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EFFECTIVENESS OF SMALL DOSE OF INTERSCALENE BRACHIAL PLEXUS BLOCK ON PAIN AFTER SURGERY OF SHOULDER

[1]Dr Muhammad Amin, [2]Dr Sadaf Zahid, [3]Dr Abid Ali

[1]Medical Officer, RHC Zahir Pir, Rahim Yar Khan, [2]Islamabad Medical and Dental College, Islamabad, [3]D.G. Khan Medical College D.G. Khan.

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Abstract:

Objective: *The aim of this research work is to assess the effectiveness of a low dose of Inter-Scalene Brachial Plexus Block on pain after surgery of shoulder. Better control of the pain after surgery plays very important role in the result of the open surgery of shoulder which provides in time rehabilitation and steps up the operational recuperation.*

Methodology: *Total 50 patients who were undergoing for the elective surgery of shoulder were the part of this research work. We randomly separated the patients into 2 groups of 25 patients in each. We provided morphine sulfate to the patients of one group and for the patients of other group, we provided a low dose of the Inter-Scalene Brachial Plexus Block. Then the evaluation of the severity of the pain, scores for the satisfaction of the patient and parameters of the recovery after anesthesia carried out.*

Results: *The scores for the patient's satisfaction were present with improvement in the group of Inter-Scalene Brachial Plexus Block. Agitation in the patients of the group of inter-scalene brachial plexus block was significantly lower in comparison with the patients of other group. The scores of the severity of pain were significantly low with the use of inter-scalene brachial plexus block. There were no side effects of the inter-scalene brachial plexus block on the parameters of recovery after anesthesia.*

Conclusion: *Small dose of the inter-scalene brachial plexus block is an effective technique for the reduction of the pain after surgery with no impact on the recovery parameters after the anesthesia as well as the stay of the patients in the hospital after shoulder surgery.*

Keywords: *Inter-Scalene Brachial Plexus Block, Anesthesia, Surgery, Morphine, Recuperation, Rehabilitation.*

Corresponding author:

Dr. Muhammad Amin,

Medical Officer, RHC Zahir Pir, Rahim Yar Khan.

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INTRODUCTION:

Greater than 38.0% patients experience pain of severe nature after surgery. Open surgery for shoulder has association with the severe nature of pain after surgical intervention particularly within 48 hours. The use of opioid for the control of the pain after surgery has very limited value due the adverse impacts of the opioids. The most effective method to control the pain is the inter-scalene nerve block. Only one injection can provide analgesia of about 12 to 15 hours. Inter-Scalene Brachial Plexus Block is very effective and secure method for the relief from pain after surgery of shoulder. After the surgical intervention, there is good pain control, satisfaction of the patient is high and occurrence of the side effects is very low with the Inter-Scalene Brachial Plexus Block. Klein S.M displayed in the year of 2000 that advantage of inter-scalene brachial plexus blocks last for greater than 48 hours in the admitted patients.

Nonstop inter-scalene nerve block is the ideal standard for analgesia after surgery of shoulder by many specialists, due to the high effectiveness of the control of pain. The placement of the catheter for inter-scalene brachial plexus block is the serious challenge to avoid the outer jugular vein, inclusion of site for catheter and superficial placement which can cause the dislodgement of the catheter. In this research work, we assessed the effectiveness of small dose of inter-scalene nerve block for the control of pain after surgical intervention and recovery aspects of the patients who are undergoing open surgery of the shoulder.

METHODOLOGY:

The ethical committee of the Shaikh Zayed Medical College and Hospital, Rahim Yar Khan gave the approval to conduct this research work. We took the consent from all 50 patients who were undergoing open surgery of shoulder in the duration of this research work. All the patients suffering from any other complication were not the part of this research work. We separated the patients into two groups of 25 patients. 20 patients received General Anesthesia for shoulder surgery and obtained morphine sulfate five milligram for the pain after surgery, other 25 patients obtained General Anesthesia with same medicine and then inter-scalene brachial plexus block for the control of the pain after surgery. We performed all the nerve blocks under the guidance of the skilled anesthesiologist with the support of a nerve stimulator with the utilization of special needles.

We set the initial stimulating current's intensity to deliver one milli-ampere and then steadily reduced to 0.50 mA after proper response from motor at the muscle of deltoid and or biceps was under observation. Then the injection of the solution of study (20.0 ml lidocaine 1.50%) injected gradually with many negative blood aspirations. The detection of the start of the block carried out with the twitch response's deletion to nerve stimulator and symptoms of the neck-sympathetic blockade of ganglion in the temperature of skin, blood flow of skin and not equal size of pupil. After that we shifted the patients to the after anesthesia care unit and assessed by the charge nurse there who was unaware about this research work.

We recorded the data about demography, severity of pain, agitation, and satisfaction of the patient. Visual analogue scale (VAS) was in use to measure the intensity of the pain. We assessed the satisfaction of the patient. SPSS V.15 was in use for the statistical analysis of the collected information. Averages and percentages were in use for the expression of the data. Kolmogorov-Smirnov method was in use for the distribution of the data. Chi square method was in use for the comparison of various variables.

RESULTS:

The traits of demography of both patients are present in Table-1. As presented, patients of both groups were present with no important disparity in age, gender and surgery duration. In the group of the patients with General Anesthesia, the severity of the pain had no association with the age of the patient as well as surgery duration. Agitation was also present with no important association with the gender and age of the patient. In the group of General Anesthesia plus Inter-Scalene Brachial Plexus Block, there was no strong association between the severity of the pain with the age and surgery duration of the patient. There was no relationship between agitation and gender and age of the patient.

Table-I: Demographic Data Of Patients In Two Groups

	Age	Sex		Duration of operation
	Mean ±SD	Male	Female	Mean ±SD
General Anesthesia	42.02 ±14.39	17	8	141.89 ±63.61
General Anesthesia + Interscalene Brachial Plexus Block	35.85±131.15	20	5	119.89 ±46.91
P value	0.161	0.333		0.17

Between both groups, we found no important disparity regarding the duration of the recovery of the patient. In the group of General Anesthesia, 7 patients were present with score 1 of the satisfaction of patient but in the group of General Anesthesia plus inter-scalene brachial plexus block, twenty-three patients were present with score 1 of the satisfaction of patient which is much important significantly as presented in Table-2. The scores of pain after surgery in the group of General Anesthesia are significantly higher than the patients of the group of General Anesthesia plus inter-scalene brachial plexus block as presented in Table-2. Agitation in the patients of General Anesthesia group is high in comparison with the group of the General Anesthesia plus inter-scalene brachial plexus block (Table-2).

Table-II: Characteristics Of Patients In Two Groups During PACU Stay

		General Anesthesia	General Anesthesia + Interscalene Brachial Plexus Block	P value
Patient's satisfaction	Satisfied	5.00	21.00	<0.001
	Unsatisfied	16.00	2.00	
Pain (VAS)	Mild(0-4)	9.00	15.00	0.001
	Moderate(5-7)	2.00	5.00	
	Severe(8-10)	8.00	1.00	
Agitation		12.00	5.00	0.007
Duration of PACU stay		35.86	46.24	0.106
Eyes opening		8.73	15.11	0.094
Reply to verbal stimulation		15.06	25.63	0.01

DISCUSSION:

After the major open surgeries of shoulder, there is an occurrence of the moderate to extreme pain in first two days and pain control is necessary for better outcome. inter-scalene brachial plexus block is the best method with very less amount of the side effects. Singelyn F displayed that one shot inter-scalene block offers ideal control of the pain after the surgery of shoulder. We performed this treatment to reduce the pain in our patients and early start of the physiotherapy. Due to the problems of catheter and probable toxicity of local anesthetic products, we conducted this very block with very small dose of local anesthesia with one shot after the completion of the surgical intervention. Borgeat in some research works showed that low amount of the local anesthetics has the ability to suppress the pain after surgery. But in this research work, we displayed that very low concentration of the local anesthetic can be in use for the inter-scalene brachial plexus block.

Rosenberg and Hoinenonen displayed that in very low amounts, rupivacaine is able to create more potent block in comparison with the bupivacaine. There is recommendation of the continuous inter-scalene brachial plexus block for the open surgeries of shoulder by many authors but the rate of failure in 10.0% to 23.0% which is very high, so they also gave the recommendation for the other methods as ultrasound. Research works of the past displayed that continuous inter-scalene brachial plexus block with a very small dose cannot be used for the patients with compromise to respiration. This current research work stated that low doses of the inter-scalene brachial plexus block decreased the pain and scores of agitation of patients after the surgeries of shoulder,

so improved the scores of satisfaction of the patients significantly. Riazi S displayed that the utilization of the small volume SBPB by ultrasound guiding has association with very few complications of respiration and other systems with no alterations in the analgesia after surgery in comparison with the ideal proportions which is comparable to many other research works.

CONCLUSION:

The findings of this research work displayed that the management of the low inter-scalene brachial plexus block dose gives a better control of the pain just after the surgical intervention with no effect on the patients, parameters of recovery particularly among the patients with compromise to respiration. Due to the induction of relief from pain, we recommend the research works for future with other long-acting anesthetics for the improvement of the wellbeing of the patient.

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