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"FFECTIVENESS OF FEMORAL NERVE BLOCK FOR POSITIONING DURING REGIONAL ANAESTHESIA IN PATIENTS WITH FEMUR FRACTURE"

Anaesthesiology

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ABSTRACT

BACKGROUND: This study was done to evaluate the usefulness of femoral nerve block (FNB) for positioning during regional anaesthesia in patients with femur fracture.

METHOD: 80 patients between the age group of 30 to 80 years, of ASA grade I, II and III, scheduled for surgery of femur fracture were evaluated in 2 groups. Group FNB received femoral nerve block with 15ml of 1.5% lignocaine and Group. NB was not given any block. Assessment of pain before and after femoral nerve block was done by VAS score along with assessment of performance time and quality of patient's positioning during regional anaesthesia.

RESULTS: 60 % of patients receiving FNB showed the VAS score of 1.4 ± 0.498 while 40% had VAS score of 4.03 ± 0.32 in Group NB and good pain relief for positioning for combined spinal epidural (CSE) in Group FNB and lesser performance time (16.2 ± 2.7 min) in comparison to patients not receiving nerve block it was (19.23 ± 2.674 min).The data analyzes for quality of positioning observed in FNB group 2.10 ± 0.308, While in NB group it was1.13 ± 0.346

CONCLUSION: Femoral nerve block is not only reducing pain during procedure but also decreases the performance time and gives better quality of positioning during regional anaesthesia for patients with fracture femur.

KEYWORDS

Femoral Nerve Block, positioning, regional anaesthesia, femur fracture.

INTRODUCTION

Pain is an unpleasant sensory and emotional experience associated with actual or potential tissue damage. Fracture femur is a painful bone injury usually occurs in elderly patients leading to considerable morbidity. Any overriding of fracture end is extremely painful and needs immediate attention and pain relief in the form of either systemic analgesics or femoral nerve block.[1] Patients with fracture of the femur present special problems to the anesthesiologist. Correct positioning during central neuraxial block is the prerequisite for a successful procedure.[2] Limb immobility and extreme pain are the deterrents for an ideal positioning for this procedure.[3] Thus, adequate pain relief in these patients not only increases the comfort but it also has been shown to improve positioning for regional anaesthesia. femoral nerve block (FNB) is a safe and effective method. These methods can be carried out during prehospital care, emergency department (ED) and in the preoperative setting.[4,5]

MATERIAL AND METHODS

After the approval from institutional ethics committee and informed written consent was taken from all patients. The study was conducted in Rajendra Institute of medical science Ranchi .80 patients of both sexes with age group between 30 to 80 years of ASA I, II and III scheduled for elective surgeries of fracture femur were included. We excluded the patients with coagulation disorders, mental disorders, patients who are uncooperative, hypersensitive to local anesthetics, local skin infections, patients on chronic analgesic treatment.

The patients were randomly divided into two groups of 40 each;
Group FNB: Femoral Nerve Block
Group NB: No Femoral Nerve block

All patients with group FNB were explained the procedure of block as well as explained the scoring of VAS (Visual analogue score) i.e. 0 - No Pain to 10 –worst Pain.[6] Intravenous access was obtained with 18 no. cannula and standard monitoring done i.e. ECG,NIBP, SPO2. Premedication with IV ondansetron 4mg and all the patients were preloaded with 10-15ml/kg of Ringer's Lactate solution. Group FNB patients received femoral nerve block using peripheral nerve locator. The contractions of quadriceps femoris muscle with the cephalic movement at patella with 0.4 mA current were elicitated. 15ml of 1.5% lignocaine was injected slowly after aspiration and confirmation of correct placement. Group NB did not receive any block for positioning of regional block. Assessment of pain before and after the FNB with the help of VAS score was noted. Performance time defined as the time from the beginning of patient positioning up to the end of regional technique was measured. The quality of patient's positioning during CSE (combined spinal epidural) was graded according to this scale (1-satisfactory, 2-good, 3-optimal) and was recorded. The patient's acceptance was recorded 24 hours after the surgery as average/good/optimal. After the CSE block level of sensory block was tested with pin prick every 1 min for 20 min and motor block was assessed by Bromage scale. The haemodynamic monitoring was done during the first 20 mins during the CSE technique and throughout the procedure till the patient was shifted to post-operative room. Patient's acceptance was noted 24 hours post operatively and graded as average/good/optimal.

OBSERVATIONS AND RESULTS

Demographic data was not significant between the groups. Sex distribution and ASA grading were comparable in both the groups and statistically not significant. In our study, VAS values for positioning in FNB group 1.4 ± 0.498 as compared to NB group as 4.03 ± 0.32. The quality of patient positioning was 2.10 ± 0.308 in FNB while 1.130 ± 0.346 in NB group which were statistically highly significant. The time required for CSE was 16.23 ± 2.788 (min) in group FNB while in NB group it was 19.23 ± 2.674(min) and was statistically significant. 24 hours post operatively Patient's acceptance was noted by simple grading as described in materials and methods and was observed that 80% of the subjects in group FNB had good pain relief after the block for positioning but other group had painful experience for positioning. The haemodynamic parameter monitoring was done throughout the procedure and was stable in both the study groups. The respiratory parameters in the form of SpO2 and respiratory rate were monitored and no significant abnormality observed. None of our patients had any systemic complications related to drugs/procedure.

Student's t-test, Chi-square test were used as appropriate to compare the two groups. Results were expressed as mean and standard deviation and analyzed using SPSS Software. P<0.05 was considered as statistically significant.

Table1. Statistical comparison between FNB and NB group

Parameters	Group FNB Mean ± S.D	Group NB Mean ± S.D	P - value
Positioning VAS	1.4 ± 0.498	4.03±0.32	0.0001
Quality of patient positioning	2.10±0.308	1.13 ± 0.346	0.0001
Time required for CSE(minutes)	16.23 ± 2.788	19.23±2.674	0.0001

Table2. Distribution of patient's acceptance

	Grade	Group FNB No of patients	Group NB No of patients
No Effect	0	0	40
Average	1	4	0
Good	2	32	0
Optimal	3	4	0

DISCUSSION

This study shows that femoral nerve block is effective in facilitating sitting position for combined spinal epidural (CSE) anaesthesia technique in patients with femur fracture. Fracture femur is a significant cause of morbidity in elderly patients. However, any movement at the fracture site leads to severe pain[7]. Thus, providing adequate pain relief with femoral nerve block for positioning during regional anaesthesia and reduces the time required for this technique. Femoral nerve block has been successfully used in adults for analgesia in pre hospital care or in emergency department, in patients with femur fracture. The fascia iliaca compartment block which produced by femoral nerve block and lateral femoral cutaneous nerve block provided good pain relief for the patients with femur neck fracture used in pre-hospital care.[8] We studied the analgesic effect of femoral nerve block to ensure proper positioning for regional techniques of CSE. Sandby Thomus reported that most frequently used agents were midazolam, ketamine and propofol; while alternative agents were fentanyl, remifentanyl, morphine, N2O and sevoflurane; Whereas nerve blocks were used very rarely.[9] But these above pharmacological interventions do have their limitations as most of the patients are elderly with co-morbid conditions**.** Parker *et al* reported that femoral nerve block reduced the pain score and analgesic requirements.[10]

Sia *et al*. compared IV fentanyl with femoral nerve block with lidocaine. The VAS score values were lower in femoral nerve block as against for fentanyl.[11] Similarly, MJ Yun *et al***.** compared IV Alfentanil with fascia iliaca block using lidocaine. VAS score during placement in lateral decubitus position were lower in the block than in alfentanil group.

In our study, we have compared, femoral nerve block with control group of patients who did not receive block for positioning during CSE in fracture femur cases avoiding any major complications like nerve injuries or vascular puncture. We observed that the VAS score for positioning in two groups were statistically significant (1.4 ± 0.498 and 4.03 ± 0.32 in FNB and NB groups respectively). Score for quality of patient positioning 2.10 ± 0.308 and 1.13 ± 0.346 in FNB and NB group respectively, was statistically significant. The time required for the technique was 16.23 ± 2.788 min. in FNB group as compared to 19.23 ± 2.674 min.in NB group and was statistically significant. It was observed that 24 hours post-operatively the patients were asked regarding the acceptance of the technique and it was seen that 32 patients had grade 2 (good) acceptance while 4 patients had grade 1(average) and grade 4 (optimal) in group FNB. But in NB group all had severe pain during positioning.

CONCLUSION

We concluded that femoral nerve block is effective and easy technique in reducing pain during the CSE technique. The performance time is decreases and it provides better quality of positioning. We avoid the systemic complications of analgesics especially in elderly patients by giving peripheral nerve block. The block can be administered safely in emergency department setting and can provide effective pain relief.

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