Application of Nerve Block Guided by Ultrasound in Anesthesia Teaching

Youli He*, Chunlian Chu

Heze Medical College, Heze, 274000, China

*Corresponding Author

Keywords: Anesthesia, Ultrasound Guidance, Nerve Block, Teaching, Satisfaction

Abstract: Objective: to Analyze the Application Effect of "Ultrasound Location Practice" Mode in Nerve Block Anesthesia Teaching under the Guidance of Ultrasound. Methods: 52 Interns in Anesthesiology Department of Our Hospital from January to December 2019 Were Selected as the Objects of Analysis. They Were Divided into Reference Group (26 Cases) and Research Group (26 Cases) According to the Way of Random Number Table. the Subjects in the Reference Group Received the Conventional Mode of Teaching, While the Subjects in the Research Group Received the Mode of "Ultrasound Positioning Practice". the Two Groups Were Observed to Receive Different Teaching Methods Before and after the Theoretical Assessment Results and Practical Assessment Results, and the Satisfaction of the Two Groups of Objects Were Compared. Results: the Theoretical and Assessment Scores of the Subjects in the Study Group Were Higher Than Those in the Reference Group, and the Satisfaction Level of the Study Group Was Also Higher. There Was a Significant Difference after the Analysis of the Specific Data ($P < 0.05$). Conclusion: for the Teaching Work of Nerve Block under the Guidance of Ultrasound, the Teaching Effect of "Ultrasound Location Practice" is Better, and the Mode is Worth Popularizing.

1. Introduction

In anesthesia teaching, nerve block is a key and basic operation method, and it is also a difficulty and key point in Anesthesia Teaching [1]. In clinical anesthesia, nerve block technology can provide sufficient analgesia with high safety, low cost, not easy to induce adverse reactions, etc., which has an important effect on postoperative rehabilitation of patients [2]. However, in the routine anesthesia teaching, the teacher mainly guides the students to carry out blind puncture, which leads to the students' inability to grasp the anatomical structure, etc., so that the puncture can not be carried out reasonably, which is very adverse to the quality of Anesthesia Teaching [3-4]. Based on this background, our hospital implements two modes in anesthesia teaching, as follows:

2. Data and Methods

2.1 General Information

From January to December 2019, 52 cases were selected from the anesthesiology department of our hospital for this analysis. The content of this study is in line with the review of relevant departments of our hospital, and the consent of the participants was obtained. According to the random number table, they were divided into the reference group (26 cases) and the study group (26 cases). In the reference group, there were 14 males and 12 females, aged 18-23 years; in the study group, there were 15 males and 11 females, aged 20-24 years. There was no difference between the two groups ($P > 0.05$).

2.2 Method

The subjects in the reference group were taught in the conventional way. The teachers first explained the theoretical knowledge, then guided the interns to observe and practice, and finally assessed. The research group needs to accept the teaching of "ultrasound location practice". The main methods are as follows:

First of all, the instructor needs to explain the anatomy structure and control area of the sciatic nerve, demonstrate the shape of the sciatic nerve, explain the principle and corresponding structure of ultrasound to the intern, demonstrate the operation method of ultrasound probe, and emphasize the advantages of ultrasound technology to the intern, such as safety, low cost, wide scanning angle, real-time image Like things are going well. In the routine anesthesia teaching, the teacher mainly instructs the students to carry out blind puncture, which leads to the students' inability to grasp the anatomical structure and so on, which is not good for the quality of Anesthesia Teaching [5-6]. After that, it is necessary to explain the operation method of ultrasound in detail, make it fully familiar with the structure and function of ultrasound equipment, master the model of probe, etc., and learn to change the angle to obtain the best image. Teachers need to guide the interns to be familiar with the anatomical signs of ultrasonic guidance, let them watch the operation of teachers, and make a reasonable demonstration. The instructor needs to guide the interns to perform the operation of sciatic nerve block under the guidance of ultrasound, reasonably place the patient's puncture position and the position of the ultrasound instrument, after finding the patient's sciatic nerve, reasonably carry out the puncture, adjust the direction of the puncture needle, observe the development, inject the anesthetic after no blood is drawn back, and observe the diffusion of the anesthetic around the nerve.

2.3 Clinical Observation Index

The assessment results of two groups of trainees before and after receiving different modes of teaching, including theoretical assessment and practical operation assessment results. Among them, the theoretical assessment score is 40, and the practical operation assessment score is 60. The higher the score, the better the assessment.

In addition, analyze the specific satisfaction of the two groups after receiving different teaching methods, choose self-made satisfaction questionnaire for analysis, and let them score by self-evaluation. If the score is less than 60, it is dissatisfied; if the score is 61-85, it is relatively satisfied; if the score is more than 85, it is very satisfied; the total satisfaction rate is expressed as $\frac{\text{More satisfied + very satisfied}}{n} \times 100\%$.

2.4 Statistical Treatment

The data in the study should be processed in spss23.0 software package. The counting data is expressed in n (%), chi square x2 test, measurement data is expressed in (± s), independent sample t processing is performed, and $P < 0.05$ is the significance of the difference.

3. Results

3.1 Comparison of Theoretical Achievements between the Two Groups

Table 1 Comparison of Theoretical Scores of Two Groups Before and after Teaching($\bar{x} \pm s$)

group	Number of cases	Before teaching	After teaching
	n	Score	Score
Reference group	26	26.3±3.8	32.1±1.4
Research Group	26	26.1±3.7	39.6±0.3
t	--	0.192	26.709
P	--	0.848>0.05	0.000<0.05

3.2 Comparison of Practical Achievements between the Two Groups

Table 2 Comparison of Practical Assessment Results of Two Groups Before and after Teaching($\bar{x} \pm s$)

group	Number of cases	Before teaching	After teaching
	n	Score	Score
Reference group	26	40.3±1.8	47.1±2.4
Research Group	26	40.1±1.9	58.6±0.9
t	--	0.389	22.877
P	--	0.699>0.05	0.000<0.05

3.3 Comparison of Satisfaction between the Two Groups

Table 3 Observation on The Specific Satisfaction of the Two Groups with Different Teaching Methods n (%)

group	Number of cases	Dissatisfied	More satisfactory	Very satisfied	Total satisfaction rate
	n	n(%)	n(%)	n(%)	n(%)
Reference group	26	9(34.6)	8(30.8)	9(34.6)	17(65.4)
Research Group	26	1(3.8)	11(42.3)	14(53.9)	25(96.2)
X2	--	--	--	--	7.924
P	--	--	--	--	0.005<0.05

4. Discussion

In anesthesia teaching, we choose the teaching method of “ultrasound location practice” for nerve block anesthesia under the guidance of ultrasound. Compared with the conventional teaching mode, this kind of teaching mode can make the anatomical structure become more visualized. Ultrasonic imaging can display the peripheral nerves of patients well, and also enable them to grasp the characteristics of adjacent tissues, and observe the guidance of the needle in real time, observe the position of the needle tip, and avoid the more sensitive anatomical structure. In this way, students can make full use of ultrasound technology to grasp the situation of nerve boundary in the process of practice, and make full observation of the target nerve block to avoid the damage of nerve and blood vessels and other tissues of patients, so as to avoid complications after anesthesia, so as to shorten the length of stay of patients.

Compared with the conventional teaching, the “ultrasound location practice” teaching method can also identify the risk of anatomical variation, which can help the operator to change the anesthesia block mode in time. And to demonstrate the shape of the sciatic nerve, to explain the principle and corresponding structure of ultrasound to the interns, to demonstrate the operation method of ultrasound probe, and to emphasize the advantages of ultrasound technology to the interns, such as safety, low cost, wide scanning angle, good real-time image, etc. And to demonstrate the shape of the sciatic nerve, to explain the principle and corresponding structure of ultrasound to the interns, to demonstrate the operation method of ultrasound probe, and to emphasize the advantages of ultrasound technology to the interns, such as safety, low cost, wide scanning angle, good real-time image, etc. After that, it is necessary to explain the operation method of ultrasound in detail, make it fully familiar with the structure and function of ultrasound equipment, master the model of probe, etc., and learn to change the angle to obtain the best image. Teachers need to guide the interns to be familiar with the anatomical signs of ultrasonic guidance, let them watch the operation of teachers, and make a reasonable demonstration. The instructor needs to guide the interns to perform the operation of sciatic nerve block under the guidance of ultrasound, reasonably place the patient's puncture position and the position of the ultrasound instrument, after finding the patient's sciatic nerve, reasonably carry out the puncture, adjust the direction of the puncture needle, observe the development, inject the anesthetic after no blood is drawn back, observe the diffusion of the anesthetic around the nerve, etc., and carry out the operation by using ultrasound After the location analysis, it can avoid the situation of entering the blood vessel by mistake. Ultrasound can show the large blood vessels of patients clearly, and avoid the damage of blood vessels. However, the traditional way may lead to the situation of anesthesia drugs injected into the arteries or veins of patients, thus inducing adverse events. What's more, this teaching method can improve the quality of anesthesia. Ultrasound-guided block can provide faster onset time, also can ensure the postoperative analgesia effect of patients, and avoid the large demand of local anesthesia drugs, and the diffusion and visualization of direct local anesthesia will be good, can use smaller volume of anesthesia drugs for anesthesia, and ensure the better block position of patients. Teachers need to guide the interns to be familiar with the anatomical signs of ultrasonic guidance, let them watch the operation of teachers, and make a reasonable demonstration. The instructor needs to guide the interns to perform the operation of sciatic nerve block under the

guidance of ultrasound, reasonably place the patient's puncture position and the position of the ultrasound instrument, find the patient's sciatic nerve, reasonably carry out the puncture, adjust the direction of the puncture needle, observe the development, draw back no blood, inject the anesthetic, and observe the spread of the anesthetic around the nerve

In this study, the two groups of interns received different modes of anesthesia teaching respectively. After comparing the relevant data, the students who received the “ultrasound location practice” teaching got better performance and higher satisfaction.

5. Conclusion

Aiming at the anesthesia teaching work, in the nerve block teaching under the guidance of ultrasound, the effect of carrying out “ultrasound location practice” teaching is better, which can improve the examination results, and significantly improve the satisfaction of teaching. The program can be applied in the anesthesia teaching.

References

[1] Lu Kejian, Gu Chunlin, Liang Shucong, et al. (2019). Application of ultrasonic simulation teaching in standardized training and assessment system for anesthesiologists. China continuing medical education, vol. 11, no. 32, pp. 93-95.

[2] Ma Yanhui, Wu Jie, Jia bin, et al. (2019). Application of simulation training combined with PBL teaching method in ultrasound-guided nerve block teaching for anesthesiologists. Beijing Medical Journal, vol. 41, no. 08, pp. 751-753.

[3] Yi Minhui, LAN Fei, Feng Kunpeng, fan long, et al. (2019). Application of ultrasound-guided nerve block in Anesthesia Teaching. Beijing Medical Journal, vol. 41, no. 08, pp. 757-758.

[4] Wang Shaoheng, Hu Yanting, Guan Lei. (2019). Experience of ultrasound-guided regional block teaching in standardized training of anesthesiologists. Continuing medical education, vol. 33, no. 07, pp. 38-40.

[5] Yan Dong, Bai Ping. (2018). Application of ultrasound-guided axillary brachial plexus block in Clinical Anesthesia Teaching. Scientific consultation (Science and technology · Management), no. 03, pp. 33-34.

[6] Jiang zhuozun, Zeng Lian. (2015). Application of axillary brachial plexus block guided by ultrasound in Clinical Anesthesia Teaching. China continuing medical education, vol. 7, no. 14, pp. 6.