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Effect of Lidocaine Tape on Pain during Intralesional Injection of Triamcinolone Acetonide for the Treatment of Keloid

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Abstract

Background: Because intralesional injection of triamcinolone acetonide (TA), a widely used for the treatment of keloid, is painful, many patients discontinue treatment. We evaluated the effects of pretreatment with topical 60% lidocaine tape on the pain and tolerability of intralesional TA treatment in patients with keloid.

Methods: The subjects were 42 patients with keloid who had been treated with intralesional injection of TA but had discontinued treatment owing to intolerable pain. All patients were pretreated with 60% lidocaine tape placed on the keloids for more than 120 minutes before intralesional injection of TA. Patients assessed pain with a 100-mm visual analog scale (VAS) with 0 mm for "no pain" and 100 mm for "worst possible pain." Pain was assessed with the VAS immediately after TA injection. Finally, the patients assessed the tolerability of this treatment.

Results: The mean VAS score during intralesional TA injection therapy without pretreatment with lidocaine tape was 82.6 ± 14.4 mm. In contrast, the mean VAS score during intralesional TA injection therapy in the same patients after pretreatment with lidocaine tape was 18.9 ± 11.3 mm, which was significantly lower ($P<.0.05$), and 30 (71.4%) of the patients tolerated this therapy well.

Conclusion: Pretreatment with 60% lidocaine tape significantly reduces the pain associated with intralesional injection of TA. This approach increases patient comfort and should enable patients to continue the treatment.

(J Nippon Med Sch 2009; 76: 9–12)

Key words: intralesional injection of triamcinolone acetonide, pain, keloid, lidocaine tape

Introduction

Keloid lesion is a hypertrophic wound healing dysfunction with continuous growth and tumor-like shape that usually presents with hyperemia, pruritus, and pain[1]. The pathogenesis of keloids is not completely clear, although it has been the focus of many studies, and this has led to empirical treatments with debatable success.

The intralesional injection of triamcinolone acetonide (TA), first reported in 1961[2], is still one of

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Table 1 Patient Demographics and Keloid Data

	Value
No. of patients	42
Age, years	
Average	29.1
Range	19－34
Sex	
Female	20 (48%)
Male	22 (52%)
Keloids	
Mean size in mm (range)	2.1 (0.5－8)
Average duration in years (range)	8.7 (0.7－14)
Location	
Chest	31 (74%)
shoulder	11 (26%)

the most effective and widely used methods in the treatment of keloid, but the pain during the injection is the greatest disadvantage[3]. Alleviating pain associated with injection to the keloid would reduce the patient's distress and allow treatment to be continued. Some methods used to reduce the pain include cooling and the addition of lidocaine. Preparations mixed with lidocaine are not always effective[4].

The 60% lidocaine tape (Penles™, Maruho, Osaka, Japan) is a self-adhesive local anesthetic-impregnated tape. It contains 18 mg of lidocaine in 15 cm^2 of polyester film. It produces dermal anesthesia and decreases pain in adults when used before percutaneous cannulation[5]. The aim of this study was to assess the effects of pretreatment with topical 60% lidocaine tape for reducing the pain and increasing the tolerability of intralesional TA injection therapy for keloid.

Materials and Methods

We reviewed the clinical records of patients with keloid treated at our hospital and selected 42 patients (22 women and 20 men; age range: 19–34 years; **Table 1**) who had discontinued intralesional injection of TA because of intolerable pain. We first asked about previous unbearable pain due to intralesional TA injection therapy for keloid. Patients assessed their pain with a 100-mm visual analog scale (VAS) with 0 mm for "no pain" and 100 mm for "worst possible pain" before the application of lidocaine tape. Then, all patients were pretreated with 60% lidocaine tape placed on the keloids 120 minutes before intralesional TA injection therapy. The tape was removed before treatment, after which a 26-gauge needle was inserted into the keloid, and 1 to 10 mg of a solution of TA (Kenacort-A®) was slowly injected. The patients assessed the pain with the VAS score immediately after injection. The mean VAS scores for pain before and after pretreatment with lidocaine tape were determined and compared with each other. Finally, the patients assessed the tolerability of the intralesional TA injection therapy. All patients were examined and treated by a single physician. Data are presented as means ± SD value. The VAS data were analyzed with the Mann-Whitney U test. A P value<0.05 was considered to indicate significance.

Results

The mean VAS score before pretreatment with lidocaine tape was 82.6 ± 14.4 mm. In contrast, the mean VAS score for the same patients after pretreatment with 60% lidocaine tape was 18.9 ± 11.3 mm, which was significantly lower (P<0.05) (**Fig. 1**).

Of the 42 patients, 30 (71.4%) tolerated well the intralesional TA injection after pretreatment with lidocaine tape (**Fig. 2**), indicating the relief of pain and willingness to continue therapy. There was no adverse effect related to the procedure in any patient.

Discussion

Keloid lesion is a benign growth of dense fibrous tissue developing from an abnormal healing response to a cutaneous injury, extending beyond the original borders of the wound or inflammatory response. Keloids are firm, erythematous nodules, often of cosmetic concern for patients. Keloids are frequently symptomatic, with most patients reporting tenderness or pruritis[6]. Many patients are affected both physically and psychologically and

Fig. 1 Self-assessed patient pain score due to intralesional injection of TA as shown by the mean VAS score with and without the pretreatment with 60% lidocaine tape. The pain score was significantly lower after pretreatment with lidocaine tape ($P<0.05$).

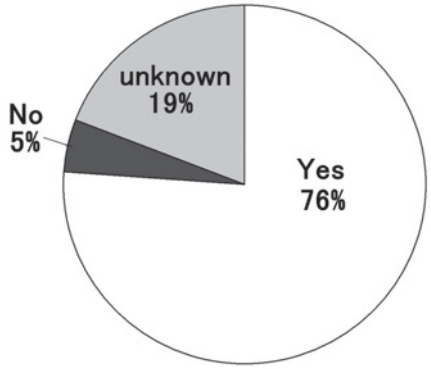

Fig. 2 Pie chart showing tolerability to continue therapy with intralesional TA injection after pretreatment with 60% lidocaine tape. More than 70% of the patients tolerated the treatment well and continued therapy.

report a severe negative effect on their quality of life[7].

A wide variety of therapies exist for keloids, with the most commonly used being intralesional steroid injection, surgical excision, cryotherapy, laser therapy, radiation therapy and the application of silicon gel sheets. Other treatments that have been used with variable success rates include imiquimod, fluorouracil, bleomycin, retinoids, calcium channel blockers, mitomycin C, and interferon-α 2b[8].

Intralesional steroid injection is by far the most commonly used treatment for keloids. Overall, this modality has high degrees of tolerability and effectiveness for reducing symptoms. Several studies evaluating intralesional steroids have reported a 50% recurrence rate[9–13]. The steroid TA (Kenacort-A®) is typically used at concentrations of 10 to 40 mg/mL, depending on the size and location of the lesion. Multiple injections at monthly intervals are generally required for larger keloids. Intralesional steroid injections help soften the keloid and reduce symptoms of pruritus and tenderness. TA has been shown to inhibit collagen synthesis and fibroblast growth in vitro[14]. Treatment of fibroblasts with TA reduces expression of transforming growth factor β and increases production of basic fibroblast growth factor.

The main drawback of intralesional TA injection is intolerable pain. Muneuchi et al.[15] were disappointed to find that nearly one-third of patients abandon treatment after 10 of fewer injection sessions because of pain and little immediate improvement. Therefore, reducing the pain from injection is important. Because needles must typically be inserted multiple times, especially for larger lesions, some authors advocate pretreatment with topical lidocaine or the injection of lidocaine with the TA to help alleviate injection-associated pain[16]. However, preparations mixed with lidocaine are not always effective in reducing the pain. With local anaethetics, because the speed of injection is negatively correlated with the degree of pain, very slow injections are recommended[17]. Intralesional steroid injection may be impractical for very large or multiple keloids, since the pain of injection may be considerable and there is additional concern due to large doses of corticosteroids.

Kiil have reported that a Dermojet® can be painful, but it is less painful than needle injection[9]. Many surgeons underestimate the pain associated with treatment. Some authors have noticed the pain of the intralesional chemotherapy for keloids. Stucker and Shaw gave their patients midazolam intravenously to make Dermojet® treatment more tolerable[18].

The present study is, to our knowledge, the first to have evaluated the effect of 60% lidocaine tape on pain from TA injection therapy of keloid. We found that more than two-thirds of the patients felt that

60% lidocaine tape significantly reduced pain during the intralesional injection of TA. As compared with previous treatment modalities, pretreatment with 60% lidocaine tape is a simple method that only requires application for 120 minutes before injection of TA and is more effective and has no adverse effect and no significant effect on the quality of treatment for keloids.

In conclusion, pretreatment with 60% lidocaine tape reduced the pain associated with intralesional injection of TA for keloids. It may be a useful premedication when TA therapy is planned.

Acknowledgement: We thank M. Ghazizadeh, MD, Associate Professor, Department of Molecular Pathology, Institute of Development and Aging Sciences, Nippon Medical School, for his careful review and revision of our manuscript.

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(Received, October 23, 2008)
(Accepted, December 9, 2008)