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ORIGINAL ARTICLE

Use of Lidocaine Analgesia Prior To Steroid Injection in Reducing Post-Traumatic Hypertrophic Scars

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ABSTRACT

Background and Aim: Hypertrophic scars are painful and can develop after surgery or trauma, with symptoms varying from an intractable allodynia to minor itch. Extraneural and intraneutral structures could be involved in painful scars issue. The standard treatment for hypertrophic scars is intralesional steroid injections. The present study aimed to investigate the lidocaine analgesia for pain relief in post-traumatic hypertrophic scars.

Place and Duration: Burn Centre Dr Ruth K.M. Pfao Civil Hospital, Karachi and the department of Plastics and Burn Surgery, Bolan Medical Complex Hospital, Quetta during the period from October 2020 to September 2021.

Methodology: Thirty-five patients with post-traumatic hypertrophic scars were enrolled in this study. Steroids were injected through scars with or without Lidocaine (-10°C) applications for 15 seconds. Ethical approval was taken from the institutional ethical committee. In this experimental protocol, two arms were used. In the first arm, two scars on the same patient's body were randomly assigned as control or experimental scars. Patients were used as their own controls because everyone experiences pain differently. Scars were injected into patients once a month, and pain intensity scores were recorded after each injection. A visual analog score (VAS) was used for the evaluation of pain severity or degree in each individual.

Results: Of the total 35 hypertrophic scars patients, about 23 (65.7%) and 12 (34.3%) were females and male respectively. The overall mean age was 32.67±5.83 years. All the hypertrophic scars patients with age ranges from 20 to 65 years were enrolled. Of the total lesions, the presence of hypertrophic scars on the arms, shoulder, back, and chest were 7 (20%), 3 (8.6%), 9 (25.7%), and 16 (45.7%) respectively. The visual analogue score for control and pretreated was 2.8±1.42 and 7.91±1.29 respectively. The VAS pain score was significantly associated ($p<0.1$) with difference in VAS score of control and pretreated scars.

Conclusion: The present study found that lidocaine analgesia provides significant pain relief in post-traumatic hypertrophic scars prior to steroid injection. It also provides a safe and effective way for enhancing the management of disease and patient compliance.

Keywords: Hypertrophic scars, Lidocaine Analgesia, Pain relief, Steroid Injection.

INTRODUCTION

Hypertrophic scars had red, rigid, and raised appearance, are benign fibrous scar tissue overgrowths caused by abnormal wound healing after trauma [1, 2]. Keloids spread beyond the original wound's borders, tend to recur after excision but do not relapse spontaneously. Beside negative aesthetic effect, they frequently cause pain, contractures, and pruritus. Pain is referred to generalized clinical issue related to those procedure designed for pain relief i.e. before any dental surgery, anaesthetic injections are applied [3, 4]. Steroids injection of intralesional contributes significantly in treatment of hypertrophic and keloids injuries pain; with continuous administration, softer and flatter scars can be achieved [5, 6]. The injection and its frequency cause pain making it unpopular treatment in children and advance age patients [7]. Noncompliance and misused injections reduce the effectiveness of treatment. Topical anaesthetics, such as EMLA cream (lidocaine and prilocaine) and Ametop gel (tetracaine), are widely used to relieve injection pain, but their efficacy is limited due to poor drug penetration.

The deep nerve structure scars can be frequently indicated by pain presence in nerve distribution. Nerve tethering can occur as a result of perineural scarring and manifests as exacerbation of pain with movement due to the restricted nerve mobility caused by the scar. Various clinical presentation could lead to this pathology, which contributes to painful scar neuropathy [8]. Lidocaine analgesia is a simple and noninvasive technique for managing pain in trauma and disease [9,10] as well as reducing postoperative pain. As there are fewer side effects of lidocaine especially in pain alleviation caused by soft tissue in sport medicine and constrained the laser treatment discomfort [11, 12]. Due to scarcity of effective and clinical anesthetic methods, the present study aimed to assess the use of lidocaine in reducing post-traumatic hypertrophic pain relief prior to steroid injections.

METHODOLOGY

The study was conducted at Burn Centre Dr Ruth K.M. Pfao Civil Hospital, Karachi and the department of Plastics and Burn Surgery, Bolan Medical Complex Hospital, Quetta during the period from October 2020 to September 2021. Thirty-five patients with post-traumatic hypertrophic scars were enrolled in this study. Steroids were injected through scars with or without cryotip (-10°C) applications for 15 seconds. Ethical approval was taken from the institutional ethical committee. In this experimental protocol, two arms were used. In the first arm, two scars on the same patient's body were randomly assigned as control or experimental scars. Patients were used as their own controls because everyone experiences pain differently. Scars were injected into patients once a month, and pain intensity scores were recorded after each injection. A visual analog score (VAS) was used for the evaluation of pain severity or degree in each individual. The VAS is a straight line with endpoints that define extreme limits (no pain and very severe pain). The patient is asked to draw a line between the two endpoints to represent his or her pain level. The patient's pain level is then determined by the distance between "no pain" and the mark. The VAS has a ten-point scale; a score of zero indicates that the injection is painless, while a score of ten indicates that the injection causes the most pain possible. Pain levels were measured in both the control (no lidocaine) and experimental groups (with lidocaine).

RESULTS

Of the total 35 hypertrophic scars patients, about 23 (65.7%) and 12 (34.3%) were females and male respectively. The overall mean

age was 32.67±5.83 years. All the hypertrophic scars patients with age ranges from 20 to 65 years were enrolled. Of the total lesions, the presence of hypertrophic scars on the arms, shoulder, back, and chest were 7 (20%), 3 (8.6%), 9 (25.7%), and 16 (45.7%) respectively. The visual analogue score for control and pretreated was 2.8±1.42 and 7.91±1.29 respectively. The VAS pain score was significantly associated (p<0.1) with difference in VAS score of control and pretreated scars. Gender distribution is illustrated in Figure-1. Table-I show the demographic details of the patients. The incidence of hypertrophic scars on arms, shoulder, chest, and back is shown in Figure-2. Visual analogue scores for both group are shown in Table-II.

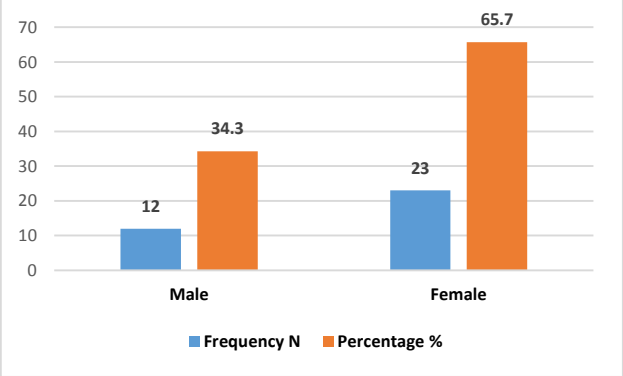

Figure 1: Gender distribution (n=35)

Table 1: Demographic details of patients (n=35)

Parameters	Value
Age (years) Means ±SD	32.67±5.83
Gender (M/F)	12/23
Types of Scars	Hypertrophic scars
VAS score Means ±SD (study group)	7.91±1.29

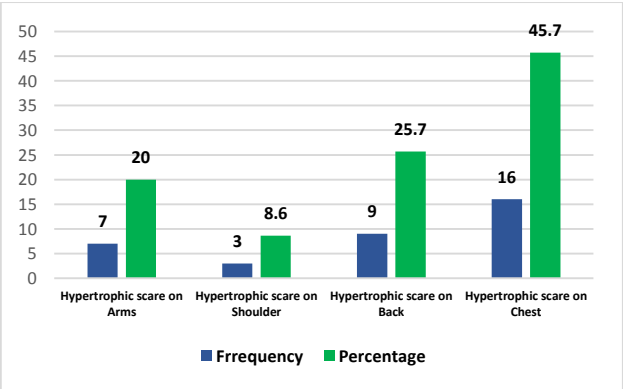

Figure 2: Incidence of hypertrophic scares on arms, shoulders, chest, and back (n=35)

Table 2: Visual Analogue Score (VAS) for pain

VAS Score	Severity level	Frequency with Lidocaine (%)	Frequency without Lidocaine (%)
10	Extremely Severe	0 (0)	1 (2.9)
9	Severe	0 (0)	11 (31.4)
8	Severe	0 (0)	8 (22.9))
7	Severe	0 (0)	5 (14.3)
6	Severe	1 (2.9)	3 (8.6)
5	Moderate	2 (5.7)	2 (5.7)
4	Moderate	2 (5.7)	0 (0)
3	Mild	14 (40)	0 (0)
2	Mild	4 (11.4)	0 (0)
1	Lower	4 (11.4)	0 (0)
0	Null	2 (5.7)	0 (0)

DISCUSSION

Scars can cause a variety of issues, including limited joint mobility, growth impairment, and loss of normal skin functions [13]. In rare cases, scar tissue tension may be the source of neuropathic pain symptoms. In general, hypertrophic scar tissues are under the influence of multiple vector forces, and increased collagen production helps the scar tissue resist these vectors. Indirectly, strained scar tissue localization, tissue stiffness, and its rebound effect on nerve tissue may be the cause of neuropathic pain. The exact mechanism, and thus the treatment of choice, may be determined by the nature of the scar. Hypertrophic scars had been treated with either non-surgical or surgical technique but standard treatment for scars treatment is intralesional steroid injections [14, 15]. The mean scars volume reduced from 0.73 to 0.701 [16] and 0.140 to 0.302 mL [17] with repeated triamcinolone acetonide steroid injections. However, pain has an unavoidable impact on the treatment's effectiveness. Recently, there have been significant advancements in local injecting anaesthetics techniques, allowing surgeons to perform more procedures under local anaesthesia with minimal pain [18, 19].

This study is of first kind to look into the use of lidocaine to reduce injection pain. We demonstrated that lidocaine effectively reduced pain intensity scores to zero in two cases. Without lidocaine, mostly patients were scared of hypertrophic scars injection. Also, without lidocaine, VAS pain score was significantly higher till 5, whereas one patient had extremely severe score of 10.

Pain intensity scores were significantly reduced after only 15 seconds of lidocaine application. The average VAS pain scores in the treated group were significantly lower (P.01) than in the control group (2.8±1.42 and 7.91±1.29, respectively). The lidocaine cream did not cause frost bite or delayed pain, and all patients wanted to use it again for future injections.

When compared to other local anaesthetic agents and techniques, lidocaine saves time and money. In many plastic surgery procedures, local anaesthetics injection ability to reduce pain to minimal or completely eliminate it [20]. Pain is an unpleasant response elicited by a variety of stimuli, and injection pain is very common, and lidocaine can be used to treat other clinical phenomena.

Although many strategies have been used to improve insulin administration, including subcutaneous infusion, inhalation, and even oral administration, none outperforms subcutaneous injection. As a result, we can use lidocaine analgesia to reduce the pain of insulin injections, and pain-free administration would significantly improve both patient compliance and disease management [21].

CONCLUSION

The present study found that lidocaine analgesia provides significant pain relief in post-traumatic hypertrophic scars prior to steroid injection. It also provides a safe and effective way for enhancing the management of disease and patient compliance.

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