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SCIENTIFIC ARTICLE

To study the effect of injection dexmedetomidine for prevention of pain due to propofol injection and to compare it with injection lignocaine

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KEYWORDS
Pain;
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Abstract
Background: Pain due to injection propofol is a common problem. Different methods are used to decrease the pain but with limited success. The objective of this study was to assess the effect of injection dexmedetomidine 0.2 mcg/kg for prevention of pain due to propofol injection and compare it with injection lignocaine 0.2 mg/kg.
Method: After taking permission of the Institutional Ethical Committee, written informed consent was obtained from all patients, in a randomized prospective study. 60 American Society of Anesthesiology I and II patients of age range 20–60 years of either sex posted for elective surgeries under general anaesthesia were randomly allocated into two groups. Group I (dexmedetomidine group): Inj. dexmedetomidine 0.2 mcg/kg diluted in 5 mL normal saline and Group II (lignocaine group): Inj. lignocaine 0.2 mg/kg diluted in 5 mL normal saline. IV line was secured with 20 G cannula and venous occlusion was applied to forearm using a pneumatic tourniquet and inflated to 70 mm Hg for 1 min. Study drug was injected, tourniquet released and then 25% of the calculated dose of propofol was given intravenously over 10 s. After 10 s of injection, severity of pain was evaluated using McCrirrick and Hunter scale and then remaining propofol and neuromuscular blocking agent was given. Endotracheal intubation was done and anaesthesia was maintained on O_2, N_2O and isoflurane on intermittent positive pressure ventilation with Bain's circuit and inj. vecuronium was used as muscle relaxant.
Results: Demographic data showed that there was no statistically significant difference between the 2 groups. There was no statistically significant difference between 2 groups in respect to inj. propofol pain. No adverse effects like oedema, pain, wheal response at the site of injection were observed in the two groups.

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PALAVRAS-CHAVE
Dor;
Fenol;
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Lidocaína

Avaliação do efeito de dexmedetomidina na prevenção da dor relacionada à injeção de propofol e comparação com o efeito da injeção de lidocaína

Resumo
Justificativa e objetivo: A dor relacionada à injeção de propofol é um problema comum. Métodos diferentes são usados para diminuí-la, mas com sucesso limitado. O objetivo deste estudo foi avaliar o efeito da dexmedetomidina (0,2 mcg kg^{-1}) na prevenção da dor relacionada à injeção de propofol e compará-lo com lidocaína (0,2 mg kg^{-1}).
Método: Depois da permissão do Comitê de Ética Institucional, a assinatura do termo de consentimento informado foi obtida de todos os participantes deste estudo prospectivo e randomizado. Sessenta pacientes com estado físico ASA I-II, idades entre 20-60 anos, de ambos os sexos e programados para cirurgias eletivas sob anestesia geral foram randomicamente alocados em dois grupos: Grupo I (dexmedetomidina) recebeu injeção de dexmedetomidina (0,2 mcg kg^{-1}) diluída em 5 mL de solução salina normal e Grupo II (lidocaína) recebeu injeção de lidocaína (0,2 mg kg^{-1}) diluída em 5 mL de solução salina normal. O acesso IV foi obtido com uma cânula de calibre 20G e a oclusão venosa aplicada no antebraço com o uso de um torniquete pneumático e inflado a 70 mm Hg durante um minuto. Os medicamentos em estudo foram injetados, o torniquete foi liberado e, em seguida, 25% da dose calculada de propofol foi administrada por via intravenosa durante 10 segundos. Após 10 segundos de injeção, a intensidade da dor foi avaliada com o uso da escala de McCrirrick e Hunter e, em seguida, o restante do propofol e um agente bloqueador neuromuscular foram administrados. A intubação endotraqueal foi feita e a anestesia mantida com O_2, N_2O e isoflurano em ventilação com pressão positiva intermitente, com o circuito de Bain e uso de vecurônio como relaxante muscular.
Resultados: Os dados demográficos mostraram que não houve diferença estatisticamente significante entre os dois grupos. Não houve diferença estatisticamente significante entre os dois grupos em relação à dor relacionada à injeção de propofol. Não houve efeitos adversos, como edema, dor e pápula no local da injeção nos dois grupos.

Introduction

Pain is an unpleasant subjective sensation which is very distressing to the patient. Pain on injection with propofol is a common problem.[1,2] It is due to phenol group present in propofol. Phenol group is irritating to skin, mucous membrane and venous intima. In the absence of treatment regimens, 28–90% of patients experience moderate to severe pain when propofol is injected into peripheral vein.[1] Various methods have been used to decrease the severity of pain like Nitroglycerine ointment at the injection site, diluting propofol with 5% dextrose or intralipid, inj. ondensetron or opioids such as fentanyl, NSAIDs. Intravenous Lignocaine is the most commonly used pre-treatment to reduce the pain caused by inj. propofol. It is definitely effective but it also has a failure rate of 13–32%.[3,4]

Dexmedetomidine is a highly selective, specific and potent alpha-2 adrenoreceptor agonist. It is a potent analgesic, sedative, along with sympatholytic effect. In addition, it has supraspinal, spinal and peripheral action. Alpha 2-adrenoreceptors located on blood vessels inhibit norepinephrine release, resulting in release of prostaglandins and cause vasodilation that antagonize the venoconstrictor response.[5] Dexmedetomidine has been shown to promote peripheral antinociception.[6] Therefore dexmedetomidine can also be used for relief of propofol pain. Lignocaine is a time tested local anaesthetic belonging to the ester group.

In the present study, we plan to investigate the effect of inj. dexmedetomidine for prevention of propofol injection pain and compare it with inj. Lignocaine.

Methods

The study was conducted after obtaining the approval from institutional ethical committee. A written and informed consent was obtained from all patients. 60 patients were included in our study. All these patients belonged to American Society of Anesthesiology (ASA) grade I or II and were posted for elective surgery under General Anaesthesia. Thorough preoperative evaluation was done. Patients were kept fasting for 6 h. Randomization was done into 2 groups by double blind method. Group I (dexmedetomidine group) in which inj. dexmedetomidine 0.2 mcg/kg diluted in 5 mL normal saline and Group II (lignocaine group) in which inj. Lignocaine 0.2 mg/kg diluted in 5 mL normal saline were given.

Exclusion criteria for this study were patients unwilling for the trial, those requiring rapid sequence induction and those with anticipated difficulty in venous access.

On arrival of patient to the operation theatre, a 20 G intravenous cannula was inserted in a prominent vein on dorsum of non-dominant hand. All monitors like electrocardiogram, non-invasive blood pressure and pulse oximeter were attached. A pneumatic tourniquet was placed on the