

Clinical Study on the Effect of General Anesthesia Combined with Continuous Epidural Anesthesia on Patients Undergoing Radical Gastrectomy for Gastric Cancer

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How to cite this paper: Hui Ding, Wenying Song. (2023) Clinical Study on the Effect of General Anesthesia Combined with Continuous Epidural Anesthesia on Patients Undergoing Radical Gastrectomy for Gastric Cancer. *International Journal of Clinical and Experimental Medicine Research*, 7(4), 682-685.
DOI: 10.26855/ijcemr.2023.10.030

Received: September 30, 2023

Accepted: October 29, 2023

Published: November 30, 2023

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Abstract

Objective: To investigate the effects of general anesthesia combined with continuous epidural anesthesia on hemodynamic indexes and lower extremity deep vein thrombosis in patients with radical gastric cancer. **Method:** Sixty patients with gastric cancer treated in our hospital from January 2020 to December 2022 were selected as research objects, and divided into two groups of 30 patients in each group by different anesthesia methods. The control group received general anesthesia, and the observation group received general anesthesia combined with continuous epidural anesthesia. The changes of HR, SBP, DBP, MAP and SPO2 before anesthesia, 1h after anesthesia, after surgery and 24h after surgery, as well as the specific changes of GLU, COR, D-D and Fbg before and after anesthesia, and the incidence of lower limb deep vein thrombosis one week after surgery were observed. **Results:** There was no significant difference in all indexes before anesthesia ($p>0.05$). HR, SBP, MAP and DBP were significantly decreased in the observation group 1h after anesthesia, after surgery and 24h after surgery compared with the control group ($p<0.05$), but SPO2 was not significantly different ($p>0.05$). Before anesthesia, the levels of GLU, COR, D-D and Fbg were significantly decreased in the observation group compared with the control group ($p<0.05$). The incidence of lower extremity deep vein thrombosis in the observation group was significantly lower than that in the control group one week after surgery ($p<0.05$). **Conclusion:** General anesthesia combined with continuous epidural anesthesia in patients with gastric cancer can have positive effects on hemodynamic indexes and deep venous thrombosis of lower limbs.

Keywords

General anesthesia with continuous epidural anesthesia, Gastric cancer, Hemodynamics, Deep vein thrombosis of lower extremity

1. Introduction

Gastric cancer is a kind of multiple digestive tract neoplastic disease, which is often accompanied by symptoms such as lack of appetite, emaciation and weakness, upper abdominal pain, etc., which seriously affects the daily life and physical and mental health of patients. At present, gastric cancer is mainly treated by radical gastrectomy and

other surgical treatments in clinical practice, which has advantages such as short action time and exact curative effect. However, long-term studies have confirmed that surgery, as a strong stressor, has a great impact on patients' body damage, which is easy to causes serious internal environmental disorders and metabolic imbalance, leading to various stress reactions [1]. At the same time, some studies have shown that the survival rate of patients within 5 years after surgery is as high as 30% to 40% [2]. Therefore, it is urgent to take effective measures to restrain such reactions in time. Some studies have found that general anesthesia combined with epidural anesthesia has the positive effect of blocking the transmission of harmful stimuli and reducing the response to harmful stimuli to a certain extent [3]. In this study, 60 patients undergoing elective radical gastrectomy for gastric cancer were selected as research objects to explore the effects of general anesthesia combined with epidural anesthesia on hemodynamics and lower extremity deep vein thrombosis, and satisfactory results were obtained. The results are reported as follows.

2. Objects and methods

2.1 Research object

Sixty patients with gastric cancer treated in our hospital from January 2020 to December 2022 were selected as research objects, and divided into two groups of 30 patients each by different anesthesia methods. The control group included 16 males and 14 females, ranging in age from 52 to 78 years old, with a mean of (65.5±0.9) years old. The observation group included 18 males and 12 females, ranging in age from 52 to 79 years, with a mean of (65.9±1.1) years. Inclusion criteria of all patients: (1) All patients were pathologically diagnosed with gastric cancer symptoms, and all patients were completely willing to undergo radical surgery; (2) All the ASA grades were I-II. (3) Patients and their families all approved the use of anesthesia in the study. Exclusion criteria: (1) There are serious contraindications to surgery and anesthesia; (2) There is organ dysfunction; (3) Had taken immunosuppressant or hormone drugs within 1 month before admission [4].

2.2 Methods

The patients were prohibited from drinking and fasting 8h before surgery, and their ECG, blood pressure and pulse signs were closely monitored.

2.2.1 Control Group

The control group received general anesthesia, which was induced by the following methods: All drugs were injected intravenously, including the following drugs: Midazolam (National drug approval number H10980025, Jiangsu Enhua Pharmaceutical Co., LTD., 2ml:10mg), cisatrimium (National drug approval number H20123332, ShangyaoDongying (Jiangsu) Pharmaceutical Co., LTD., 10mg), Propofol (National drug approval number H20163040, Xi'an Libon Pharmaceutical Co., LTD., 10ml:0.2g), the doses were 0.05mg/kg, 0.4µg/kg, and 1mg/kg, respectively. About 2-3 minutes later, endotracheal intubation was performed, and sevoflurane 0.6-1MAC was inhaled during the operation. After that, cisatracurium and propofol were placed into injection pumps, respectively, and sustained intravenous pumping was performed with the doses of 0.12mg/kg/h, 80-150ug/kg/min, and 5-8mg/kg/h, respectively, to maintain anesthesia.

2.2.2 Observation Group

The observation group received general anesthesia combined with continuous epidural anesthesia. The observation group was given the same general anesthesia procedure as the control group. Continuous epidural anesthesia is performed as follows: T8-T9 interbody space was used as the puncture point, and a tube was placed at the head end of 3cm. 3ml 2% lidocaine (national drug approval number H45020823, Guilin Nanhua Pharmaceutical Co., LTD., 20ml:0.4g) was injected into the patient. T4-T12 was the anesthetic plane at the initial test, and 5ml 2% lidocaine was injected into the patient epidural. The observation group was given the same operation according to the induction method performed in the control group, and the combination anesthesia with intravenous aspiration was maintained. The observation group was given the same operation according to the method and drug performed in the control group, and the dosage was adjusted according to hemodynamics.

2.3 Evaluation criteria

The changes of HR, SBP, DBP, MAP, SPO2, GLU, COR, D-D, Fbg levels before and after anesthesia were investigated in the two groups before and after anesthesia, 1h after anesthesia, 24h after surgery, and the incidence of deep vein thrombosis in lower limbs was observed one week after surgery [5].

2.4 Statistical Methods

SPSS 25.0 statistical software was used for data analysis, measurement data were expressed as mean ± standard deviation, and a comparison between the two groups was conducted by t-test. χ^2 test was used for comparison between groups, and $P < 0.05$ was considered statistically significant.

3. Results

3.1 Changes of HR, blood pressure, MAP and SPO2 in two groups at different time periods

There was no significant difference in all indexes before anesthesia ($p > 0.05$). HR, SBP, MAP and DBP were significantly decreased in the observation group 1h after anesthesia, after surgery and 24h after surgery compared with the control group ($p < 0.05$), but SPO2 was not significantly different ($p > 0.05$), as shown in Table 1.

Table 1. Changes of HR, blood pressure, MAP and SPO2 in two groups at different time periods

group	HR				SBP				DBP			
	preanesthesia	1h after anesthesia	After the operation	24h after surgery	preanesthesia	1h after anesthesia	After the operation	24h after surgery	preanesthesia	1h after anesthesia	After the operation	24h after surgery
Control group	89.13±8.15	89.63±7.53	86.36±4.29	79.20±8.22	116.48±9.07	126.95±10.44	135.27±10.95	121.17±9.05	82.33±8.76	96.33±9.15	99.65±10.14	78.59±7.97
Observation group	88.92±9.22	81.25±3.27	80.32±3.06	71.07±8.48	116.52±10.09	120.37±5.82	128.89±9.88	100.25±8.75	84.28±5.59	87.64±6.85	91.29±8.75	70.15±8.25
t	0.077	4.579	5.141	3.083	0.014	2.468	2.249	7.446	0.842	3.409	2.793	3.292
P	>0.05	<0.05	<0.05	<0.05	>0.05	<0.05	<0.05	<0.05	>0.05	<0.05	<0.05	<0.05

Table 1. for the changes of HR, blood pressure, MAP and SPO2 in the two groups at different time periods (continued)

group	MAP				SPO2			
	preanesthesia	1h after anesthesia	After the operation	24h after surgery	preanesthesia	1h after anesthesia	After the operation	24h after surgery
Control group	95.72±8.86	101.24±8.95	112.64±9.54	90.82±6.33	92.42±6.82	93.27±6.77	93.77±6.54	92.52±4.07
Observation group	95.69±7.74	90.65±9.13	105.53±8.47	80.19±9.42	92.33±5.65	93.22±6.70	93.82±6.49	92.48±5.09
t	0.013	3.713	2.496	4.199	0.047	0.025	0.025	0.029
p	>0.05	<0.05	<0.05	<0.05	>0.05	>0.05	>0.05	>0.05

3.2 Changes of GLU, COR, D-D and Fbg levels in the two groups at different anesthesia periods

Before anesthesia, the levels of GLU, COR, D-D and Fbg of patients were significantly decreased, and the decreased levels in the observation group were more significant than those in the control group ($p < 0.05$), as shown in Table 2.

Table 2. Changes of GLU, COR, D-D and Fbg levels in the two groups at different periods of anesthesia

group	GLU		COR		D-D		Fbg	
	preanesthesia	Anesthesia 24h	preanesthesia	Anesthesia 24h	preanesthesia	Anesthesia 24h	preanesthesia	Anesthesia 24h
Control group	5.41±0.85	6.52±1.05	388.55±14.92	423.27±17.85	0.41±0.08	0.50±0.12	373.18±74.22	387.95±40.31
Observation group	5.36±0.63	5.82±0.88	388.66±15.10	395.15±12.27	0.42±0.09	0.33±0.07	373.46±75.15	331.33±48.25
t	0.172	2.310	0.025	5.813	0.842	6.069	0.013	4.031
p	>0.05	<0.05	>0.05	<0.05	>0.05	<0.05	>0.05	<0.05

3.3 Incidence of lower extremity deep vein thrombosis 1 week after operation in both groups

In the observation group, the incidence of lower extremity deep vein thrombosis was 6.67% (2/30) one week after surgery, which was less than that of the control group (33.33% (10/30) ($\chi^2=7.039$, $p<0.05$).

4. Discussion

In recent years, the number of patients with stomach cancer in our country has continued to increase. Currently, many doctors have adopted radical gastrectomy for the treatment of stomach cancer, which can obtain good therapeutic effects. However, through follow-up observation of patients, radical gastrectomy will destroy the normal coagulation regulation mechanism of patients, and easily lead to venous thrombosis [6]. It will also cause the hemodynamic index measures of patients to fluctuate greatly. In this case, it is necessary to implement good surgical anesthesia to stabilize the hemodynamic indexes and reduce or even avoid the formation of deep venous thrombosis of the lower extremities. According to the results of this study, after anesthesia, the levels of HR, SBP, DBP, MAP, GLU, COR, D-D, and Fbg of patients were significantly reduced, and the reduction levels of the experimental group were more significant. It can be seen that combined anesthesia can effectively stabilize the hemodynamic indexes of patients, improve the blood flow of large vessels, and make blood vessels dilated. Reduce the stress of operation and have a good effect. According to relevant studies, epidural anesthesia can effectively change the clotting state, thus reducing the incidence of thrombotic diseases. The results of this study are similar to those of epidural anesthesia, indicating that combined anesthesia can effectively reduce the incidence of deep venous thrombosis of the lower extremities.

5. Conclusion

In summary, general anesthesia combined with continuous epidural anesthesia can stabilize the hemodynamics of patients and significantly reduce the incidence of deep venous thrombosis of the lower extremities.

6. Ethics

All patients in this study were aware of the specific content of the study, and the signing of relevant informed consent was improved. The study was reviewed and approved by the ethics committee of the hospital.

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