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Study of effect of aspirin on suxamethonium induced myalgia

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Abstract
The present study was planned to know the outcome of oral aspirin in dropping the incidence of post-operative myalgia triggered by administration of suxamethonium and to relate it with precurarization (with pancuronium) and with a control.
GROUP A: Patients in this group were precurarised by giving injection pancuronium 0.01 mg/kg body weight intravenously three minutes before commencement of induction of anesthesia. **GROUP B:** Patients in this group were given soluble aspirin (tablet Disprin) 600 mg orally one hour before induction of the anesthesia. **GROUP C:** No pretreatment was given
In group A there are 4 cases are of mild pain and 1 cases of moderate pain. In group B there are 5 cases are of mild pain and 2 moderate pain. In group C there are 8 cases are of mild pain and 6 moderate pain. In Group A patients without aspirin 15 cases showed no fasciculation and 5 cases showed mild fasciculation. In group B administered with the aspirin 2 cases of no fasciculation observed, 12 cases are of mild fasciculation, 4 cases are of moderate fasciculation and 2 cases are of severe fasciculation.
Preoperative aspirin 600mg orally 1 hr before operation effectively reduces Suxamethonium induced pain and avoid complications associated with pretreatment with non-depolarising agents.

Keywords: oral aspirin, suxamethonium, fasciculation

Introduction
Myalgia, or muscle pain, is a symptom of many diseases and disorders. The most common causes are the overuse or over-stretching of a muscle or group of muscles. Myalgia without a traumatic history is often due to viral infections. Longer-term myalgias may be indicative of a metabolic myopathy, some nutritional deficiencies or chronic fatigue syndrome.
The most common causes of myalgia are overuse, injury or strain. However, myalgia can also be caused by diseases, disorders, medications, or as a response to a vaccination. It is also a sign of acute rejection after heart transplant surgery.
Suxamethonium chloride, also known as suxamethonium or succinylcholine, is a medication used to cause short-term paralysis as part of general anesthesia [1]. This is done to help with tracheal intubation or electroconvulsive therapy [1]. It is given either by injection into a vein or muscle [2]. When used in a vein onset of action is generally within one minute and effects last for up to 10 minutes [2].
Common side effects include low blood pressure, increased saliva production, muscle pain, and rash [2]. Serious side effects include malignant hyperthermia and allergic reactions [3]. It is not recommended in people who are at risk of high blood potassium or a history of myopathy [1]. Use during pregnancy appears to be safe for the baby [4]. Suxamethonium is in the neuromuscular blocker family of medications and is of the depolarizing type [2]. It works by blocking the action of acetylcholine on skeletal muscles [2].
Suxamethonium was described as early as 1906 and came into medical use in 1951 [5]. It is on the World Health Organization's List of Essential Medicines, the most effective and safe medicines needed in a health system [6]. Suxamethonium is available as a generic medication [2]. The wholesale cost in the developing world is about 0.45 to 1.31 USD a dose [7]. It may colloquially be referred to as "sux" [5].
Its medical uses are limited to short-term muscle relaxation in anesthesia and intensive care, usually for facilitation of endotracheal intubation. It is perennially popular in emergency medicine because it has the fastest onset and shortest duration of action of all muscle relaxants. The former is a major point of consideration in the context of trauma care, where endotracheal intubation may need to be completed very quickly. The latter means that, should attempts at endotracheal intubation fail and the person cannot be ventilated, there is a prospect for neuromuscular recovery and the onset of spontaneous breathing before low blood oxygen levels occurs. It is better than rocuronium in making it easy to intubate [8].
Suxamethonium is also commonly used as the sole muscle relaxant during electroconvulsive therapy, favoured for its short duration of action.
Suxamethonium is quickly degraded by plasma butyrylcholinesterase and the duration of effect is usually in the range of a few minutes. When plasma levels of butyrylcholinesterase are greatly diminished or an atypical form is present (an otherwise harmless inherited disorder), paralysis may last much longer, as is the case in liver failure or in neonates [9].
It is recommended that the vials be stored at a temperature between 2°-8°C, for optimum action. This is all the more important in temperate and tropical countries where room temperatures can go as high as 30°C.
The present study was planned to know the outcome of oral aspirin in dropping the incidence of post-operative myalgia

triggered by administration of suxamethonium and to relate it with precurarization (with pancuronium) and with a control.

Methodology

The study was planned in the Model Hospital ESIC, Phulwarisharif undergoing the General Anaesthesia from July 2016 to July 2017. The age group of the patients is ranges from 20 to 60 years. Total 80 patients were evaluated for the study. As per the classification of the American Society of Anesthesiologists I and II physical conditions were enrolled on to the study.

Following was the inclusion and Exclusion criteria of the study:

Inclusion Criteria

1. Age 20- 60 years
2. American Society of Anesthesiologists I and II physical conditions patients

Exclusion Criteria

1. Patients at particular risk of heart conditions, such as congenital disease
2. Pregnant/lactating females.
3. Patients on anticoagulant therapy, history of peptic ulceration

The patients were divided in the following two groups.

Group A

Patients in this group were precurarised by giving injection pancuronium 0.01 mg/kg body weight intravenously three minutes before commencement of induction of anesthesia.

Group B

Patients in this group were given soluble aspirin (tablet Disprin) 600 mg orally one hour before induction of the anesthesia.

Group C

No pretreatment was given Patients were induced with injection Thiopentone sodium 4-5mg/kg body wt. I/V followed by injection suxamethonium 1 mg/kg body wt I/V. Anesthesia was maintained with 67% Nitrous Oxide and 33% oxygen supplemented with Halothane and Intrvaenous Pentozocine if required. Endotracheal intubation was done. Non-depolarizing muscle relaxant of appropriate duration of action will be employed when contoll ventilation of lungs was required.

Results & Discussion

The data from the 60 patients were collected and presented as below.

Table 1: Incidence of Fasciculations of Suxamethonium in all groups

Group	Group A	Group B	Group C	Total
Total Cases	20	20	20	60
No fasciculation	15	2	2	19
Mild fasciculation	5	12	10	27
Moderate fasciculation	--	4	4	8
Severe fasciculation	--	2	4	6

In Group A patients without aspirin 15 cases showed no fasciculation and 5 cases showed mild fasciculation. In group B administered with the aspirin 2 cases of no fasciculation observed, 12 cases are of mild fasciculation, 4 cases are of moderate fasciculation and 2 cases are of severe fasciculation.

Table 2: Showing Incidence and severity of muscle pain in all groups

Group	Group A	Group B	Group C	Total
Total Cases	5	7	14	26
Mild Pain	4	5	8	17
Moderate Pain	1	2	6	9
Severe Pain	--	--	--	--

In group A there are 4 cases are of mild pain and 1 cases of moderate pain. In group B there are 5 cases are of mild pain and 2 moderate pain. In group C there are 8 cases are of mild pain and 6 moderate pain.

Suxamethonium provides a rapid and profound relaxation but for a short period. The useful relaxanthas some disadvantages out of which muscle stiffness and pains have been posing a common problem. Pain is always hard to evaluate because of subjective factors involved. This study is another effort to ascertain the possible usefulness of two methods to prevent suxamethonium muscle pain.

There was high incidence of pain 68% (17 out of 25) in this group which was similar as reported by Churchill-Davidson, (66% outpatients); Morris and Dunn, (72% out patients) [10], Mayrhofer, (89%) [11]. The findings of present study were at variance with those of Hegarty, as 25.6% [12]. The low incidence of muscle pain was because the cases of old age group and greater number of cases did not get up till third post-operative day. Bush and Roth showed the incidence of muscle pains as10%. Those cases were of age group 5-10 years. This low incidence of pain in children is attributed totheir rapid circulation reducing the period fasciculation. In most of patients pain was present at more than one site. Commonest sites were back, neck, shoulder, subcostal region and limbs. Muscle painoccurred invariably in more than one site (Churchill Davidson, Hegarty). Lamoreaux and Ur back (1959) described chest as the commonest site which was similar to our study regarding distribution of muscle pain [13].

The results suggested no definite correlation between muscle fasciculation and pain which were similar to finding of other studies.

Conclusion

Preoperative aspirin 600mg orally 1 hr before operation effectively reduces Suxamethonium induced pain and avoid complications associated with pretreatment with non-depolarising agents.

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