Case Report

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Efficacy of Topical Local Anesthetics for Pain Relief in Acute Burn

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Abstract

This is a preliminary result of an ongoing thesis work of Post Graduate Resident of Plastic Surgery in a tertiary care Institute. Aim of study was to evaluate the role of topical lignocaine solution in pain management of acute burn in first 24 hours. Eighteen patients were grouped into study and control group. Topical application of 2% lignocaine solution (5 mg/kg) with supplemental oral ketamine (3mg/kg) in the study group was compared with normal saline in the control group. Pain score and analgesic consumption were analyzed. There was no significant difference in acute pain relief between the study and control groups.

Keywords: Acute burn; Pain; Lignocaine.

Introduction

Pain is a major problem after burns and researchers continue to report that pain from burns remains undertreated. The inadequate pain control results in adverse sequelae physically and psychologically in the burn victims [1].

The main therapeutic option for analgesia has been the use of opioids. The use of opioids associated with well-known side effects and dependence is most problematic [2]. Other analgesic modalities have been tried in this patient population with minimal success. In recent times and in the setting of burns pain, there has been growing evidence that lignocaine can improve the analgesic efficacy, alleviate the deleterious effect of opioid administration, and minimise the necessity of escalating opioid dosage in patients with thermal injury [3].

In this study we analyze the effect of topical local anesthetic for pain relief in acute burn pain.

Case Report

This is a preliminary result of an ongoing thesis work of Post Graduate Resident of Plastic Surgery in a tertiary care Institute. Aim of study was to evaluate the role of topical lignocaine solution in pain management of acute burn in first 24 hours. The inclusion criteria were all Patients >13 years with thermal burns of extremity of 1st and 2nd degree presenting within 24 hours of occurrence, conscious and co-operative. Patients with 3rd and 4th degree burns, Old burns (>1 day), Burns with eschar and patients with renal/hepatic impairment were excluded from the study.

All acute burn patients attending the study centre during the study period who meet the prescribed criteria were explained about the study. After obtaining informed consent patients will be included in the study. Patients were randomly allotted into two groups control group (saline application) and treatment group (topical lignocaine) application. Baseline VAS (visual analog score), renal and liver function were documented. Limited Access Dressing (LAD) was applied to the extremity (Figure 1) and wound irrigation with topical 2% lignocaine solution and analgesia with oral ketamine was given on demand or if VAS score >5. In the control group saline irrigation and analgesia with oral ketamine was given on demand or if VAS score >5. Visual analog scores for pain were evaluated hourly for first eight hours and 2nd hourly for the second eight hours and every 4 hours for next 8 hours. Top up dose of lignocaine was given every 8 hours after wound

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lavage with saline. Analgesic consumption over 24 hours was noted. Any adverse effect was noted. The VAS scores for pain and analgesic dose requirement over 24 hours in the two groups were noted.

In our study the mean age was 30±5 years. Female were more than males (ration 3:2). The average percentage of burn was 9%. Upper extremity was more commonly affected than the lower extremity. The mean pain score at admission in both the groups was 8(out of 10). After admission, the mean scores at 8 hours, 16 hours and 24 hours in the control group were 4, 4, 2 and study group were 4, 3, and 2. The total analgesic consumption (ketamine in mg) was 384 mg in study group and 408 mg in control group. On comparing the mean score of both the groups it was found that there was no significant difference but statistical analysis is yet to confirm as the study is going on. No significant adverse effect was noted in both the groups.

Discussion

Burns cause significant pain and disability. Pain associated with burn injuries is not of a single type. Many different patterns of pains are described. So each pattern of pain is managed with a particular protocol. The most common patterns described are the background pain, breakthrough pain, post-operative pain and the procedural pain [4].

In a review on pain management in burns, it was concluded that pain in burn is affected by a complex array of factors. So a multidisciplinary approach is the critical step in management of pain. But this is further complicated by the varying analgesic requirements due to the various procedures these patients undergo during their course of hospitalisation. So it is diffcult to determine the required standard daily dose of analgesic drug [5].

Opioids are the mainstays of treatment of burn pain in most burn centres. It is understood that the doses of opioids for pain relief in burn can far exceed the usual recommended doses. So the use of opioid sparing agent is crucial for pain effective pain relief.

Ketamine is an anesthetic agent which acts as an antagonist at NMDA receptor. It also has analgesic effect. Ketamine is a safe and effective drug and its use in burn dressings have been proven.

Local anesthetics have been shown to reduce the production of pro inflammatory mediators and so reduce the pain, edema and post burn ischemia [6]. Most commonly intravenous lignocaine was used for assessing opioid sparing effect. But the results were inconclusive.

Jellish et al. in their study on the skin graft donor raw areas applied topical local anesthetics for analgesic effect, 2% lignocaine or 0.5% bupivacaine or saline applied topically over the SSG donor site immediately after harvest. Topical lignocaine group had reduced analgesic consumption [7].

In our study we did not find significant reduction in total analgesic consumption. This could be due to the short duration of action of lignocaine. So we need to top up the doses frequently or use longer acting drugs like bupivacaine.

Limitation of the study: Statistical analysis not done as it is a preliminary result of an ongoing study. Blood levels of the drug were not monitored.

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