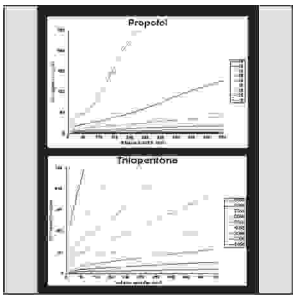
ORIGINAL PROF-927

APGAR SCORE OF NEONATE;
COMPARISON OF THIOPENTONE AND PROPOFOL DURING C-SECTION.



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ABSTRACT... dradeelaslam@hotmail.com A comparative study was conducted in CMH, Malir, CMH, Kharian and WT (Pvt) Ltd. Gynaecology and Obstetrics, Multan from April 2001 to March 2004. The Apgar score of neonate was compared for thiopentone or propofol in C-section patients. Two groups of patients were made. Group-A was induced with thiopentone and group-B was induced with propofol. Each group had 100 patients. In group-A 13 neonates required manipulation and 2 neonates in group-B also required manipulation like mask ventilation or endotracheal intubation and one of drugs like atropine to improve apgar score. 13% neonates in group-A and 1% neonates in group-B required manipulation. This clearly shows the superiority of propofol over thiopentone as an induction agent in C-section. The P value of group-A was 0.13 and for group B was 0.02 and had had a statistically significant difference.

Key words: Thiopentone, Propofol, apgar score.

INTRODUCTION

General anaesthesia has been given for the last several years for C-section. The commonest induction agent is thiopentone. The studies for use of propofol were not conclusive because of its effects on neonates and children. So it was decided to have a comparative study between thiopentone and propofol effects on neonate. The effects were assessed by Apgar score at 1 min, 2 min, 5 min, and 25 minutes interval.

MATERIAL AND METHODS

Two groups of patients were made, both groups had 100 patients each. All C-sections were elective. Patients were primary gravida as well as multi gravida. There was no foetal distress and no foetal abnormality detected preoperatively. All patients had haemoglobin values above 10 g/dl. They were normotensive. No premedication was used. All patients were pre-oxygenated with 4-5 puffs. After induction with thiopentone in group-A and propofol in group-B, succinyl choline[1] was given and patients intubated. No case with

difficult intubation was added in the present study. The patients were maintained on 50% oxygen, 50% nitrous oxide and 0.5% halothane to have better neonatal outcome. High oxygen concentration was kept[2]. Pavulon was used as muscle relaxant and patients were manually ventilated. Pulse oximetery, blood pressure, capnography and ECG were monitored intra-operatively. After delivery of neonate injection syntocinon and injection methergin were given to mother. The neonates oropharyngeal suction was done immediately, cord clamped and placed in heated neonatal trolley. Neonates were covered with blankets over head. Oxygen was given after oropharyngeal suction. Apgar score was noted after 1 minute, 2 minutes, 5 minutes, 10 minutes and 25 minutes interval. All neonates were those with weight more than 2.5 kg and more than 37 weeks gestational age. The uterine incision to delivery time was kept to minimum as foetal outcome was directly related to it[3].

RESULTS

Two groups of patients were made A and B. In group-A thiopentone and in group-B propofol were used as induction agent. Each group had 100 patients. In group-a, 5 neonates required endotracheal intubation and IPPV. Apgar score improved to 8/10 after 2 minutes and 10/10 after 5 minutes. Eight neonates required IPPV with mask in which oxygen was given. Their Apgar score improved within 2 minutes to 10/10.

DISCUSSION

The drugs that cross placental barrier and have effects over foetus are those which are more lipid soluble, non-ionized and have smaller sized molecule[4]. Multiple other factors also play a role like route of administration (intravenous or intramuscular), dose and timing of drug and maturity of foetal organs (brain and liver). The effects of drugs can be evaluated intrapartum by changes in foetal heart rate pattern, acid base status or postpartum by Apgar score or neuro-behavioral examination[5]. Both thiopentone and propofol are lipid soluble and cross placental barrier. Cases of metabolic acidosis and foetal myocardial failure have been reported in children receiving high dose infusion for prolonged sedation by propofol[6]. But placental transfer is much less and its not harmful as it is for shorter duration.

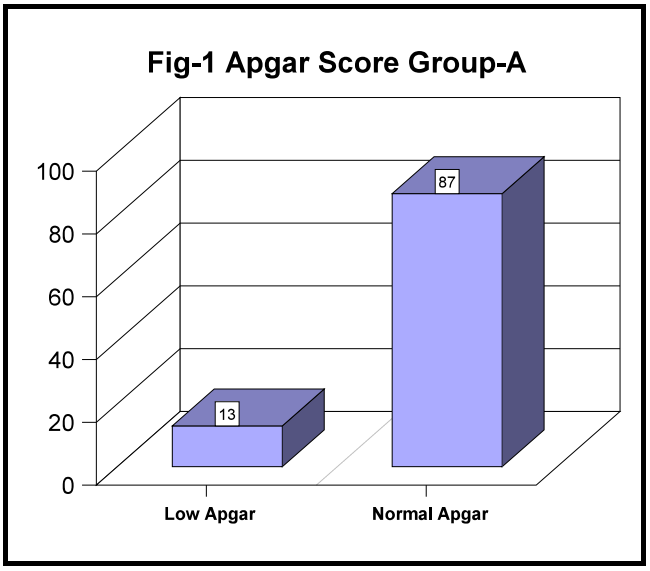
In apgar score we assess heart rate, respiratory effort, muscle tone, reflex irritability and colour of neonate.

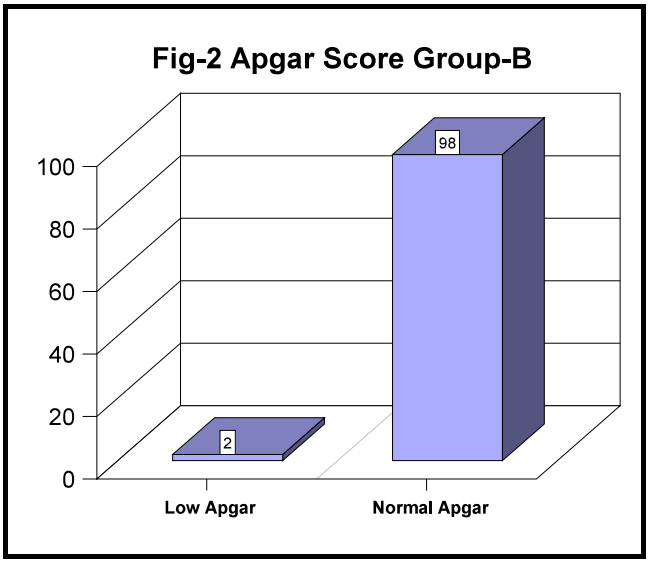
As shown in table-I, the manipulation like endotracheal intubation was done in 5 cases in group-A and 8 cases of group-A required IPPV with mask. So 13% of group-A required some degree of manipulation as shown in Fig-1, and their Apgar score improved within 5 minutes. As compared to group-A, in group-B only 2% neonates required mask ventilation with oxygen and their Apgar score improved within 2 minutes as shown in Fig-2. Better results of Apgar score in group-B were obtained because of quicker metabolism of propofol by liver, with the clearance of 1.8-1.9 litre/minute. Fentanyl reduces the clearance to approximately 1.3 litre/minute[7]. Propofol blood level decline with alpha phase of 2.5 minutes and beta phase of 54 minutes[8]. Other workers have identified three phases of 2.3 minutes, 50 minutes and 310 minutes[9]. The slow terminal phase being related to prolonged exertion of propofol from a poorly perfused fat compartment. The plasma thiopentone concentration is exponential but it can best be discussed by three separate curves characterized 3 half lives alpha of 2-6 minutes corresponding to diffusion into tissue of high blood flow, alpha-2 of 3-6 minutes corresponding to diffusion in fat tissue and beta half life of 5-10 hours corresponding to elimination of thiopentone[10]. Residual effects of even a single small dose will persist for many hours. Thiopentone freely crosses placental barrier, but alert babies and mother's state suggest rapid redistribution in maternal tissue[11].

CONCLUSION

In our comparative study which continued for three years it is clearly seen that propofol has got an edge over thiopentone as far as apgar score of neonate. As only 2% neonates required some degree of manipulation as compared to 13% in group-A of thiopentone. Propofol patients in group-B also showed much quicker recovery and clear headedness. No case of bronchospasm or laryngospams was noted in group. Propofol has also got

a strong antiemetic effect.





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