzodiazepine
C	Cervical vertebra
ºC	Celesius
CCB	Calcium channel blocker
CNS	Central nervous system
CO2	Carbon dioxide
COP	Cardiacoutput
CPR	Cardio pulmonary resuscitation
CSF	Cerebrospinal fluid
CVS	Cardiovascular system
CVP	Central venous pressure
DRG	Dorsal root ganglion
EAA	Excitatory amino acid
ECG	Electrocardiogram
ºF	Fahrenheit
F value	Fisher value
GA	General anesthesia
GABA	Gamma amino butyric acid
H2O	Water
HOCM	Hypertrophic obstructive cardiomyopathy
HR	Heart rate
ICP	Intracranial pressure
Kg	Kilogram
KA	Kainate
L	Lumber vertebra
LAs	Local anesthetics
LC	Locus coeruleus
LT	Low threshold

MBP	Mean blood pressure
mcg	Microgram
mg	Milligram
MI	Myocardial infarction
ml	Milliliter
mm	Millimeter
MRI	Magnetic resonance image
min	Minuets
n	number
NE	Norepinphrine
NMDA	N-methyl-D-aspartate
NS	Noxious stimuli
NSAID	Non steroidal anti inflammatory drugs
NRS	Nucleus raphe magnus
O2	Oxygen
PAG	Periaqueductal
PaCO2	Arterial carbon dioxide tension
PDPh	Post dural puncture headache
PO2	Oxygen tension
P value	Probability value
R	Racemic
RR	Respiratory rate
S	Sacral vertebra
SBP	Systolic blood pressure
SpO2	Oxygen saturation
T	Thoracic vertebra
TNS	Transient neurological symptoms
TRI	Transient radicular irritation
WDR	Wide dynamic range
WBC	White blood cells

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AIM OF THE WORK

This study was designed to compare between intrathecal hyperbaric ropivacaine (0.5% in glucose 10%) and Intrathecal hyperbaric bupivacaine in TURP as regards onset, duration, extent of motor and sensory blocks.

Also to compare hemodynamic changes (heart rate and blood pressure) intra-operatively and post-operatively, and to compare post operative complications (headache , backache and transient neurological symptoms).

CHAPTER (1)

PAIN

PHYSIOLOGY OF PAIN

A detailed understanding of sensory perception and the experience of pain is fundamental to the practice of anesthesia. The discipline developed from a need to suppress or abolish the processing of noxious sensory input and the perception of pain during surgical procedures. Anesthesia has flourished and evolved to encompass the management of pain itself in many settings.

Definition of pain

Pain is defined as an unpleasant sensory and emotional experience associated with actual or potential tissue damage, or described in terms of such damage. The perception of pain and its threshold are the result of complex interactions between sensory, emotional, and behavioral factors. **(Al-Chaer and Traub, 2002)**

Somato-sensation refers to the physiologic process by which sensory neurons are activated by physical stimuli resulting in the perception of what we describe as, for example, touch, pressure or pain.

Nociception refers to the physiologic process of activation of specialized neural pathways, especially by tissue-damaging or potentially tissue-damaging stimuli.

Pain, in contrast to nociception, is a conscious experience, and although the stimulus induced activation of afferent neural pathways, other factors may influence the overall perception of pain. These factors may include the alterations in somato-sensory processing following injury to tissues and/or nerves as well as psychosocial factors **(Raja and Dougherty, 1999).**