ORIGINAL ARTICLE

Comparison of Pain with Propofol Lipuro and Propofol mixed with Lidocain at the time of Induction of Anaesthesia

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ABSTRACT

Background: Propofol is a popular intravenous anaesthetic drug which causes pain when given. The incidence of pain on injection varies between 28% to 90%.
Aim: To compare the frequency of pain with propofol lipuro and propofol mixed with lidocain when used for induction of anaesthesia in elective surgeries.
Methods: In this Randomized controlled trial, 100 patients undergoing elective surgery were included and divided into two equal groups A and B by using random number table. Each group comprised of 50 patients. In group "A" 2ml / Kg body weight propofol lipuro and in group b 2mg / Kg body weight propofol with lidocain 2ml (1%) was given intravenously with in 20 seconds.
Results: According to gender 22(44%) in group A and 23(46%) in group B were male while 28(56%) in group A and 27(54%) in group B were female. Regarding pain free injection, 18(36%) in group A and 34(68%) in group B were noted. Age distribution of the patient shows majority of patients in 18 to 30 years of age i.e. 32(62%) in group A and 28(56%) in group B, 17(34%) in group A and 19(38%) were between 31-40 years while 2(4%) in group A and 3(6%) in group B were between 41 to 60 year.
Conclusion: Propofol lidocain mixture is more effective.
Keywords: Propofol lipuro, Propofol lidocain mixture, Pain on injection.

INTRODUCTION

Propofol is a common drug used in induction of anaesthesia[1]. Propofol facilitate inhibitory neurotransmission mediated by $GABA_A$ receptor binding[2]. Propofol (2, 6 di-iso-propyl phenol) is 1% aqueous solution[3]. Propofol is an oil-in-water emulsion containing soybean oil, glycerol and egg lecithin[4]. The experience of pain upon injection has been widely investigated and is reported to occur in 70% of patients[5]. Several strategies have been used to reduce pain, such as pre-injection administration of opioids, Ketamine, metoclopramide, acetaminophen or by cooling or warming the emulsion[6-11]. Lidocain works as local anaesthetic on venous nociceptors and decreases the percentage of free propofol and reduces pain on injection[12]. This method is more effective in reducing pain[13]. The Mechanism of pain relief is two fold; first by reduction of propofol in aqueous phase and second, lidocain acting as stabilizer in the kinin cascade[14].

Doenick et al advocated a reformulated lipid emulsion of propofol to alleviate injection pain containing both medium chain triglycerides (MCT) and long chain triglycerides (LCT) in equal proportion[15].

Different factors affect the incidence of pain for example speed of injection, site and propofol in aqueous phase and buffering effect of blood[16,17].

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MATERIAL AND METHODS

After the approval of study from hospital ethics committee 100 patients of ASA class P_1 and P_2 status, age 15 to 60 years of both sex, undergoing general anaesthesia electively were included in this study. Written informed consent were taken from all patients on preoperative visit and divided into two groups A and B by using random number table. In group A patients received 2mg / Kg body weight propofol lipuro (LCT/MCT) and in group B patients received 2 mg / Kg body weight propofol (LCT) mixed with 2ml 1% Lidocain. A 20 G cannula was passed in a prominent vein on the dorsum of hand in all patients and was connected to a Ringer's Lactate infusion and free flow under the influence of gravity was confirmed. All the patients were given IV midazolam 0.02mg / Kg five minutes before arrival in the operation room. Routine monitoring included pulse oximetery, ECG, NIBP, temperature and capnography was applied. The study drugs were injected at a constant rate over 15 seconds and any associated pain or discomfort measured by asking the patients so as to measure the frequency of pain free injection (grade 0) on verbal rating score. Once the assessment of injection pain was made induction of anaesthesia continued according to the routine. This study was Randomized controlled trial and sampling technique was non probability purposive sampling. Data was entered and analyzed in SPSS version 11.0 and analyzed. Chi-square test was used and P value < 0.05 was considered significant. There

was 2% margin of error, 80% power of study taking expected percentage of pain by reformulated medium and long chain triglycerides (propofol lipuro) and standard propofol mixed with lidocain ie 63% and 24% respectively on intravenous injection.

RESULTS

Age distribution shows majority of the patients in 18 to 30 years i.e. 31(62%) in group A and 28(56%) in group B, 17(34%) in group A and 19(38%) were between 31 to 40 while only 2(4%) in group A and 3(6%) in group B were recorded between 41 to 60 years of age, mean and standard deviation was 28.43±.21 and 27.98±3.76 in group A and B respectively, regarding gender 22(44%) in group A and 23(46%) in group B were male while 28(55%) in group A and 27(53%) in group B were female. Regarding pain free injections 18(36%) in group A and 34(68%) in group B were recorded with pain free injections, which was significantly higher in group B, as the P value was recorded 0.00.

Table 1: Age Distribution (n = 100)

Age (years)	Group A	Group B
18-30	31(62%)	28(56%)
31-40	17(34%)	19(38%)
41-60	2(4%)	3(6%)
Total	50(100%)	50(100%)
Mean & S.D.	28.43±4.21	27.98±3.76

Table 2: Distribution according to gender (n=100)

Gender	Group A	Group B
Male	22(45%)	23(47%)
Female	28(55%)	27(53%)
Total	50(100%)	50(100%)

Table 3: Comparison of pain free injection using propofol lipuro and standard propofol lignocain mixture (n = 100)

Pain free	Group A	Group B
Yes	18(36%)	34(68%)
No	32(64%)	16(32%)
Total	50(100%)	50(100%)

P value 0.000

DISCUSSION

Propofol has achieved a great popularity because of its recovery characteristies[18]. A number of techniques have been used for minimizing propofol induced pain. The mechanism of pain caused by propofol is uncertain but immediate pain may be the result of direct irritation of afferent nerves ending with in the veins, while delayed pain may be triggering of kinin cascade and release of kinogens[19,20].

In the study of Hung YW et al they compare lidocain with ketorolac and that incidence of pain was reduced by 20% with ketorolac and 60% with lidocain[21].

Similarly in the study of Abbas et al they compare the lidocain and vein size and concluded that by adding lidocain 50 mg with propofol is effective in 60% patients.

CONCLUSION

Propofol lidocain mixture is more effective in pain control as compared to propofol lipuro.

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