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Research Article

Preoperative gabapentin alone or in combination with dexamethasone on postoperative pain relief after abdominal hysterectomies. A randomized controlled trial

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KEYWORDS

Gabapentin;
Dexamethasone;
Postoperative pain;
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Abstract *Objectives:* To investigate the role of combining preoperative gabapentin with dexamethasone in the management of post-operative pain following abdominal hysterectomy.
Methods: This prospective randomized double blinded study included 60 females scheduled for abdominal hysterectomy under general anesthesia. They were randomized into three equal groups [20 patients each]; group C [Control]: received oral placebo and intravenous 2 cc normal saline 0.9%, group G [Gabapentin]: received 800 mg gabapentin orally and intravenous 2 cc normal saline 0.9% and group GD [Gabapentin/Dexamethasone]: received 800 mg gabapentin orally and intravenous 8 mg/2 cc dexamethasone. Intraoperative fentanyl requirement, postoperative pain, sedation and nausea and vomiting were assessed at 2, 6, 12 and 24 h postoperative. Time of the first request for analgesia and total postoperative meperidine dose over 24 h were calculated.
Results: Intraoperative fentanyl requirement, time of the first analgesic request, total 24 h meperidine consumption and VAS score at 2 and 6 h postoperatively showed highly statistically significant difference between group (GD) [added dexamethasone to gabapentin] and gabapentin (G) alone or control (C), meanwhile there was statistically significant difference between (G) and (C) groups. VAS score was statistically significant lower among the three studied groups when assessed at 12 h postoperatively. There were no statistically significant differences among the three groups as regards the postoperative sedation scale. PONV was highly statistically significant less observed in groups (GD) and (G) at 2 h and statistically significant less observed at 6 h postoperatively when compared to the control group (C).
Conclusion: Gabapentin alone reduced the intraoperative and postoperative opioid requirement as well as postoperative pain and PONV which was significant in comparison with the placebo effect in

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the control. Obviously these effects were more prominent and highly significant when dexamethasone was added to gabapentin.

1. Introduction

Postoperative pain affects the patient's recovery profile. Poorly controlled pain results in increased catabolism, heart rate and blood pressure in addition to immunosuppression [1]. Inadequate pain management has both physiological and psychological unwanted consequences and prolongs the recovery and discharge time leading to increased health care costs [2]. Postoperative pain is not only nociceptive in nature but also consists of inflammatory, neurogenic as well as visceral components [3]. Owing to the multiplicity of the mechanisms responsible for postoperative pain, an opioid and non-opioid analgesic combination is often used as a multimodal analgesic regimen to enhance analgesia and reduce opioid needs and side-effects [4].

Gabapentin, a structural analog of gamma aminobutyric acid (GABA), was introduced in the United States as an anticonvulsant, used clinically to treat epilepsy. The drug causes amino acids release in the spinal cord dorsal horn and thus decreasing response to neural inputs and stabilizing the nervous activity. The mechanism of action of gabapentin on neuropathic pain is thought to bind to the alpha 2 delta subunit of the voltage-dependent calcium channel in the central nervous system, reducing calcium influx into the nerve terminals and decreases the release of neurotransmitters like glutamate [5]. Gabapentin, therefore, can be used for controlling chronic pain, as in diabetic neuropathy and other neuropathic disorders [6]. Some studies examined the effectiveness of gabapentin for postoperative pain relief [7,8]. A recent study concluded that gabapentin has a role in postoperative pain control, preoperative anxiolysis, attenuation of hemodynamic response to intubation, prevention of postoperative nausea and vomiting (PONV) and finally postoperative delirium [8].

Corticosteroids are used as anti-inflammatory as well as anti-immunological agents. They also posses antiemetic properties and in particular dexamethasone is used commonly for prevention of postoperative nausea and vomiting [9]. Earlier studies showed that glucocorticoids were effective in decreasing postoperative edema and pain in patients undergoing dental procedures [10,11]. A number of recent studies investigated the possible analgesic benefit of a single preoperative dose of dexamethasone [11–13]. Long-term glucocorticoid treatment is associated with several side-effects [14]. However, it is not clear yet if a single dose increases the risk of these side effects.

The aim of this clinical study was to evaluate the role of combining preoperative gabapentin with dexamethasone in the management of post-operative pain following abdominal hysterectomy.

2. Patients and methods

This is a prospective randomized controlled double blinded study, done at the gynecology and obstetric department in the *kasr Al Ainy* hospital during the period from September 2013 to September 2014.