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SCIENTIFIC ARTICLE

Prophylactic use of pregabalin for prevention of succinylcholine-induced fasciculation and myalgia: a randomized, double-blinded, placebo-controlled study

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KEYWORDS
Pregabalin;
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Abstract
Background: Succinylcholine is commonly used to achieve profound neuromuscular blockade of rapid onset and short duration.
Objective: The present study compared the efficacy of pregabalin for prevention of succinylcholine-induced fasciculation and myalgia.
Design: Prospective, randomized, placebo controlled, double blinded study.
Materials and methods: Patients of both genders undergoing elective spine surgery were randomly assigned to two groups. Patients in Group P (pregabalin group) received 150 mg of pregabalin orally 1 h prior to induction of anesthesia with sips of water and patients in Group C (control group) received placebo. Anesthesia was induced with fentanyl 1.5 mcg/kg, propofol 1.5–2.0 mg/kg followed by succinylcholine 1.5 mg/kg. The intensity of fasciculations was assessed by an observer blinded to the group allotment of the patient on a 4-point scale. A blinded observer recorded postoperative myalgia grade after 24 h of surgery. Patients were provided patient-controlled analgesia with fentanyl for postoperative pain relief.
Results: Demographic data of both groups were comparable ($p > 0.05$). The incidence of muscle fasciculation's was not significant between two groups ($p = 0.707$), while more patients in group C had moderate to severe fasciculation's compared to group P ($p = 0.028$). The incidence and severity of myalgia were significantly lower in group P ($p < 0.05$).
Conclusion: Pregabalin 150 mg prevents succinylcholine-induced fasciculations and myalgia and also decreases the fentanyl consumption in elective sine surgery.

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PALAVRAS-CHAVE
Pregabalina;
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Mialgia

Uso profilático de pregabalina para prevenção de mialgia e fasciculação induzidas por succinilcolina: estudo randômico, duplo-cego e controlado por placebo

Resumo
Justificativa: A succinilcolina é comumente usada para atingir um bloqueio neuromuscular profundo, de início rápido e de curta duração.
Objetivo: O presente estudo comparou a eficácia de pregabalina na prevenção de mialgia e fasciculação induzidas por succinilcolina.
Desenho: Estudo prospectivo, randômico, duplo-cego e controlado por placeboo.
Materiais e métodos: Pacientes de ambos os sexos submetidos à cirurgia eletiva de coluna foram aleatoriamente divididos em dois grupos. Os pacientes do Grupo P (pregabalina) receberam 150 mg de pregabalina oral 1 hora antes da indução da anestesia e os pacientes do Grupo C (controle) receberam placebo. A anestesia foi induzida com fentanil (1,5 mcg/kg) e propofol (1,5-2,0 mg/kg), seguidos de succinilcolina 1,5 mg/kg. A intensidade da fasciculação foi avaliada por um observador, cego para a alocação dos grupos, usando uma escala de 4 pontos. Um observador cego registrou o grau pós-operatório de mialgia após 24 horas de cirurgia. Para o alívio da dor no pós-operatório, fentanil foi usado em sistema de analgesia controlada pelo paciente.
Resultados: Os dados demográficos de ambos os grupos eram comparáveis ($p > 0,05$). A incidência de fasciculação muscular não foi significativa entre os dois grupos ($p = 0,707$), enquanto mais pacientes do Grupo C apresentaram fasciculação de moderada a grave em relação ao Grupo P ($p = 0,028$). A incidência ea gravidade de mialgia foram significativamente menores no grupo P ($p < 0,05$).
Conclusão: Pregabalina (150 mg) previne mialgia e fasciculação induzidas por succinilcolina, além de diminui o consumo de fentanil em cirurgia eletiva de coluna.

Introduction

Succinylcholine is a short acting depolarizing muscle relaxant with rapid onset and short duration of action. Its use is associated with a number of side effects like fasciculation, postoperative myalgia, increased serum levels of creatine kinase and potassium, malignant hyperthermia, myoglobinuria, raised intraocular pressure and intracranial pressure precluding its routine use.[1,2] Fasciculations are relatively benign side effects of its use; most anesthesiologists prefer to prevent them due to a possible association between fasciculations and postoperative myalgia.

Different pre-treatment modalities have been attempted to reduce the incidence and severity of fasciculations and myalgia. This includes precurarization with a small dose of non-depolarizing muscle relaxant,[3] pre succinylcholine use of lidocaine,[4] calcium gluconate,[5] magnesium sulphate,[6] nonsteroidal anti-inflammatory drugs (NSAIDs),[7] dexmedetomidine,[8] benzodiazepines,[4] remifentanil,[9] phenytoin[10] or ketorolac.[11] The efficacy of each is variable.

Pregabalin and its predecessor, gabapentin, are analogs of the inhibitory neurotransmitter gammaaminobutyric acid (GABA). As gabapentin[12] has been found to prevent succinylcholine induced fasciculation and myalgia, pregabalin may be an alternative of this with better results.

With this aim, this randomized, double-blinded, placebo-controlled study was instituted to investigate whether use of preoperative pregabalin administration has any effects on succinylcholine-induced fasciculation's and myalgia in subjects undergoing microdiscectomy under general anesthesia.

Materials and methods

This prospective, randomized, placebo-controlled study was conducted after approval from the Institutional Ethics Committee and written informed consent from the patients undergoing elective spine surgery under general anesthesia. The study was registered at Clinical Trials.gov (Ref.: CTRI/2013/08/003925).

Sixty-four patients, aged 20–60 years, either sex, ASA physical status I or II, scheduled for elective spine surgery were included in the study. Patients with a history of seizure disorders, preoperative ingestion of pregabalin or gabapentin, hyperkalemia, systemic illness like hypertension, diabetes, impaired kidney or liver functions, increased intracranial and intraocular pressure, pregnant or breast-feeding females and patients with known sensitivity to pregabalin were excluded from the study. The patients were randomly allocated to two equal groups with the help of a computer generated table of random numbers to receive following drugs.

Group P (pregabalin group)

Patients received pregabalin 150 mg orally with sips of water, 1 h before the induction of anesthesia.