Original Research Article

NEONATAL OUTCOME USING KETAMINE AS A PRE SPINAL AGENT IN CAESAREAN SECTION - A CASE CONTROL HOSPITAL BASED STUDY

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A B S T R A C T

Background: Ketamine is used mainly for induction and maintenance of anesthesia-producing dissociative anesthesia. Studies have shown that even with known cases of intrauterine asphyxia, excellent APGAR scores have been achieved in neonates. **Objective:** To study fetal outcomes using Ketamine as a pre-spinal agent in caesarian sections.

Material and Methods: 80 full-term women who were undergoing caesarian section were divided into two groups A and B. A Group (receiving Ketamine) and B Group (receiving Placebo) by using a basic randomization technique of consecutive numbers— the prospective Randomized case-control trial. The patients falling into Odd sequencing numbers were categorized under A Group and received low dose Ketamine IV 0.25mg/kg diluted to 10ml with sterile water while even sequencing numbered were B Group and received placebo. At the delivery, APGAR scores of the newborn were assessed at 1st and 5th minutes and the time of onset of breastfeeding was also calculated.

Results: APGAR scoring at 1st minute in the case and control group were 7.20 and 6.875, the t-test had a value < 0.05 which was significant. The 5th minute APGAR scoring on the other hand was 9 and 8.5 for cases and controls respectively which had a test value of <0.05 which was significant. The time of onset of breastfeeding in the case and control group were 98.125 min and 113.625 min respectively which had a considerable value <0.05.

Conclusion: Ketamine given to the mother as a prespinal anesthetic does not show a significant improvement in the 1st and 5th minute APGAR scoring and ease of induction of breastfeeding.

Key Words: Ketamine, pre-spinal, neonatal outcome, cesarean section.

INTRODUCTION

Ketamine, an anesthetic agent used intravenous, induces so-called "dissociative anesthesia" – profound analgesia1, immobility amnesia with light sleep, and feeling of dissociation from one's body.[2,4] The primary site of action is the cortical and subcortical areas.

Studies have shown that even with known cases of intrauterine asphyxia, excellent APGAR scores have been achieved in neonates,[11] spinal Ketamine is also known to reduce shivering during spinal anesthesia.[14]

Insufficient pain relief post caesarian section birth may reduce the mother's ability to favorably care for the baby in the post operative period and interfere with early maternal – baby bonding.[13] Mothers ability to breast feed may hamper the effectiveness of initiating the breastfeeding. The pain relief need to be effective at the same time safe for the mother and baby as well so as not to interfere with mobility of mother, her ability to breast feed and at the same time no adverse effect on the newborn.

Pre-emptive analgesia is a treatment initiated before and is operational during the surgical procedure to reduce the physiological consequences of nociceptive transmission provoked by the procedure.[11,13] Due to evidence showing a nociceptive pathway protective effect, pre-emptive

ketamine anesthesia could be more effective after surgery O. Ketamine is known to cross the placenta but is significant only above dosages above 1.5mg/kg 3. It can change beat-to-beat variability without changing fetal acid/base status.[8]

There are only very few international studies demonstrating neonatal outcomes in using Ketamine as a pre-spinal agent in LSCS, this study will be the first of its kind in pediatrics.

MATERIALS AND METHODS

A Randomized Case Control study. 80 full-term women who were undergoing caesarian section were divided into two groups A and B. The A Group (receiving Ketamine) and B Group (receiving Placebo) by using a basic randomization technique of consecutive numbers— the prospective Randomized case-control trial. The patients falling into odd sequencing numbers were categorized under A Group and received low dose Ketamine IV 0.25mg/kg diluted to 10ml with sterile water while even sequencing numbered were B Group and received placebo.

The patient, prior to arrival in the theatre, had their vital observations (Heart rate, Blood pressure and oxygen saturations documented. At the delivery, APGAR scores of the newborn were assessed at 1st and 5th minutes and the time of onset of breastfeeding was also calculated

Statistical Analysis: Statistical analysis was done. The significance of APGAR scoring and time of onset of breastfeeding was analyzed using a t-test in the present study.

RESULTS

APGAR SCORE AT 1st MINUTE

t-Test: Two-Sample Assuming Unequal Variances			
	cases	control	
Mean	7.2	6.875	
Variance	0.164102564	0.368589744	
Observations	40	40	
Hypothesized Mean Difference	0		
Df	68		
t Stat	2.816275544		
P(T<=t) one-tail	0.003176242	< 0.05	significant
t Critical one-tail	1.667572281		
P(T<=t) two-tail	0.006352485	< 0.05	significant
t Critical two-tail	1.995468907		

APGAR SCORE AT 5th MINUTE

t-Test: Two-Sample Assuming Unequal Variances			
	cases	control	
Mean	9	8.5	
Variance	0	0.358974359	
Observations	40	40	
Hypothesized Mean Difference	0		
Df	39		
t Stat	5.277986629		
P(T<=t) one-tail	2.59592E-06	< .05	significant
t Critical one-tail	1.684875122		
P(T<=t) two-tail	5.19185E-06	<.05	significant
t Critical two-tail	2.022690901		

TIME OF ONSET OF BREASTFEEDING

t-Test: Two-Sample Assuming Unequal Variances			
	cases	control	
Mean	98.925	113.625	
Variance	707.7634615	1201.266026	
Observations	40	40	
Hypothesized Mean Difference	0		
Df	73		
t Stat	-2.127850012		
P(T<=t) one-tail	0.018363284	<.05	significant
t Critical one-tail	1.665996224		
P(T<=t) two-tail	0.036726567	<.05	significant
t Critical two-tail	1.992997097		

DISCUSSION

Our results suggest that using ketamine as a spinal agent in elective LSCS has shown significant results regarding APGAR scoring and time of onset of breastfeeding between the Case and Control groups. This study shows almost the same results as Dich –-Nielsen et al and similar results in terms of the requirement of analgesia and onset of breastfeeding as a study by K Ghazi–Saidi et al. The results

suggest that Ketamine used is not only beneficial to the neonate but also it improves the ease of administering of spinal anesthesia in case of an emergency LSCS or an apprehensive patient. From this study, we can also conclude that the use of ketamine as a pre-spinal agent can be a routine procedure because it has no adverse effect on the baby and helps in the early induction of spinal anesthesia.

CONCLUSION

The above study concludes that ketamine given pre-spinal anesthesia eases the induction of spinal anesthesia, improves the APGAR scoring, and eases the induction of breastfeeding.

The APGAR score showed significant improvement in the 1st and the 5th-minute score in our analysis.

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