Research Article

Effect of dexamethasone in TAP block

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Abstract
Background: Pain is defined as an unpleasant sensory and emotional experience associated with actual or potential tissue damage. Postoperative pain is the major obstacle for early postoperative ambulation and increases the risk of venous thromboembolism and respiratory complications and prolongs the hospital stay. So, aggressive perioperative pain prevention can yield both short-term and long-term benefits which can pose a challenge to anesthesia providers. **Patients and Methods:** 60 adult patients of both sex at El-Minia University Hospital, aged 18-70 years of American Society of Anesthesiologists (AS A) physical status I to III scheduled for laparotomies under general anesthesia. The TAP block was performed by using the ultrasound guided technique. The patients were randomly assigned to receive either 18 ml of 0.25% bupivacaine + 2 ml normal saline bilaterally (group C) or 1 v mi of 0.25% bupivacaine + 8 mg (2 ml) dexamethasone bilaterally (group D). **Results:** significant decrease in mean heart rate inside the group was recorded in comparison to the basal values at all-time intervals of recordings with no significant difference regarding oxygen saturation. **Conclusion:** TAP block is a safe and effective analgesic technique in laparotomies. Keywords: Laparotomies, TAP block
Keywords: thromboembolism, dexamethasone, respiratory complications

Introduction
Pain is defined as an unpleasant sensory and emotional experience associated with actual or potential tissue damage. Postoperative pain is the major obstacle for early postoperative ambulation and increases the risk of venous thromboembolism and respiratory compli-cations and prolongs the hospital stay. So, aggressive perioperative pain prevention can yield both short-term and long-term benefits which can pose a challenge to anesthesia providers (Urigel and Molter, 2014).

Rafi and McDonnell are the first to describe the TAP block and provided evidence of blockade to the mid-lower thoracic and upper. lumbar spinal nerves as they travelled in the fascial plane between the transversus abdominis and internal oblique muscles (French and Townsley, 2011)

Hebbard have described an ultrasound-guided approach to the TAP block. Which become the gold standard for the regional anesthesia (French and Townsley, 2011).

Aim of the work
Effect of dexamethasone in TAP block in laparotomies.

Patients and methods
After obtaining Institutional Ethical Committee approval and written informed consent, this prospective randomized double blind controlled study conducted on 60 adult patients of both sex at El-Minia University Hospital, aged 18-70 years, of American Society of Anesthesiologists (ASA) physical status I to III, scheduled for laparotomies under general anesthesia.

Exclusion criteria:
- History of allergy to the studied drugs.
- Opiod dependence.
- Morbid obesity (BMI >40 kg/m2).
- Psychiatric and neurological disorders.

Patients' groups
The included patients were randomly allocated into two equal parallel groups of 30 patients each. Group C (Controlled group): received ultrasound guided TAP block using 18ml bupivacaine 0.25% + 2m1 saline 0.9% before skin incision (10m1 on each quadrant). Group D (Dexamethasone group): received ultrasound guided injection TAP block using a bolus injection of 18m1 bupivacaine 0.25% + 8mg dexamethasone (2m1) before skin incision. Parameters assessed & analyzed HR and $Sa0_2$ after induction, at 15, 30 ,45 min, lh, 1.5h, 2hrs

and 2.5hrs after the block then at 1, 2, 4, 6, 8, 10, 12, 18 and 24h postoperatively.

Results

The two groups were comparable as regard the age, gender, weight, ASA classification, surgical time and operation type.

Mean heart rate:

Intragroup comparison recorded significant decrease in mean heart rate in the two groups in comparison to the basal values at all-time intervals of recordings.

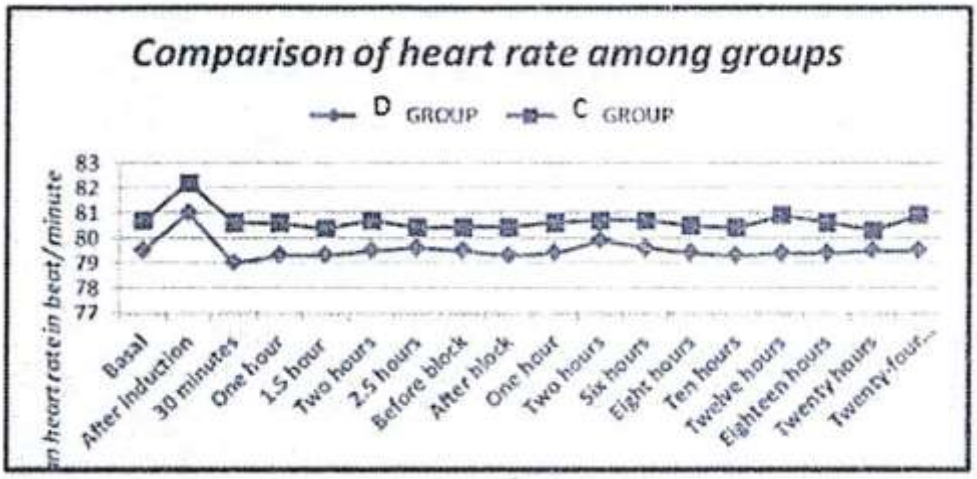

Figure (1): Changes in the mean heart rate (beat/min) in the studied groups (data presented as mean ± SD)

Arterial oxygen saturation (Sa02):

No statistically significant difference was recorded in Sa02 between the two studied-groups at all-time intervals of recordings as shown in (Figure 2).

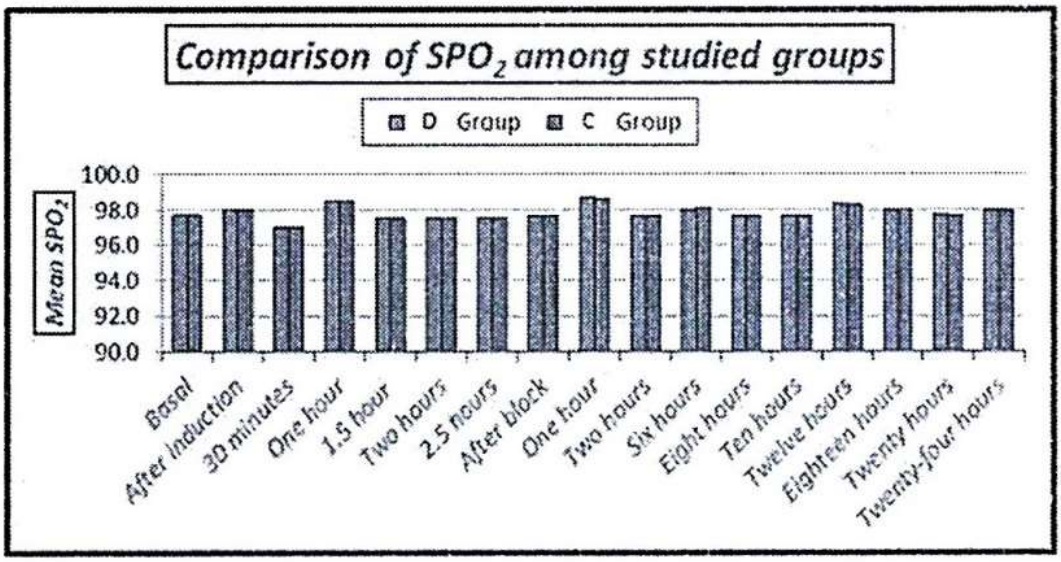

Figure (2): Changes in the $Sa0_2$ in the studied groups.

Discussion

Acute postoperative pain is a normal response to surgical intervention and is a cause of delayed recovery and discharge after surgery as well as increased risk of wound infection,

respiratory and cardiovascular complications so multimodal analgesia uses a combination of opioid and nonopioid analgesics to improve patient outcomes such as pain control, patient satisfaction, time to discharge and return to daily activities. One method used in this multimodal approach is the TAP block (Urigel and Molter, 2014).

TAP block is a developed block involving the nerves of the anterior abdominal wall. Initial studies describe a blockade of these nerves accessed in the neuro-fascial plane between the internal oblique and the transversus abdominis muscles through a well-defined entrance at the triangle of Petit. Many published clinical trials involving patients undergoing both major abdominal as well as gynecological surgeries have demonstrated promising results with this technique as part of a multimodal postoperative pain treatment. The improved safety and efficacy that ultrasound brings to regional anesthesia will help promote its use and realise the benefits that regional anesthesia has over general anesthesia (Petersen et al., 2010).

The duration of TAP block is limited to the effect of administered local anesthetics. However, recently adjuvants such as epinephrine, ketamine and clonidine are added to LA solution in concentrations advocated for other peripheral blocks to prolong the effect of TAP block with promising results.

Dexamethasone, through its anti-inflammatory and blocking effects on neural discharge and nociceptor C-fibers transmission could be used as a local anesthetic adjuvant (Rana et al., 2016).

We conclude that the addition of dexamethasone 8mg to bupivacaine 0.25% attenuated hemodynamic stress response.

References

1. Ammar AS, Mahmoud KM: Effect of adding dexamethasone to bupivacaine on transversus abdominis plane block for abdominal hysterectomy: A prospective randomized controlled trial. Saudi journal of anesthesia 2012;6:229.
2. French J and Townsley P. Transversus abdominis plane block: Anesthesia turtorial of the week ATOTW 239. September 2011. Available from: www. TOTWanesthesiologists.org.
3. Milan Z, Tabor D, McConnell P, Pickering J, Kocarev M, du Feu F, Barton S: Three different approaches to transversus abdominis plane block: A cadaveric study. Med Glas (Zenica) 2011;8:181-184.
4. Petersen P, Mathiesen 0, Torup H, Dahl J: The transversus abdominis plane block: A valuable option for postoperative analgesia? A topical review. Acta Anesthesiologica Scandinavica 2010; 54:529-535.
5. Rana S, Verma RK, Singh J, Chaudhary SK, Chandel A: Magnesium sulphate as an adjuvant to bupivacaine in ultrasound-guided transversus abdominis plane block in patients scheduled for total abdominal hysterectomy under subarachnoid block. Indian journal of anesthesia 2016;60:174.
6. Urigel S, Molter J: Transversus abdominis plane (TAP) blocks. American Association of Nurse Anesthetists journal (AANA) 2014;82.