Pain during rigid cystoscopy: a prospective randomized controlled study comparing the benefit of cooled and room temperature lignocaine gel

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ABSTRACT

Lignocaine gel is an established topical anesthetic agent for cystoscopy in awake patients. We performed a prospective randomized study to evaluate whether cooling the lignocaine gel to 4°C decreases the pain perception during cystoscopy in male patients. Sixty consecutive male patients undergoing rigid cystoscopy were randomized into two groups. Group I received 15 ml of 2% lignocaine hydrochloride gel at 4°C and group II received the same agent at room temperature (20°C). Cystoscopy was performed and pain perceived during the procedure was assessed by independent evaluator using Wong-Baker FACES pain scale rating chart. The mean pain score in group I was lower (4.32±1.70) than that in group II (5.28±1.99), but this difference was statistically not significant (p=0.191). However significantly greater percentage (84% Vs 52%) of patients with cooled lignocaine wished to have same anesthetic in future for similar procedure (p=0.032). In conclusion, cooling the lignocaine gel to 4°C does not decrease the pain perception during rigid cystoscopy in male patients.

Keywords: Lignocaine gel, temperature, pain, cystoscopy.

INTRODUCTION

Cystoscopy is one of the most frequently performed procedures in Urology. Before the mid 1990s, all cystoscopies used to be done with rigid cystoscope. The advent of flexible cystoscopy has significantly decreased the pain and discomfort associated with the procedure. Although flexible cystoscope is available in few centers in Nepal, most of the institutes still use rigid cystoscope for diagnostic cystoscopy.

Both rigid and flexible cystoscopy is associated with some extent of pain and discomfort to the patient. Various anesthetic agents have been used to decrease the pain and discomfort of cystoscopy. Cocaine was reported as the first topical anesthetic agent for cystoscopy in 1884.[1,2] Now a day, topical lignocaine gel is the most commonly used agent because of its simultaneous role as a lubricant and local anesthetic. Although several reports have been published regarding the volume, temperature, and instillation time of lignocaine gel, there is yet no standard regimen for both rigid and flexible cystoscopy. We performed a prospective randomized controlled trial comparing pain during rigid cystoscopy in male patient with lignocaine gel at 4°C and at room temperature.

MATERIALS AND METHODS

A total of 60 male patients undergoing rigid cystoscopy under local anesthesia were included in the study. Exclusion criteria were allergy to lignocaine, urinary tract infection use of any analgesics within previous 24 hours, urethral stricture, presence of a sensory disorder such as a spinal cord injury and simultaneous scheduling of another procedure (like bladder biopsy or urethral dilatation) along with cystoscopy.

After giving informed consent, the patients were randomized into two groups: group I received intraurethral instillation of 15 ml of refrigerated lignocaine gel at 4°C and group II received the same at room temperature (20°C). After instillation, the penis is compressed with a gauge loop for 10 minutes in all patients for the drug to take effect.

Patient was then kept in lithotomy position and cystoscopy was done. All cystoscopies were done by a single urological surgeon. After procedure an independent person evaluated the patient in recovery room regarding the pain perceived during the procedure. Subjective pain was assessed using Wong-Baker FACES pain scale rating chart with pain score 0 – 10, where 0 = no pain at all and 10 = worst pain imaginable. Patients also rated their willingness to have the same kind of anesthetic for similar procedure in future on yes or no basis.

Data analysis was done using statistical package for social sciences (SPSS) version 12. Pain score was compared in

Table-1: Age and pain score in two groups

	Group I	Group II	p
Mean age (±SD)	44.56(±18.92)	39.60(±20.88)	0.720
Mean pain score (±SD)	4.32(±1.70)	5.28(±1.99)	0.191
Positive response (%)	84	52	0.032

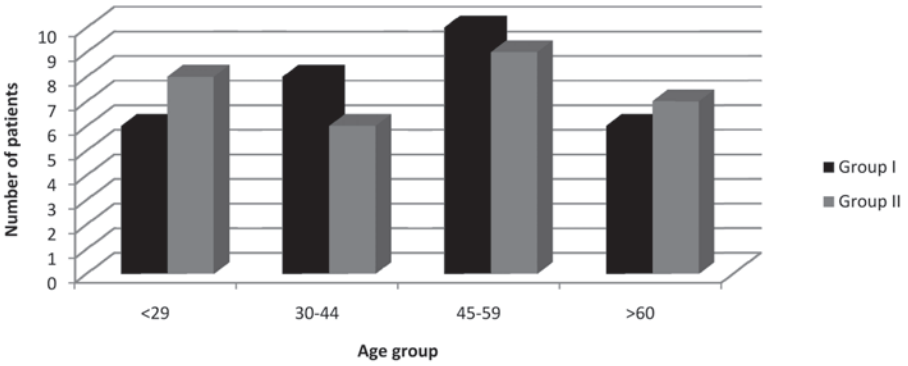

Fig. 1. Age distribution of patients in two groups

the two groups with student's t-test and p value <0.05 was considered statistically significant. Similarly the age and willingness to have similar anesthetic in future were also compared using chi square test.

RESULTS

Each of the two groups contained 30 patients. The two groups were comparable demographically as illustrated in Table-1 and Fig. 1. mean age of the patients in group I was 44.56±18.92 years while that in group II was 39.60±20.88 years. The difference was statistically not significant (p=0.720). Comparison of the pain scores in the two groups is shown in Fig. 2. Although the mean pain score in group I was lower (4.32±1.70) than that in group II (5.28±1.99), this difference was also statistically not significant (p=0.191).

Eighty percent of the patients with cooled lignocaine wished to have same anesthetic for similar procedure in future where as only 52% of the patients with room temperature lignocaine wished the similar anesthetic (Fig. 3 and 4). This difference was statistically significant with p value of 0.032.

None of the patients in both groups needed analgesic in post cystoscopy period and no adverse reactions occurred during and after instillation of lignocaine gel.

DISCUSSION

Lignocaine is a lipid soluble amide which enters the hydrophobic component of neural membrane and prevents the transmembrane flow of sodium ions necessary for initiation and propagation of action potential.

Lignocaine was first used in clinical practice in 1949.[3] Various studies have been done on different aspects of intraurethral instillation of lignocaine for men undergoing cystoscopy including volumes, rates of instillation, exposure times and temperatures of the lignocaine gel.

It has been shown that reduced temperature leads to decreased nociceptor responsiveness which may explain the reduced discomfort associated with the intraurethral instillation of cooled lignocaine gel.[4,5] Contrary to this, the present study failed to show any significant difference in pain scores between the groups who received lignocaine gel at room temperature and at 4°C.

Thompson *et al* compared the discomfort caused by instillation of lignocaine gel at 4°C, 22°C and 40°C.[6] They concluded that cooling lignocaine gel to 4°C significantly reduced the discomfort associated with its delivery into the male urethra. Goel *et al* also reported that cooling the lignocaine gel to 4°C significantly reduced the discomfort compared to the same agent at 22°C.[7]

In our study we instilled 15 ml of lignocaine gel and kept for 10 min before insertion of cystoscope. Dawkins *et al* reported a mean urethral volume of 16 ml (range12-20 ml) in awake male by assessing the volume of gel required to pass through the bladder neck on ultrasonography.[8] Thus 10ml of gel seems to be inadequate to completely lubricate the entire urethra in male patients. Although Brekkan *et al*[9] and Holms *et al*[10] have reported that instillation of 20 ml is superior to 10 ml, McFarlane *et al*[11] found no difference in pain reduction between instillation of 10 ml and 20 ml of anesthetic gel.

There has been debate on the optimum indwelling time necessary for the analgesic effect of lignocaine after intraurethral instillation. Pharmacokinetically, the absorption of topical lignocaine is slow, with a peak level reached at 15 to 60 minutes.[12] Choong *et al*[13] found better

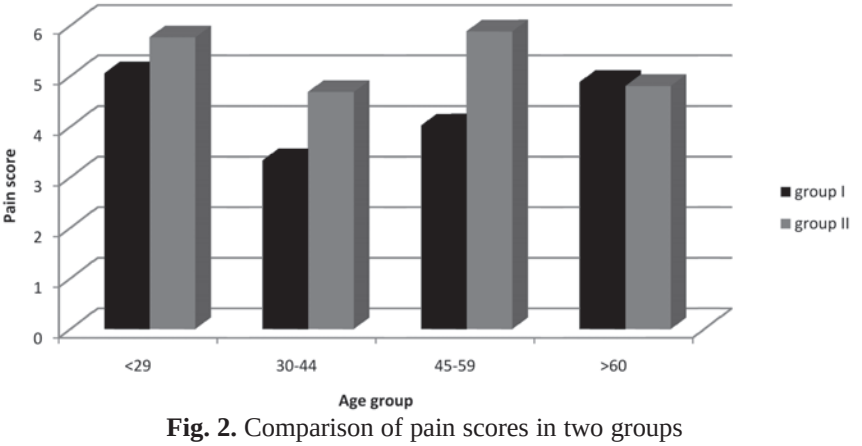

Fig. 2. Comparison of pain scores in two groups

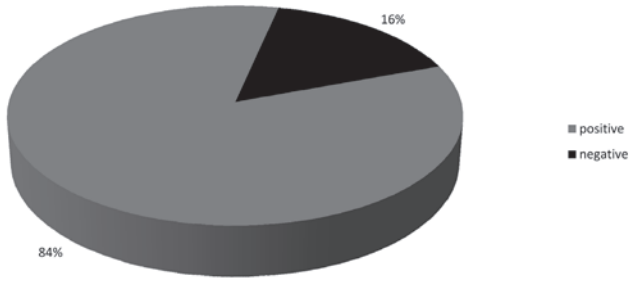

Fig. 3. Positive and negative response in group I

pain control when cystoscopy was done 25 minutes after gel instillation. However Burke *et al*[14] reported cystoscopy at 30 to 60 seconds after lignocaine gel instillation was well tolerated while Herr *et al* found no difference in pain perception between cystoscopy performed immediately and 15 min after lignocaine gel instillation.[14,15] Young *et al* and McFarlane *et al* even showed that lignocaine gel has no significant advantage over plain lubricating gel in control of pain during cystoscopy.[11,16] These conflicting reports indicate some other factors rather than lignocaine gel alone might play roles in patient tolerance. For instance, the surgeon's skill, patient counseling, patient's age and comorbidity are likely to affect the pain perception during cystoscopy.

In conclusion cooled lignocaine gel at 4°C has no advantage over room temperature lignocaine gel for decreasing pain perception during rigid cystoscopy. However greater proportion of patients who receives cooled lignocaine wish to have same anesthetic agent for similar procedure in future in contrast to those who get room temperature lignocaine gel.

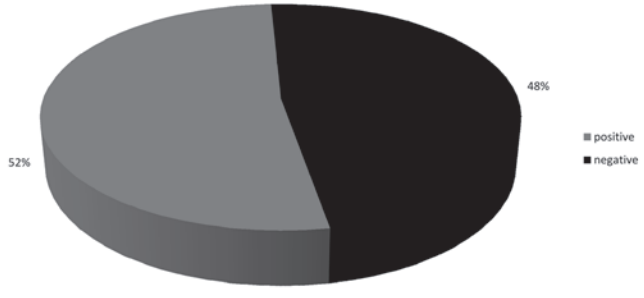

Fig. 4. Positive and negative response in group II

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