

# Postoperative back pain following epidural anesthesia: Can dexamethasone help?

Masoud Saghafinia, Nahid Nafissi<sup>1</sup>, Mohammad Hosein Kalantar Motamedi, Reza Asadollahi<sup>1</sup>

Department of Anesthesia, Trauma Research Center, Baqiyatallah, University of Medical Sciences, <sup>1</sup>Iranian Mine Victim Rescue Center (IMC), Tehran, Iran

**E**pidural anesthesia (EA) is a central neuraxial block with many applications. Improvements in equipment, drugs and techniques have made it a popular and versatile anesthetic procedure. However, back pain is a common postoperative complaint. We aimed to determine the effect of dexamethasone added to EA to reduce post-epidural anesthesia backache. Fifty-nine patients scheduled undergoing surgery were randomly assigned to two groups: Case group (30 patients) received 300 mg lidocaine (1.5%) plus 1/200,000 epinephrine and 4 mg dexamethasone (1CC) for epidural anesthesia, and a control group (29 patients) received 300 mg lidocaine (1.5%) with 1/200000 epinephrine and 1CC normal saline (placebo). Patients were visited 12, 24 and 48 hours after operation, and the severity of post-epidural backache was recorded according to a visual analogue scale pain score. In the case group, 29 patients (96.6%) had mild back pain, and only 1 patient (3.3%) had moderate back pain and none experienced severe back pain post-operatively. In the control group, 19 patients (65.5%) had mild backache, 9 patients experienced moderate and 1 had severe backache. Mean backache severity score of the case group was statistically lower than the control group ( $P = 0.003$ ), after 12 h ( $P = 0.001$ ), 24 h ( $P = 0.00$ ) and 48 h ( $P = 0.002$ ) postoperatively. Dexamethasone addition may be effective in reducing severe to moderate post-epidural anesthesia backache in EA patients.

**Key words:** Dexamethasone, epidural anesthesia, post-epidural backache

## INTRODUCTION

Epidural anesthesia (EA) is a central neuraxial block procedure with many applications. Improvements in equipment, drugs and techniques have made it a popular and versatile anesthetic procedure, with applications in surgery, obstetrics and pain control. It can be continued after operation to decrease pain, and this further decreases the hospitalization period. One of the most common complications of EA is back pain that occurs in 30-45% cases. Local trauma leads to aseptic periostitis, tendonitis, ligament inflammation and osteochondritis inducing post-epidural back pain (PEBP). Long-term backache occurs in about 3% of the patients.<sup>[1,2]</sup> Few drugs have been added as adjuncts to EA in attempts to prevent post-epidural backache.

It has been shown that local supplementation of ketoprofen reduces the incidence of low back pain after lumbar EA.<sup>[3]</sup> Pre-operative epidural administration of dexamethasone reduces PEBP following laparoscopic

cholecystectomy.<sup>[4]</sup> Wang *et al.* found dexamethasone and tenoxicam effective in reducing both the incidence and severity of PEBP.<sup>[5,6]</sup> We assessed the incidence and severity of PEBP following surgery in two groups of patients under EA after an injection of dexamethasone.

## MATERIALS AND METHODS

In this randomized, double-blind study, 59 patients in class I and class II ASA groups (American Society of Anesthesiologists) were studied prospectively. They were randomly selected from candidates of urologic, orthopedic, and general surgeries from November 2004 to April 2005. Patients with a history of low back pain, lumbosacral trauma, spine surgery, or psychiatric patients were excluded. The duration of operation was 2 h. Patients were visited prior to the operation, and consent was obtained. The ethics committee of our institution approved the study. The patients were randomly allocated to 1 of 2 groups; each group received a fixed dose of the compound drug: The case group (30 patients) received 300 mg lidocaine (1.5%) plus 1/200000 epinephrine and 4 mg dexamethasone (1CC) for epidural anesthesia and the control group (29 patients) received 300 mg lidocaine (1.5%) with 1/200000 epinephrine and 1CC normal

### Address for correspondence:

Dr. Mohammad Hosein Kalantar Motamedi, Giti Blvd, 11, 19667 Tehran, Iran. E-mail: Motamedical@lycos.com

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saline (placebo).

#### Technique

First, 3CC lidocaine (1%) was subcutaneously injected in the course of epidural needle, and then, a single bolus injection was administered in L4-L5 or L5-S1 spaces using a Tuohy needle No. 18 using the hanging-drop method.<sup>[1]</sup>

After the surgical procedure, a physician examined the patient's backache severity at 12, 24 and 48 h and scored them on the basis of a visual analogue scale (VAS). VAS pain score ranged from 0 (no pain) to 10 (severe pain). For assessment, the patient was placed supine and the physician extended the patient's leg 100° (as Lasegue's Test). When the patient felt back pain, the degree between the axis and the horizon was measured and for each 10° one grade was allocated. The grades were deducted from ten and the patient's VAS score was determined. Back pain severity was divided into three groups, mild (score <3), moderate (3 ≤ score ≤7), and severe (score >7).

All statistical analyses were performed using the SPSS software package version 13.5. The level of significance was set at  $P < 0.05$ . Nominal data was analyzed using the  $\chi^2$  test, and 2-way analysis of variance was used for analyzing changes seen in VAS.

#### RESULTS

Out of 59 patients, 54 (91.5%) were males and 5 (8.5%) were females. Mean age was 46.7 years, ranging from 18 to 87 years. There was no significant difference with regard to age or sex. Operations for which epidural anesthesia was administered included 23 (39%) urologic, 21 (35.6%) general surgery and 15 (25.4%) orthopedic surgeries.

In the case group, 29 patients (96.6%) had mild back pain, only 1 patient (3.3%) had moderate pain and none had severe back pain during the post-operative period. In the control group, 19 patients (65.5%) had mild back pain, 9 patients experienced moderate pain and 1 patient had severe back pain. Mean back pain severity score of the case group was statistically lower than the control group in general ( $P = 0.003$ ) and at 12 h ( $P = 0.001$ ), 24 h ( $P = 0.00$ ) and 48 h ( $P = 0.002$ ) after operation [Table 1]. At 1-month follow up, no complications were detected in either group.

#### DISCUSSION

Back pain is a common complication after the use of epidural anesthesia in obstetric and non-obstetric surgeries and occurs in 30-45% of cases.<sup>[1,2]</sup> Few studies have been conducted on this complication.<sup>[1,2]</sup> Field block anesthesia suggested by Wilkinson *et al.* for decreasing backache was not popularized due to its difficult technique.<sup>[7]</sup> Local supplementation of ketoprofen<sup>[3]</sup> and preoperative epidural administration of

**Table 1: Comparison of mean VAS scores 12, 24 and 48 h after epidural anesthesia**

Visit	Group	No.	Mean VAS score	P value
12 h post-epidural	Case	30	0.60	0.001
	Control	29	2.69	
24 h post-epidural	Case	30	0.20	0.000
	Control	29	3.28	
48 h post-epidural	Case	30	0.06	0.002
	Control	29	1.76	

VAS - Visual analogue scale

dexamethasone following laparoscopic cholecystectomy<sup>[4]</sup> have been shown to be effective in reducing post-operative backache. In another study, Wang *et al.* found dexamethasone effectiveness in reducing the incidence and severity of post-epidural back pain.<sup>[5]</sup> However, it should be noted that Wang *et al.* selected a group of patients referred for hemoroidectomy, while in epidural anesthesia; the sacral area is not anesthetized properly. In this study, while using patients with different urologic, orthopedic and general surgeries, we found that adding 4 mg of dexamethasone in epidural anesthesia can significantly reduce PEBP. Twenty-nine patients (96.6%) in our case group had VAS scores from 0 to 3, but in the control group 19 patients (65.5%) were in the same VAS range. In our case group, only 1 patient (3.3%) had moderate back pain and none experienced severe, while 9 patients experienced moderate and 1 patient had severe back pain in the control group. Mean back pain severity score of the case group was statistically lower than in the control group (12, 24 and 48 h after operation).

Complications following the use of dexamethasone are rare in EA with this method.<sup>[8]</sup> The suppressing effect on the hypothalamus-hypophysis-adrenal axis depends on the steroid dosage and seems improbable.<sup>[9,10]</sup> Cauda equina syndrome is a rare complication of epidural anesthesia and a case has been reported.<sup>[11]</sup> Arachnoiditis, nerve damage, hematoma and epidural abscess are other complications.<sup>[8,9,12,13]</sup> None of these were observed in our study.

#### CONCLUSION

We used a low-dose dexamethasone (4 mg) administration in epidural anesthesia via an easy and effective method to reduce post-epidural anesthesia severe to moderate back pain.

#### REFERENCES

- Brown DL. Spinal, Epidural and Caudal Anesthesia. In: Miller RD, editor. Miller's Anesthesia. 6<sup>th</sup> ed. Philadelphia: Churchill Livingstone; 2005. p. 1670-8.
- Visser L. Epidural Anaesthesia. In: Update in Anaesthesia, Michigan: University of Michigan Medical Center 2001, Issue 13, Article 11: 1-4.
- Hsieh JR, Hui YL, Yu CC, Lau WM, Ng YT, Wang YL. Local supplementation of ketoprofen reduces the incidence of low back pain after lumbar epidural anesthesia. *Changgeng Yi Xue Za Zhi* 1999;22:439-44.
- Thomas S, Beevi S. Epidural dexamethasone reduces postoperative pain and analgesic requirements. *Can J Anaesth* 2006;53:899-905.

5. Wang YL, Tan PP, Yang CH, Tsai SC, Chung HS. Epidural dexamethasone reduces the incidence of backache after lumbar epidural anesthesia. *Anesth Analg* 1997;84:376-8.
6. Wang YL, Hsieh JR, Chung HS, Yu CL, Ho AC, Lu PP, *et al.* The local addition of tenoxicam reduces the incidence of low back pain after lumbar epidural anesthesia. *Anesthesiology* 1998;89:1414-7.
7. Wilkinson HA. Field block anesthesia for lumbar puncture. *JAMA* 1983;249:2177.
8. Brown FW. Management of discogenic pain using epidural and intrathecal steroids. *Clin Orthop* 1977;129:72-8.
9. Burn JMB. Duration of action of epidural methylprednisolone. *Am J Phys Med* 1974;53:29-34.
10. Kay J. Epidural triamcinolone suppresses the pituitary adrenal axis in human subjects. *Anesth Analg* 1994;79:501-5.
11. Bilir A, Gulec S. Cauda equina syndrome after epidural steroid injection: A case report. *J Manipulative Physiol Ther* 2006;29:492.e1-3.
12. Sehgal AD. Laboratory studies after intrathecal corticosteroids. *Arch Neurol* 1963;9:64-8.
13. Johansson A, Dahlin L. Long term local corticosteroid application does not influence nerve transmission or structure. *Acta Anaes* 1995;39:364-9.

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