

## A Meta-Analysis of Complications of Epidural Anesthesia in Iraqi Patients

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**Abstract:** A cross-sectional study was conducted by adopting a meta-analysis in cooperation with different hospitals in Baghdad, Iraq, where 200 patients collected with different age groups from 20 to 60 years were collected. The statistical analysis program SPSS IBM SOFT 22 was relied upon to analyse the results of patients resulting from the use of epidural anaesthesia. In this study, four anesthetists were relied upon in order to provide follow-up to the patient's condition after surgery, where the visit to the patient was estimated twice, after one day and two days later, and classification was made to the epidural through the use of an eye consisting of 11 points, and complications were analyzed and recorded at two days and between 3 to 10 days, then the patients were contacted to know the effects after five months. The most frequent complications were post-operative neurologic deficits for 17 patients, as well as low body temperature for 17 patients, in addition to the presence of epidural hematoma for 13 patients and the occurrence of vomiting and nausea for 16 patients along the time period in the evaluation of complications. We conclude the effect of using epidural anaesthesia was significant, and it was noted that the patients had complications. In general, the incidence of complications was for 57 patients at two days, and from 3-10 days for 36 patients, and eight patients at more than five months, and the symptoms were evaluated for their occurrence at 50% in this study.

**Keywords:** Anaesthesia, epidural, patients, vomiting, evaluation, complications.

### INTRODUCTION

Epidural anaesthesia (EA) is one of the methods of regional anaesthesia that doctors use during childbirth, as well as a number of surgical procedures when it is important for the patient to be conscious. The drug is injected into the epidural space - it is located between the periosteum of the vertebrae and the dura mater of the spinal cord in the lumbar region [Coriat, P. *et al.*, 2001; Scott, N.B. *et al.*, 2005; Nygård, E. *et al.*, 2005].

Epidural anaesthesia is the ideal option for performing surgical operations in areas of the body below the navel, especially for patients who suffer from chronic diseases, heart and respiratory diseases, and who may experience complications that may be unimaginable if they are subjected to general anesthesia. It is also used to relieve chronic pain, the pain of major operations, and cancer pain [Wijeysundera, D.N. *et al.*, 2009; Bakhtiary, F. *et al.*, 2007; Caputo, M. *et al.*, 2009; Powell, E.S. *et al.*, 2011].

Usually, an epidural can be used after labor has begun, but in special cases, it can be started even in the early stages of labor, while during the last stages of labor, spinal analgesia may be sufficient which does not require the placement of a catheter for safety reasons [Svircevic, V. *et al.*, 2011;

Horlocker, T.T. *et al.*, 2010; Gadsden, J. *et al.*, 2012]

One of the most common complications in using this type of anaesthesia is the inappropriateness of analgesia, in addition to the presence of itching, low body temperature, low blood pressure, sensitivity, or negative reactions when taking analgesic drugs. [Watson, M.J. *et al.*, 2014; Newman, B. *et al.*, 2013; Niazi, A.U. *et al.*, 2013]

In some very rare cases, it may cause inflammation in the spine. In some cases, it may lead to fever, causing confusion among the gynecologist about the cause of the fever, whether it is from epidural anaesthesia or another infection.

### Contraindications to Epidural Anaesthesia

A certain category of women does not perform epidural anaesthesia if it has contraindications. These include: [Arnbak, B. *et al.*, 2016; Sehmbi, H. *et al.*, 2017]

- vegetative-vascular dystonia in a pregnant woman;
- deformed spine, which complicates the puncture process;
- There is a rash on the skin in the area where the puncture will be performed;
- blood problems (poor clotting, infection);

- bleeding
- Individual intolerance to the components of the anaesthetic.
- Patient is unconscious.
- Heart or blood vessel disease.

**MATERIAL AND METHOD**

**Patient Sample**

A cross-sectional study was conducted by adopting a meta-analysis in cooperation with different hospitals in Baghdad, Iraq, where 200 patients collected with different age groups from 20 to 60 years were collected.

**Study Design**

Information and preliminary data about patients who underwent epidural anesthesia (height, age, gender, in addition to the body mass index) were collected, and the patients were examined if they were suffering from comorbidities.

The statistical analysis program SPSS IBM SOFT 22 was relied upon to analyse the results of patients resulting from the use of epidural anaesthesia

In this study, four anesthetists were relied upon in order to provide follow-up to the patient's condition after surgery, where the visit to the patient was estimated twice, after one day and two days later, and classification was made to the epidural through the use of an eye consisting of 11 points, and complications were analyzed and recorded at two days and between 3 to 10 days,

then the patients were contacted to know the effects after five months

**Statistical Analysis**

The results of patients were expressed using the mean values and the standard deviation as  $\pm$

The logistic regression was recorded to the ages of patients to know the resulting differences in addition to the logistic regression for complications resulting from the use of epidural anaesthesia was found by relying on the reliability field (CI-95%). The statistical differences between the parameters were also recorded using (p-value)

**Study Period**

We cooperated with the relevant committees to conduct this study and to withdraw information about patients by relying on the electronic record in the hospital. The total study period consisting of information collection and analysis was two years, from 9-8-2018 to 22-9-2020

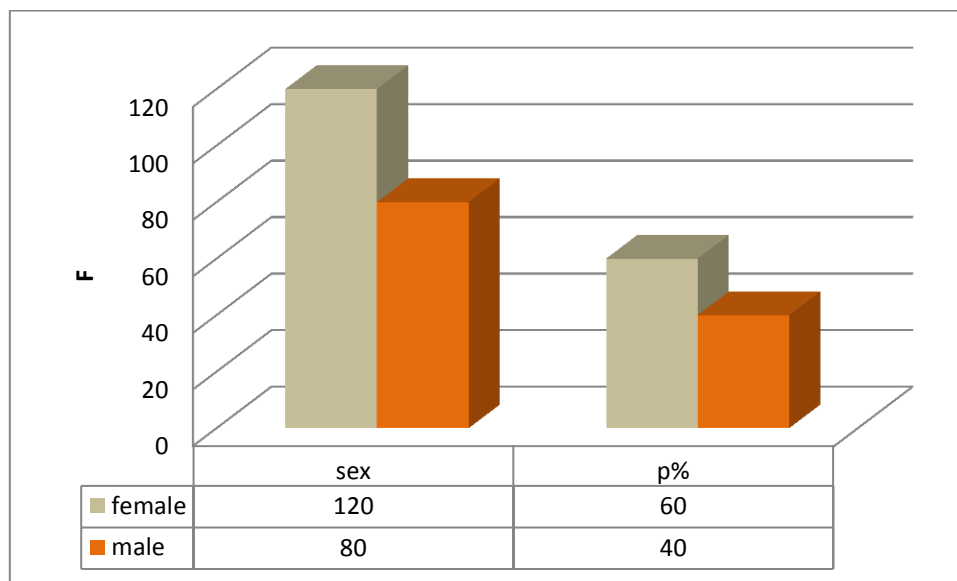
**AIM OF RESEARCH**

This paper aims to do a meta-analysis for selecting complications of epidural anaesthesia in Iraqi patients.

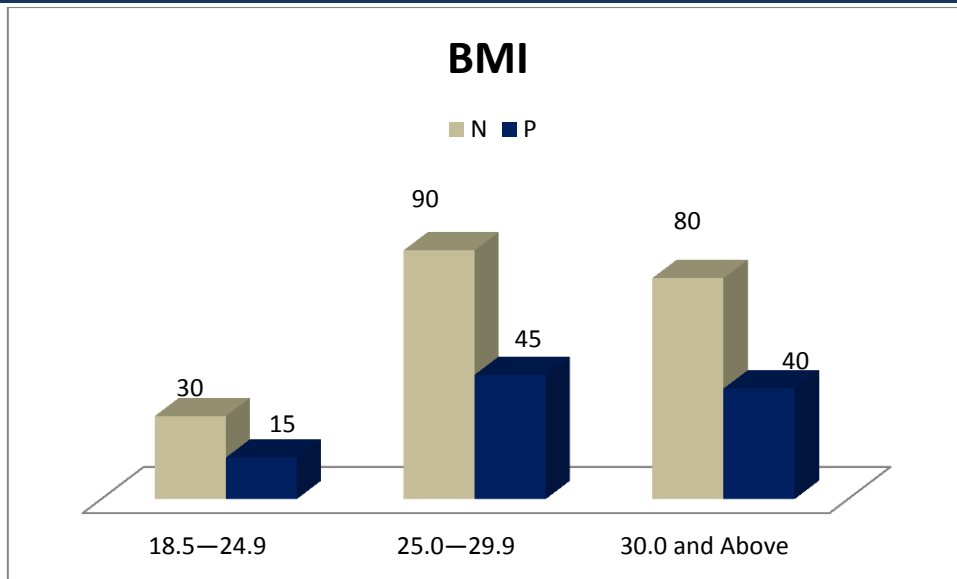
**RESULTS**

**Table 1:** Distribution of patients according to age

Age	N	P	Chi-square
20-29	40	20	3.11
30-39	70	35	
40-49	40	20	
50-60	50	25	



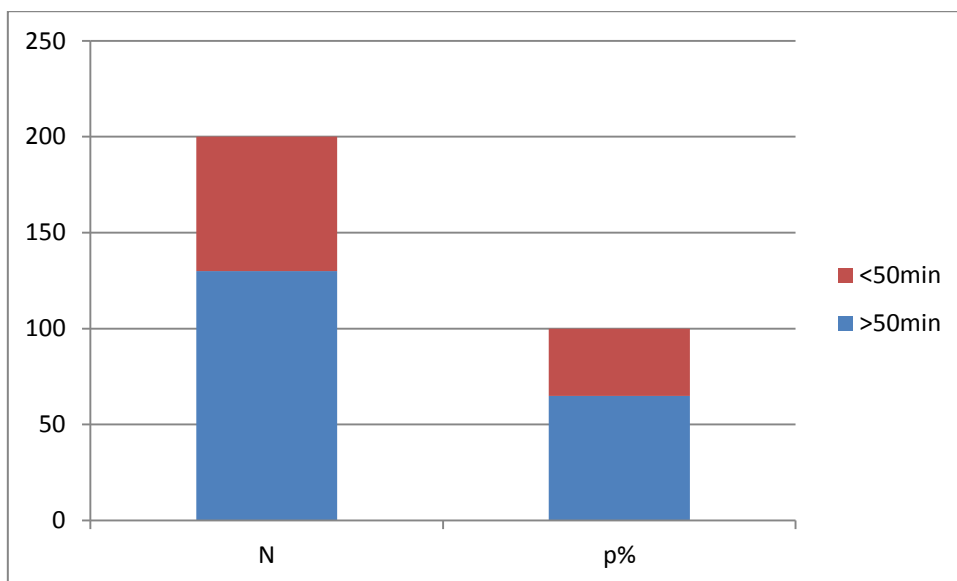
**Fig 1:** Distribution of patients according to sex



**Fig 2:** Distribution of patients according to BMI

**Table 2:** Clinical results of patients

P	value	P value
Age (Mean±SD)	39±11	0.11
comorbidities		
Hypertension N (%)	40 (20)	0.045
History of neuraxial anesthesia N (%)	90 (45)	0.066
Others N (%)	70 (35)	0.55
surgical intervention		
Gynecological	44 (22)	0.11
General	60 (30)	0.3
Thoracic	40 (20)	0.24
rthopedic	40 (20)	0.13
Urologic	16 (8)	0.4
BMI (Mean±SD)	29.5±4.5	0.03



**Fig 3:** Duration of surgery

**Table 3:** Outcomes of complication of patients

	At 2 days	3-10 days	More than 5 months	Total
Post-operative neurologic deficits	10	15	2	17
Epidural hematoma	9	3	1	13
Post-dural puncture headache	5	4	1	10
Systemic local anesthetic toxicity	4	4	2	10
Low body temperature	12	4	1	17
Sensory deficit	5	2	1	8
vomiting and Nausea	12	4	0	16
Total	57	36	8	101

**Table 4:** Association between case volume and mortality in an anesthetic management retrospective control group

	From	CI-95%	To CI-95%
Age	0.5		1.2
sex	0.1		1.5
SAP mmHg	0.6		1.6
Heart rate	1.55		2.4
Medical problem	1.1		1.8
Epidural hematoma	0.77		1.3
Post-operative neurologic deficits	0.8		1.7

**Table 5:** Association between epidural anaesthesia with patients

Correlations				
		Age	Sex	Mortality
Age	Pearson Correlation	1	-.265	-.0113
	Sig. (2-tailed)		.404	.726
	N	200	200	200
sex	Pearson Correlation	-.265	1	.502
	Sig. (2-tailed)	.404		.096
	N	200	200	200
mortality	Pearson Correlation	-.0113	.502	1
	Sig. (2-tailed)	.726	.096	
	N	200	200	200

## DISCUSSION

A cross-sectional study was established, where 200 patients were included, distributed in different age groups, and the most frequent age group was between 30-39 years, 70 patients with 35%, and 20-29 years to 40 with 20%, and the same is true for the age group. From 40-49 years, as for the lowest frequency category, the distribution of patients was from 50-60 years to 50 patients, with 25% of the patients being chi-square. The percentage of female patients was higher than that of males (120 female patients with 60 %, and 80 male patients with 40 %), as shown in Figure 1.

The body mass index was calculated for the patients, and a significant increase in the body mass index was seen for 80 patients with 40 % and 90 patients with 45 % of the body mass index (25-29 kg/m<sup>2</sup>) were distributed.

The surgeries discussed in this study were gynecological for 44 patients (22 %) and general surgery, which was the most frequent for the types of surgeries used for 60 patients (30 %), and Thoracic was divided into 40 patients with 20 %

Also, no statistical differences were found at a 0.05 p-value, as shown in Table 2; the complications resulting from the effect of anaesthesia were evaluated at different intervals to know the long and short-term complications. The complications were evaluated at two days, 3-10 days, and more than five months.

Post-operative neurologic deficits were observed in 10 patients at two days and from 3-10 days in 15 patients, and a decrease in complications was observed over a period of more than five months for two patients.

It was noted that there is a low and clear effect of anaesthesia on hypothermia, and this response occurs within the therapeutic ranges; Thus, the inter-threshold range can be increased 10-20 times, i.e., four °C, so that the peripheral vasoconstrictor response that normally occurs at 37 °C can occur with inhaled anesthetics at 34 or 35 °C, i.e., we are completely exposed to hypothermia in the period of surgery. Regional anaesthesia may only increase the range 3 or 4 times but has a direct vasodilator effect that equally impairs response to cold

Temperature changes occur in 3 phases during anesthesia 10. In the first stage, a rapid decrease in temperature occurs, from 1 to 1.5 ° C in the first hour after the start of surgery, due to the redistribution of heat from the center to the extremities. Heat loss in this first stage is due firstly to the normal gradient existing from 2 to 4 ° C between the heart and the periphery, and secondly to the vasodilatation present at the peripheral level due to the loss of vasoconstrictor mechanisms due to anaesthesia

Hypothermia increases blood viscosity, which can lead to poor perfusion. The hematocrit rises by 2% for every degree Celsius that the temperature drops. This false increase in hematocrit can be misleading in a patient with hypothermia with blood loss

## CONCLUSION

At the end of this study, we conclude that the effect of using epidural anaesthesia was significant, and it was noted that the patients had complications. In general, the incidence of complications was for 57 patients at two days, and from 3-10 days for 36 patients, and eight patients at more than five months, and the symptoms were evaluated for their occurrence at 50% in this study.

## RECOMMENDATION

Body temperature should be monitored in all surgical patients in order to detect variations early, as well as complications that occur with variations, such as fever, malignant hyperthermia, and symptomatic hypothermia. A review of factors leading to hypothermia during the postoperative period, as well as prevention and treatment, is presented.

## REFERENCES

1. Coriat, P. and Beaussier, M. "Fast-tracking after coronary artery bypass graft surgery." *Anesthesia & Analgesia* 92.5 (2001): 1081-1083.
2. Scott, N.B., Turfrey, D.J., Ray, D.A., Nzewi, O., Sutcliffe, N.P., Lal, A.B., Norrie, J., Nagels, W.J. and Ramayya, G.P. "A prospective randomized study of the potential benefits of thoracic epidural anesthesia and analgesia in patients undergoing coronary artery bypass grafting." *Anesthesia & Analgesia* 93.3 (2001): 528-535.
3. Nygård, E., Kofoed, K.F., Freiberg, J., Holm, S., Aldershvile, J., Eliassen, K. and Kelbæk, H. "Effects of high thoracic epidural analgesia on myocardial blood flow in patients with ischemic heart disease." *Circulation* 111.17 (2005): 2165-2170.
4. Wijesundera, D.N., Bender, J.S. and Beattie, W.S. "Alpha-2 adrenergic agonists for the prevention of cardiac complications among patients undergoing surgery." *Cochrane database of systematic reviews* 4 (2009): CD004126
5. Bakhtiary, F., Therapidis, P., Dzemali, O., Ak, K., Ackermann, H., Meiningner, D., Kessler, P., Kleine, P., Moritz, A., Aybek, T. and Dogan, S. "Impact of high thoracic epidural anesthesia on incidence of perioperative atrial fibrillation in off-pump coronary bypass grafting: a prospective randomized study." *The Journal of Thoracic and Cardiovascular Surgery* 134.2 (2007): 460-464.
6. Caputo, M., Alwair, H., Rogers, C.A., Ginty, M., Monk, C., Tomkins, S., Mokhtari, A. and Angelini, G.D. "Myocardial, inflammatory, and stress responses in off-pump coronary artery bypass graft surgery with thoracic epidural anesthesia." *The Annals of thoracic surgery* 87.4 (2009): 1119-1126.
7. Powell, E.S., Cook, D., Pearce, A.C., Davies, P., Bowler, G.M.R., Naidu, B., Gao, F. and UKPOS Investigators. "A prospective, multicentre, observational cohort study of analgesia and outcome after pneumonectomy." *British journal of anaesthesia* 106.3 (2011): 364-370.
8. Svircevic, V., Nierich, A.P., Moons, K.G., Diephuis, J.C., Ennema, J.J., Brandon Bravo Bruinsma, G.J., Kalkman, C.J. and van Dijk, D. "Thoracic epidural anesthesia for cardiac surgery: a randomized trial." *The Journal of the American Society of Anesthesiologists* 114.2 (2011): 262-270.
9. Horlocker, T.T., Wedel, D.J., Rowlingson, J.C., Enneking, F.K., Kopp, S.L., Benzon, H.T., Brown, D.L., Heit, J.A., Mulroy, M.F., Rosenquist, R.W., Yuan, C.S. and Tryba, M. "Regional anesthesia in the patient receiving

- antithrombotic or thrombolytic therapy: American Society of Regional Anesthesia and Pain Medicine Evidence-Based Guidelines." *Regional Anesthesia & Pain Medicine* 35.1 (2010): 64-101.
10. Gadsden, J., Kwofie, K. and Shastri, U. "Continuous intercostal versus paravertebral blockade for multiple fractured ribs." *Journal of Trauma and Acute Care Surgery* 73.1 (2012): 293-294.
  11. Watson, M.J., Walker, E., Rowell, S., Halliday, S., Lumsden, M.A., Higgins, M., Binning, A. and McConnachie, A. "Femoral nerve block for pain relief in hip fracture: a dose finding study." *Anaesthesia* 69.7 (2014): 683-686.
  12. Newman, B., McCarthy, L., Thomas, P.W., May, P., Layzell, M. and Horn, K. "A comparison of pre-operative nerve stimulator-guided femoral nerve block and fascia iliaca compartment block in patients with a femoral neck fracture." *Anaesthesia* 68.9 (2013): 899-903.
  13. Niazi, A.U., El-Beheiry, H., Ramlogan, R., Graham, B., von Schroeder, H.P. and Tumber, P.S. "Continuous infraclavicular brachial plexus blockade: effect on survival of replanted digits." *Hand Surgery* 18.03 (2013): 325-330.
  14. Arnbak, B., Jensen, T.S., Egund, N., Zejden, A., Hørslev-Petersen, K., Manniche, C. and Jurik, A.G. "Prevalence of degenerative and spondyloarthritis-related magnetic resonance imaging findings in the spine and sacroiliac joints in patients with persistent low back pain." *European radiology* 26.4 (2016): 1191-1203.
  15. Sehmbi, H., D'Souza, R. and Bhatia, A. "Low back pain in pregnancy: investigations, management, and role of neuraxial analgesia and anaesthesia: a systematic review." *Gynecologic and obstetric investigation* 82.5 (2017): 417-436.

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