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COMPARISON BETWEEN SUPERFICIAL CERVICAL BLOCK AND MORPHINE TO REDUCE ANALGESIC REQUIREMENTS DURING AND AFTER TOTAL THYROIDECTOMY OPERATION

By

Essam Ibrahem Saber, Wael Mohamed El Mahdi Ibrahim, and Mostafa Mohamed Abd El-Hakeam*

Anesthesia & Intensive Care Department, Al-Azhar faculty of medicine

* Corresponding author: Mostafa Mohamed Abd El-Hakeam,

E-mail: mostafa_hakimhakem@yahoo.com

ABSTRACT

Background: More than 230 million people undergo surgery each year worldwide, and the number is increasing annually. Surgery causes commonly postoperative pain that should be alleviated as soon as possible to reduce suffering, and to promote the healing process and rehabilitation, and to prevent complications. Pain after thyroid surgery is regarded as being of moderate intensity and short duration. However, during the first 24 h after surgery, some patients require opioid and non-opioid analgesics.

Objectives: The aim of this work was to compare the effect of superficial cervical block combined with general anesthesia, intravenous morphine in patients undergo thyroidectomy operation as regard as the heamodynamics intraoperative and post-operative analgesia.

Patients and Methods: After obtaining the approval of the Al-Azhar University Ethical Committee, eighty patients of American Society of Anethesiologists (ASA) physical status I or II, scheduled for thyroidectomy operation under general anesthesia were enrolled in this randomized, prospective, clinical trial study. Information about the study were given comprehensively both orally and in written forms to the patients. All patients gave their written informed consents prior to their inclusion in the study. The study was carried out in Al-Azhar University Hospitals (AL- Hussein &Sayed Galal Hospitals). Eighty patients were randomly divided into two equal groups: Group {A} received a bilateral superficial cervical block (15ml per side) with bupivacaine 0.25% after induction of general anesthesia, and Group {B} recived morphine (0.1 mg\ kg body weight) 15 minutes before induction of general anesthesia.

Results: The results of the present study revealed that mean arterial pressure (MAP) and heart rate (HR) were significantly lower in Group (A) compared with group (B). Pethidine requirements during the first 24 h after thyroidectomy were significantly reduced in Group (A) compared with Group (B). At post-operative care unit (PACU) admission, pain scores were significantly lower in Group (A) than in Group (B). Pain scores decreased in the two groups during the 24 h after surgery. Thirty-four patients (42.2%) developed post-operative nausea and vomiting (PONV) in the post-operative care unit (PACU), 8 patients in Group (A), 26 patients in Group (B).

Conclusion: Bilateral superficial cervical plexus block (BSCPB) was an effective technique to reduce analgesic requirements during and after thyroid surgery and improved the anethetic outcome more than intravenous injection of morphine.

Keywords: Superficial Cervical Block, Intravenous Morphine, Total Thyroidectomy Operation.

INTRODUCTION

More than 230 million people undergo surgery each year worldwide and the number is increasing annually. Surgery causes commonly postoperative pain that should be alleviated as soon and as effective as possible to reduce suffering, to promote the healing process and rehabilitation and to prevent complications. Pain after thyroid surgery is regarded as being of moderate intensity and short duration. However, during the first 24 h after surgery, some patients require opioid and non-opioid analgesics *(Shih et al., 2010)*.

In addition, thyroid surgery is reported to be associated with a high risk of postoperative nausea and vomiting (PONV). Analgesics inducing nausea or vomiting, such as opioids, should be avoided *(Mommaerts et al., 2010)*.

Bilaterally superficial cervical plexus block (BSCPB) may reduce analgesic requirements. This technique consists of a bilateral injection of local anaesthetic behind the lateral border of the sternocleidomastoid muscle producing surface anaesthesia of the neck *(Warschkow et al., 2012)*.

However, the effectiveness of this technique in decreasing the levels of pain after thyroidectomy is debated *(Herbland et al., 2009)*.

We used a three-point injection and showed that BSCBP using 15 ml of bupivacaine 0.25% per side decreased the intensity of postoperative pain and postoperative opioid requirement *(Aysenur et al., 2014)*.

The aim of this work was to compare the effect of superficial cervical block combined with general anesthesia, and intravenous morphine in patients underwent thyroidectomy operation as regard as the hemodynamics intraoperative and post-operative analgesia.

PATIENTS AND METHODS

After obtaining the approval of the Al-Azhar University Ethical Committee, eighty patients of American Society of Anethesiologists (ASA) physical status I or II, scheduled for thyroidectomy operation under general anesthesia, were enrolled in this randomized, prospective, clinical trial study.

Information about the study was given comprehensively both orally and in written form to the patients. All patients gave their written informed consents prior to their inclusion in the study.

The study was carried out in Al-Azhar University Hospitals (AL- Hussein &Sayed Galal Hospitals).

Patients were randomly divided into two equal groups.

Group (A) will receive a bilateral superficial cervical block (15ml per side) with bupivacaine 0.25% after induction of general anesthesia.

Group (B) will receive morphine 0.1 mg\ kg body weight 15 minutes before induction of general anesthesia.

Inclusion Criteria:

1. Age 19 to 60 years old.
2. Both genders were eligible.
3. ASA class I or II patients.

Exclusion Criteria:

1. Patients refused to be in the study.

2. Emergency surgery.
3. Any contraindication for local anesthesia infiltration.
4. Body mass index (BMI) more than 35.
5. Any neurological or psychiatric disorder that may affect communication with the patient.
6. Any previous allergy to local anesthetics.
7. Drug abuse or using any drug that modifies pain perception.
8. Prolonged surgeries more than two hours.

Anesthetic Technique

Preoperative Assessment: Patients who fulfilled inclusion criteria were evaluated by medical history, physical examination and clinical laboratory tests (complete blood picture (CBC), kidney function tests, liver function tests, international normalized ratio (INR), prothrombin time (PT) and chest X-Ray). Electrocardiogram (ECG) was done for patients above 40 years old. Patients were prepared by 8 hours preoperative fasting, receiving Alprazolam tablet (0.25mg) and Omeprazole (20 mg) at bed time day before surgery.

All patients were educated about the standard Visual Analogue Scale (VAS) pain score of 0-10, during pre-anesthetic evaluation visit.

Intraoprative management: In the operating room, routine monitoring were applied (ECG, pulse oximetry, non-invasive blood pressure, capnography and nasopharyngeal temperature) Baseline vital signs were recorded before induction. 20 gauge intravenous cannulas were inserted at the pre- anesthesia room.

Fentanyl (2 ?g/kg) was given 5 minutes before induction. After 3 minutes of pre oxygenation, anesthesia was induced with Propofol (2.0 mg/kg body weight) over 30 seconds, and injection of Atracurium (0.5 mg/kg body weight), appropriate size endotrachial tube were inserted. Patients were maintained with 50% O2, 1.2 vol% isoflurane, atracurium (0.1mg/kg) every 20 minutes. Ringer lactate infusion at a rate of 8 ml /kg was started.

At the end of the surgery, paracetamol (15-20mg/kg) was givin, residual neuromuscular blockade was reversed with neostigmine (0.05 mg/kg) and atropine (0.01 mg/kg) intravenously after return of protective reflexes.

Group (A) has bilateral superficial cervical block After intubation sterilization of the skin of the neck bilaterally with an antiseptic solution, a hypodermic needle was inserted along the posterior border of the sternocleidomastoid muscle, landmark was identified as the midline between the mastoid process and clavicular head of the sternocleidomastoid muscle, and three injections of 5 mL of bupivacaine (0.25%) was given behind the posterior border of the sternocleidomastoid muscle subcutaneously, perpendicularly, cephalad, and caudad in a fan fashion .

Group (B) received intravenous morphine (0.1 mg\ kg body weight) just 15 minutes before induction of anesthesia.

Statistical analysis:

Recorded data were analyzed using the statistical package for social sciences,

version 20.0 (SPSS Inc., Chicago, Illinois, USA). Quantitative data were expressed as mean± standard deviation (SD). Qualitative data were expressed as frequency and percentage. The following tests were done: Independent-samples t-test of significance was used when comparing between two means, mann Whitney U test: for two-group comparisons in non-parametric data, chi-square (x2) test of significance was used in order to compare proportions between qualitative parameters, the confidence interval was set to 95% and the margin of error accepted was set to 5%. So, the p-value was considered significant as the following: Probability (P-value): P-value <0.05 was considered significant, P-value <0.001 was considered as highly significant, P-value >0.05 was considered insignificant.

RESULTS

There was a statistically significant increase mean of group (B) compared to group (M) according to mean arterial blood pressure, from at 20 min to discharge from the operating room (Table 1).

Table (1): Comparison between group (A) and group (B) according to mean arterial blood pressure (mmHg)

Groups / Mean arterial blood pressure (mmHg)	Group A (n=40)	Group B (n=40)	P-value
Before intubation	98.0±7.1	98.0±5.7	>0.05
After intubation	93.1±4.4	93.1±8.4	>0.05
At 0 Min.	83.3±11.2	90.5±12.3	>0.05
At 10 min.	80.9±8.4	82.7±9.6	>0.05
At 20 min.	66.6±8.3	87.2±6.8	<0.001
At 30 min.	64.9±5.2	79.6±9.9	<0.001
After extubation	65.6±6.0	76.0±6.2	<0.001
Discharge from the operating room	65.3±6.3	74.9±5.7	<0.001

T-Independent Sample t-test;

There was statistically significant increase mean of group (B) compared to group (A) according to heart rate, from at 20min to discharge from the operating room (Table 2).

Table (2): Comparison between group (A) and group (B) according to heart rate (beat/min)

Groups / Heart rate (beat/min)	Group A (n=40)	Group B (n=40)	P-value
Before intubation	93.20±4.78	94.37±5.14	>0.05
After intubation	91.46±2.98	92.61±5.14	>0.05
At 0 Min.	87.22±3.68	90.75±5.14	<0.001
At 10 min.	87.71±3.28	89.57±0.98	<0.001
At 20 min.	72.51±7.98	81.14±8.04	<0.001
At 30 min.	69.63±5.98	79.48±6.43	<0.001
After extubation	65.51±3.72	79.48±6.43	<0.001
Discharge from the operating room	67.16±4.61	79.48±6.43	<0.001

T-Independent Sample t-test;

There was a statistically significant increase mean of group (B) compared to group (A) according to pain scores, from after 0hr to after 6hrs (Table 3).

Table (3): Comparison between group (A) and group (B) according to pain score (NRS)

Groups / Pain scores (NRS)	Group A (n=40)	Group B (n=40)	P-value
After 0hr.	2.83±1.90	3.61±1.90	0.011*
After 2hrs.	2.66±1.65	3.61±1.56	0.016*
After 3hrs.	2.77±1.72	3.76±1.62	0.004*
After 6hrs.	2.75±1.80	3.56±1.83	0.012*
After 24hrs.	1.49±0.89	1.67±0.88	>0.05

Z-Mann-Whitney t-test;

There was a statistically significant increase mean of group (B) compared to group (A) according to pethidine requirements during the first 24hrs after surgery (Table 4).

Table (4): Comparison between group (A) and group (B) according to pethidine requirements during the first 24hrs after surgery

Groups / Pethidine requirements during the first 24hrs after surgery(mg)	Group A (n=40)	Group B (n=40)	P-value
Mean±SD	43.26±18.93	81.25±35.61	<0.005

T-Independent Sample t-test;

There was statistically significant increase mean of group (B) compared to group (A) according to time of first analgesia (Table 5).

Table (5): Comparison between group (A) and group (B) according to time of first analgesia (min)

Groups / Time of first analgesia (min)	Group A (n=40)	Group B (n=40)	P-value
Mean±SD	176.40±47.63	82.50±22.28	<0.005

T-Independent Sample t-test;

There was a statistically significant difference between groups according to patients requiring pethidine at 0hr and 2hr (Table 6).

Table (6): Comparison between group (A) and group (B) according to number of patients requiring pethidine during 24h postoperative

Groups / Number of patients requiring pethidine during 24h postoperative	Group A (n=40)	Group B (n=40)	P-value
After 0hr.	2 (5.0%)	14 (35.0%)	<0.001
After 2hrs.	5 (12.5%)	13 (32.5%)	0.032
After 3hrs.	6 (15.0%)	7 (17.5%)	>0.05
After 6hrs.	6 (15.0%)	9 (22.5%)	>0.05
After 24hrs.	0 (0.0%)	1 (2.5%)	>0.05

X^2: Chi-square test

There was a statistically significant difference between groups according to postoperative nausea and vomiting (Table 7).

Table (7): Comparison between group A and group B according to postoperative nausea and vomiting.

Groups / Postoperative nausea and vomiting	Group A (n=40)	Group B (n=40)	P-value
Positive	8 (20%)	26 (65%)	<0.001
Negative	32 (80%)	14 (35%)	

X^2: Chi-square test;

DISCUSSION

Thyroid operations can cause mild to moderate incisional pain. In addition, discomfort in swallowing, burning sensation in the throat, nausea, and vomiting can be caused by the operation or by general anesthesia. These affect a majority of the patients, especially within the ?rst day after operation. Surgeons and anesthesiologists have attempted to prevent or treat these problems with various modalities, such as opioids and no steroidal anti-inflammatory drugs (NSAIDs), or with additional regional anesthesia techniques. Regional anesthesia, such as local anesthetic wound in?ltration (LWI), bilateral super?cial cervical plexus block (BSCPB), and bilateral combined super?cial and deep cervical plexus block, can potentially reduce postoperative pain in patients who undergo thyroid operations. The use of regional anesthesia in thyroid surgery remains controversial. Although thyroid surgery is a short-stay procedure, most patients require effective postoperative analgesia. However, nausea and vomiting are the most frequent side effects of opioids. Therefore the most recent studies concerning post thyroidectomy analgesia are focused on the efficacy of regional techniques. Bilateral super?cial cervical plexus block (BSCPB) is a popular regional anesthesia technique for its feasibility and ef?cacy. The aim of this double-blind, randomized controlled study was conducted to evaluate the analgesic ef?cacy of bilateral superficial cervical plexus block (BSCPB) performed under general anesthesia in patients undergoing total thyroidectomy by measuring the intraoperative analgesic consumption plus the hemodynamic parameters and

postoperative analgesic requirements and postoperative pain numeric rating scale (NRS) *(Herbland et al., 2009)*.

The present study was designed to compare between superficial cervical block versus intravenous morphine in patients undergo total thyroidectomy operation. This study was carried out on 80 patients, with age ranging from 19-60 years and of ASA I-II classes, undergoing thyroid surgery. The selected cases were randomly categorized into two groups; (A) and (B) 40 patients in each group.

Group (A) received a bilateral superficial cervical block (15ml per side) with bupivacaine (0.25%) after induction of general anesthesia.

Group (B) received morphine (0.1 mg\ kg body weight) 15 minutes before induction of general anesthesia.

Regarding the demographic data in this study; statistical analysis of the demographic data of the patients and procedural characters did not show any significant differences between the two groups as regard age, sex, weight, height, ASA and duration of surgery. While sex, there was increase in the number of females relative to males but remains non-significant.

Regarding the hemodynamic parameters; mean arterial blood pressure and heart rate there were no significant changes between the two groups from the baseline up to 30 minutes. Then significant changes reported in group (A) compared with group (B) till the end of operation.

As a result in this study, BSCPB proved its effectiveness on the hemodynamic parameters intraoperative.

On the contrary of study done by *Mamede and Raful (2009)* to compare between general anesthesia alone and superficial cervical plexus block plus general anesthesia in partial thyroidectomies, they found that the perioperative mean arterial blood pressure was similar and no differences between both types of anesthesia in both groups.

Shih et al. (2010) study reported a reduction in intra- and postoperative analgesic requirements with bilateral superficial and deep cervical plexus block performed with of bupivacaine 0.25%.

Regarding the postoperative pethidine requirements during the first 24hrs after surgery; there were statistically significant differences in postoperative pethidine requirements between group (A) and group (B). In our study, the number of patients requiring pethidine postoperatively at PACU admission (H0) 35.7% in group (A) and (B). After 3 hours postoperative (H3) 17.9% in group (A) and 32.2% in group (B) and. After 6 hours postoperative (H6) 14.3% in group (A) and 17.9% in group (B). After that time, no significant difference noted between the two groups.

In the same time, *Warschkow et al. (2012)* pointed out the value of the BSCPB after thyroidectomy. In their study, half of the patients in whom a BSCPB was performed did not require opiate analgesics during the first two postoperative hours and 34% did not require opiate analgesics during the first 24 h after surgery.

In another study done by *Oremule et al. (2015)* in his randomized trial, he has demonstrated that superficial cervical plexus block with bupivacaine 0.25%

reduced more than 3-fold opioid consumption in the recovery room. Additional use of non-steroidal anti-inflammatory drugs (NSAIDs), which were explicitly excluded in this study, would most likely further reduce opioid administration and increase the proportion of patients who will not require opioids at all. There were no patients in the bupivacaine 0.25% group in which morphine requirements or pain scores suggested that a satisfactory block had not been achieved. This stresses the reliability of this technique.

On the contrary, *K?ç?kaya et al. (2016)* found that neither local wound infiltration nor BSCPB decreased opioid requirements or pain scores after thyroid surgery.

Regarding the postoperative Pain scale (NRS) after thyroidectomy, the pain control should focus on the first postoperative hours. Paracetamol alone is insufficient and additional pethidine in the first 24 h is required. Regional anesthesia is an appropriate component of multimodal analgesia in this setting. Furthermore, regional nerve blockade may also contribute to decreased mechanical hyperalgesia induced by inflammation.

The results of this study showed that, at PACU admission (H0), pain scores were highly significantly lower in groups (A) (mean) (2.8)).and (B) (mean) (2.6). At (H2) pain scores were significantly lower in group (A) than in group (B) (4.2). At (H6) Pain scores were highly significantly lower in group (A) than in group (B). Then starting from (H9) till (H24) there were no statistically significant differences between the two groups and the pain started to decrease by time during the 24 h after surgery.

Chertin et al. (2015) infiltrated the wound with 10 mL 0.5% bupivacaine at the end of surgery and found that the 24-h morphine requirement and the mean pain scores were significantly less in the treatment group .

In another study, *K?ç?kaya et al. (2016)* could not demonstrate any difference in pain scores, or the 24-h meperidine consumption, of patients whose wounds were infiltrated with bupivacaine, when compared with those of the control group. The possible explanation for *K?ç?kaya et al. (2016)* contradictory result could be the differences in study design and pain management. The study of *Chertin et al. (2015)* was not double-blind and their postoperative pain medication included morphine IV or IM as needed. We used IV-PCA, which is a more objective and sensitive method for assessing the postoperative opioid demand. However, *K?ç?kaya et al. (2016)* cannot exclude the possibility of obtaining better results with a larger concentration of bupivacaine (0.5%) because a significant dose-response relationship was reported when a larger concentration of local anesthetic caused the most pronounced effect. There is also the possibility of a longer duration with 0.25% bupivacaine with epinephrine. BSCPB was found to reduce pain intensity scores and the amount of cumulative morphine doses after thyroidectomy in the study of *Warschkow et al. (2012)*. They performed BSCPB with 20 mL bupivacaine0.25% with 1:200,000 epinephrine at the end of surgery and found lower pain intensity scores in the

early postoperative period in the treatment group. However, *Kl?çkaya et al. (2016)* used 30 mL bupivacaine 0.25% for BSCPB and could not demonstrate any beneficial effect on postoperative opioid demand or pain scores. The main difference in their study was in pain assessment intervals and the manner in which a nurse evaluated the patient's numeric rating scale (NRS)-11 score every 4 h; 5 mg morphine was administered subcutaneously if the pain score was 4 or higher.

Kl?çkaya et al. (2016) evaluated the 24-h opioid demand with IV PCA and pain scores in 2-h intervals during the first 8 h. *Warschkow et al. (2012)* concluded that BSCPB did not provide optimal pain relief because 65% of patients needed additional analgesics and the reduced opioid consumption was less clinically relevant, as it did not result in reduced side effects. It seems that the decrease in morphine consumption was not enough to have an impact on the morphine-related side effects and this would weaken the clinical relevance of opioid-sparing. In the same study, the only beneficial effect of BSCPB was the prolonged first analgesic requirement time, which was about 15 min. This result was statistically significant but of no clinical significance. A likely explanation for the lack of beneficial effects of BSCPB or LWI on post thyroidectomy analgesia is that pain arising from areas that cannot be blocked by a superficial approach is of greater significance than that from cutaneous, subcutaneous, and muscular layers after thyroid surgery. Intraoperative neck position and wound drainage are also important components of postthyroidectomy pain. Kl?çkaya and colleagues concluded that BSCPB or LWI with 0.25% bupivacaine did not decrease opioid requirement or pain scores after thyroid surgery .

The value of BSCPB in thyroid surgery is, however, debated. *Herbland and colleagues (2009)* did not find an analgesic effect of BSCPB with 0.75% ropivacaine administered before or after surgery. On contrary to our study that proved that BSCPB is effective to decrease both intra and postoperative analgesic consumption and providing good pain relief. However, Herbland and colleagues used a two-point injection for performing BSCPB, whereas we used a three-point technique. The two-injection technique blocks the main emerging branches of the superficial cervical plexus, whereas in the three-injection technique additional infiltration of the transverse cervical branches is achieved.

Kl?çkaya et al. (2016) stated that BSCPB performed using a three-injection technique was reported to not reduce analgesic requirement after thyroid surgery. Forty-five patients were randomized to receive no regional analgesia (control) or BSCPB or local anaesthetic wound infiltration with either 30 or 20 ml of bupivacaine 0.25% performed after intubation. No significant reduction in postoperative opioid demand or pain scores was observed between groups, leading the authors to conclude that BSCPB or local anaesthetic wound infiltration with bupivacaine 0.25% did not decrease analgesic requirement after thyroid surgery. However, these authors performed their BSCPB with a low concentration local anaesthetic without any adjuvant such as epinephrine in

Dieudonne's study. As a consequence, the block may have receded rapidly during the postoperative period, even though the time to first analgesic requirement was significantly longer in the BSCPB group compared with local anaesthetic wound infiltration or control groups. These studies suggest that the clinical benefit of BSCPB after thyroid surgery depends on the technique used.

Yaghoubi et al. (2014) stated that the inflammatory reaction induced by the surgical stimulus may have increased its analgesic effect and may partly explain the reduction in intraoperative opioid requirement .

The present study coincides with *Oremule et al. (2015)*; they concluded that significant and clinically relevant lower morphine consumption and pain score, as well as the substantially higher patient satisfaction demonstrates that superficial cervical plexus block provides effective pain relief for patients undergoing carotid endarterectomy.

Compared to intravenous morphine, superficial cervical plexus block offers better analgesia, is simple to perform and bears no additional risk. Bilateral superficial cervical plexus block has been successfully used for postoperative pain therapy after thyroid surgery under general anesthesia *(Warschkow et al., 2012)*.

Oremule et al. (2015) showed that superficial cervical plexus block was safe, easy to perform and an effective procedure to reduce morphine consumption and improve pain relief after carotid endarterectomy under general anesthesia.

Ward et al. (2011) stated that the main finding of his study is that carotid endarterectomy may be performed successfully by using either a superficial or a combined (deep and superficial) block. The main end point (the dose of supplemental lidocaine used intraoperative) did not differ between the two groups. The subsidiary measures of effectiveness (pain scores, postoperative analgesia) were also not different between the groups. They could not confirm the suggestion of *Davies et al. (2009)* that surgeons would find that the combined block provides an improved operative field.

Ward et al. (2011) confirm and extend the findings of *Stoneham et al. (2011)* who compared superficial block alone with deep block alone and found the intraoperative requirements for lidocaine 1% to be similar between the blocks. They also confirmed that surgeons were unable to distinguish the type of block used from the operative conditions they experienced.

It is generally accepted that the superficial block is easier to perform, easier to teach, and associated with fewer potential complications, and yet it is as effective as the deep or combined block.

The question therefore arises as to whether “adding” the deep element to a superficial block provides any extra benefit. From the results presented with *Ward and colleagues (2011)*, the answer is that it does not, and a superficial block alone appears to be sufficient.

Regarding the toxicity of bupivivaine vs ropivicaine; some authors prefer using ropivicaine because of its lesser cardiac toxicity compared with bupivacaine *(Graf et al., 2012)* and also for BSCPB,

significant volumes of local an aesthetic are injected near vascular structures. *Shih et al. (2010)* have demonstrated the safety of ropivacaine 0.5% for combined superficial and deep cervical plexus block in thyroid surgery.

One of the measures taken to avoid toxicity was to use anesthetics with vasoconstrictors. This association minimizes toxicity by reducing plasmatic levels of these drugs *(Mamede et al., 2009)*.

Regarding the adequacy of our technique, superficial cervical plexus block is probably sufficient for thyroid surgery. The serious complications that may be associated with deep cervical block, particularly phrenic nerve palsy, make it inappropriate to perform this block bilaterally. We observed no significant side-effects from superficial cervical plexus blockade. In particular, BSCPB was not associated with an increased incidence of recurrent nerve paralysis by diffusion of the local anesthetic. Compared with bilateral deep cervical plexus block, BSCPB has the advantage of being devoid of serious complications as long as injection of local anesthetic remains subcutaneous (s.c).

Bilateral deep cervical plexus block *Kulkarni et al. (2013)*, or combined superficial and deep cervical plexus block *(Shih et al., 2010)* were also found to be effective for decreasing postoperative thyroidectomy pain. However, deep cervical plexus block has been reported to cause hemidiaphragmatic dysfunction in 61% of patients. *K?ç?kaya et al. (2016)* suggest that bilateral deep cervical block can produce significant respiratory dysfunction and should not be encouraged for postoperative pain management.

Regarding the volume used in our technique; we used a total volume of 15 ml each side and proven to be effective if the anatomical landmark is correctly detected. The results of *Stoneham et al. (2011)* study appear to differ from *Ward et al. (2011)* results in only one major respect: in Stoneham study, an unusually large number of patients in the superficial block group required morphine postoperatively (14 of 20), compared with only 5 of 20 in Ward and colleagues study. One reason for this difference might be that they used approximately 30 mL of 0.375% bupivacaine; Stoneham and colleagues used a standard dose of only 20 mL of 0.375% bupivacaine in all patients. This would suggest that a dose of approximately 30 mL of 0.375% bupivacaine, rather than 20 mL, is a more optimum dose for a successful block.

Regarding the Postoperative complication (PONV), in our study, there were highly statistically significant differences between the two groups regarding PONV.

Several factors may have influenced the high incidence of PONV in our study, including volatile anaesthetic, absence of prophylactic antiemetics, and the high number of female patients. Thyroid surgery is associated with a high incidence of PONV *(Sonner et al., 2012)*.

No other complications reported regarding our technique except 3 cases of hematoma formation at the site of needle placement occurred after pre injection aspiration. All of them managed simply by compression for few minutes.

Our technique is simple to use and possibility of major complications like intrathecal injection or phrenic nerve paralysis are uncommon. That because BSCPB is superficial in comparison to deep cervical plexus block.

As regard to intravascular injection in our technique, it has a main concern to make sure that the needle not inside the vascular structure as the external jugular vein which is very close to the injection point in our technique. Pre injection aspiration is mandatory to avoid intravascular injection beside availability of resuscitation equipment such as intralipid emulsion.

CONCLUSION

BSCPB is an effective technique to reduce analgesic requirements during and after thyroid surgery and improves the anathetic outcome more than intravenous injection of morphine.

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المقارنة بين التخدير الموضعي العنقي السطحي والحقن وريدياً بالمورفين لتخفيض جرعات المسكنة للألم أثناء جراحة إستئصال الغدة الدرقية وما بعدها

عصام إبراهيم صابر - وائل محمد المهدي إبراهيم - مصطفي محمد عبدالحكيم

قسم التخدير والرعاية المركزة_ كلية الطب_ جامعة الأزهر

خلفيـــة البحـــث: إن الألـــم بعـــد جراحـــات الغـــدة الدرقيـــة يعتبـــر مـــن الآلآم متوســـطة الحـــدة وقصـــيرة الأمـــد ومـــع ذلـــك بعـــض المرضـــى يحتـــاجون للمســـكنات خـــلال الأربـــع والعشـــرون ســـاعة الأولـــى بعـــد الجراحـــة. بالإضـــافة إلـــى ذلـــك فـــإن جراحـــات الغـــدة الدرقيـــة تكـــون مصـــحوبة بـــالقيىء والغثيـــان بشـــكل كبيـــر بعـــد الجراحـــة واســـتخدام المســـكنات يزيـــد مـــن حـــدوث هـــذه المضـــاعفات ولـــذلك يفضـــل تجنبهـــا. ومـــن الممكـــن بتخـــدير الضـــفيرة العنقيـــة الســـطحية علـــى الجـــانبين أن تقـــل الحاجـــة للمســـكنات ومـــع ذلـــك فـــإن فاعليـــة هـــذه الطريقـــة مـــن التخـــدير فـــى تخفيـــف درجـــة الألـــم بعـــد جراحـــات الغـــدة الدرقية تظل محل خلاف.

الهـدف مـن البحـث: وكـان الهـدف مـن هـذا العمـل هـو مقارنـة تـأثير التخـدير الموضـعي العنقـي السـطحي مـع التخـدير العـام، وعقـار المـورفين فـي الوريـد فـي المرضـى الـذين يخضـعون لعمليـة استئصـال الغـدة الدرقيـة فيمـا يتعلـق الـديناميكا الدمويـة أثنـاء العمليـة وبعد العملية الجراحية.

المرضـــي وطـــرق البحـــث: أجريـــت هـــذه الدراســـة علـــى 80 مريضـــاً مـــن الجنســـين، ذوى الفئـــة الصـــحية ١ أو ٢ (حســـب تصـــنيف الجمعيـــة الأمريكيـــة لأطبـــاء التخـــدير) ، وتتـــراوح أعمـــارهم بـــين 19 و 60 ســـنة وتـــم تقســـيم المرضـــى بطريقـــة عشـــوائية إلـــى مجموعتـــان تشـــتمل كـــل مجموعـــة علـــى 40 مريضـــا بعـــد تخـــديرهم بالتخـــدير العـــام وتوحيـــد الأدويـــة المســـتخدمة فيـــه وتشـــمل البروبوفـــول ٢ ملجـــم لكـــل كجـــم و الفنتانيـــل ١ ميكروجـــرام لكـــل كجـــم و السيســـاتراكوريوم ٢،٠ملجـــم لكـــل كجـــم فـــى البدايـــة ثـــم اســـتخدام الأيزوفلـــوران مـــن ٨،٠ إلـــى٢، ١ ٪ . والمجموعـــات هى:مجموعـــة (A): تخـــدير موضـــعي عنقـــي ســـطحي علـــي الجـــانبين (15مـــل لكـــل جانـــب) بعقـــار البـــوبيفيكين

25% بعد التخدير الكلي، مجموعة (B): حقن وريدي بعقار المورفين 0.1 مل/كجم، 15 دقيقة قبل التخدير الكلي.

النتائج: ضغط الدم الشرياني والموارد البشرية كانت أقل بكثير في المجموعة (A) مقارنة مع (B).. تم تخفيض متطلبات البيثيدين خلال ال 24 ساعة الأولى بعد استئصال الغدة الدرقية بشكل كبير في المجموعة (A) مقارنة مع المجموعة (B). ومتابعة المرضي خلال اول 24 ساعة، كانت درجات الألم أقل بكثير في المجموعة (A) مما كانت عليه في المجموعة (B). انخفضت درجات الألم في المجموعتين خلال 24 ساعة بعد الجراحة. تم حدوث قيئ وغثيان في أربعة وثلاثون مريضاً (42.2%)، 8 مرضى في المجموعة (A)، 26 مريضاً في المجموعة (B).

الإستنتاج: التخدير الموضعي العنقي السطحي هو تقنية فعالة لتقليل متطلبات المسكن أثناء وبعد جراحة الغدة الدرقية ويحسن النتيجة التخديرية أكثر من الحقن الوريدي بعقار المورفين.