

# Cooled Lignocaine Gel For Relieving Pain During Rigid Cystoscopy

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## ABSTRACT

**Objective** To compare the difference of mean pain score between cooled and room temperature 2% lignocaine applied topically during rigid cystoscopy in male patients.

**Study design** Comparative study.

**Place & Duration of study** Department of Urology & Transplantation, Jinnah Postgraduate Medical Center (JPMC) Karachi, from January 2018 to December 2018.

**Methodology** Male patients with age between 18 year to 60 year with indication of cystoscopy like hematuria, lower urinary tract symptoms, incontinence, surveillance cystoscopy and DJ stent removal were included in the study. Exclusion criteria were patients allergic to topical lignocaine, active urinary tract infection, urethral stricture, spinal cord injury, narrow urethral meatus and prostatitis. Patients were divided into two groups. In group A cooled 2% lignocaine gel and in group B 2% lignocaine gel at room temperature was instilled into the urethra before cystoscopy. Groups were allotted by envelope lottery method. Data was collected on predesigned form and statistical analysis was performed.

**Results** Total of 118 patients were included in the study and divided into Group A and Group B with 59 patients in each group. In group A, the mean age of the patients was 34.44 ±9.52 year (19-55 years) while in group B it was 34.00 ±8.98 year (20-55 years). Mean pain score was 3.95 ±1.41 in group A, while in group B it was 6.31 ±1.82. Application of Student t test showed that there was highly significant difference among the mean pain scores between two groups (P <0.001).

**Conclusion** Cooling of 2 % lignocaine at 4°C significantly decreased the mean pain score, its severity and discomfort and thus recommended for diagnostic and day care rigid cystoscopy procedures under local anesthesia.

**Key words** Rigid cystoscopy, Cooled lignocaine, Pain, Visual Analog Scale (VAS).

## INTRODUCTION:

Endoscopy is an essential part of urology practice. Most of these procedures are done on day care basis. For evaluating the urinary tract symptoms cystoscopy is performed as a diagnostic tool.<sup>1</sup>

Cystoscopy can be performed with flexible or rigid scope.<sup>2</sup> A flexible cystoscopy is a good alternate to rigid cystoscopy as it results in less pain and discomfort during the procedure.<sup>3</sup> Flexible cystoscope is not freely available. Equipment is costly and some procedures cannot be performed with this instrument.

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Rigid cystoscopy under general or spinal anesthesia is an another option but not cost effective. There is high risk of complications and it cannot be performed in out-patient setting.<sup>4</sup> There are studies on using intra-urethral instillation of lignocaine gel along with other pain controlling methods like intravenous ketorolac, sedation with midazolam and deep sedation with propofol with better pain control.<sup>5</sup>

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Rigid cystoscopy is used commonly with certain benefits. It provides better vision due to rod lens system, good caliber working channel for accessory instrument passage, larger lumen for irrigation etc.<sup>6</sup> Due to larger diameter and rigidity patients may experience more pain along with discomfort and need of high doses of analgesia and sometimes deep sedation for pain management.

In male patients due to larger urethra and prostatic enlargement this procedure is even more painful. Attempts have been made to decrease pain and discomfort by using drugs and lubricating agent before cystoscopy as a topical anesthetic agent.<sup>7</sup> Number of drugs were used for this purpose. Now a days lignocaine (a lipid soluble amide-extensively used local anesthetic agent worldwide) is used commonly for rigid cystoscopy as lubricating agent equally effective for decreasing pain and discomfort during the procedure. It is also cheaper and easily available.<sup>8</sup>

There are number of contradictions regarding the use and benefits of cooled lignocaine.<sup>9</sup> Studies suggest that cooled lignocaine gel (at 4°C) is more effective in relieving pain than that kept at room temperature.<sup>10,11</sup> There are studies that contradict this observation.<sup>12,13</sup> There is no standard literature recommendation for the usage of lignocaine such as its volume, temperature and instillation time per urethra for flexible and rigid cystoscopy. Such contradictory results need clarity for urologists regarding optimal and correct use of lignocaine gel during cystoscopic day care procedures. This study was done to compare pain perception during rigid cystoscopy in male patients with 2% lignocaine gel at 4°C and at that kept at room temperature.

#### **METHODOLOGY:**

This comparative study was conducted in the Department of Urology & Transplantation at Jinnah Postgraduate Medical Center Karachi, from January 2018 to December 2018. Approval was taken from institutional ethical review board. Informed and written consent was taken from all the patients regarding the study objectives. Presence of sterile urine was confirmed by prior urine culture and sensitivity test. Opaque envelopes (containing the name of group) were used for random allocation in two groups (group A and group B). Group A received intra-urethral instillation of 15 ml of refrigerated lignocaine gel at 4°C while group B received 15 ml of lignocaine kept at room temperature (about 20°C) 15 minutes before rigid cystoscopy procedure. After instillation, the penis was compressed with a gauze for 15 minutes in all patients for the drug to take

effect. Patients were then kept in lithotomy position and cystoscopy performed. All cystoscopies were done using 19 French Storz 30° degree rigid cystoscope.

Patients with hematuria suspected from lower tract, unexplained lower urinary tract symptoms (LUTS), incontinence, surveillance cystoscopy for bladder tumor and removal of Double J stent were included. Patients who were allergic to lignocaine, on regular use of sedatives or analgesics, with spinal cord injury, narrow urethral meatus, operated for urethral stricture, and with active urinary tract infection were excluded.

Type of the operative procedures and total time taken was recorded. Immediately after the procedure subjective pain was assessed using visual analogue score (0-10 score -0 means no pain while 10 means unbearable pain). This was performed by filling a questionnaire by the patient with the help of an independent clinical nurse to evaluate patient's pain and discomfort during cystoscopy. Data were entered in SPSS version 18.0 for analysis. Mean and standard deviations were calculated on age and the pain score. Age was stratified into two groups, 18-35 year and 36-55 years to reduce confounding effect. Student t test was used to analyze the difference between the mean pain score among two groups. P <0.05 was taken as significant.

#### **RESULTS:**

Total of 118 patients underwent cystoscopy with 59 patients in each group A and B. Both the groups were comparable demographically in age as well as the type of procedure. In group A the mean age of patients was 34.44±9.52 year with a range from 19 to 55 years. The mean age in group B was 34.00±8.98 years with range from 20 to 55 years (table I). Mean pain score in group A was 3.95±1.41 while in group B 6.31±1.82 (p=0.001). Age groups 18-35 years showed mean pain score of 4.06±1.43 in group A and 6.10±1.92 in group B (p=0.001). Details are given in table II. Patients in both the groups did not need any additional analgesia in post cystoscopy period and none of the patients developed adverse reaction during and after instillation of lignocaine gel.

#### **DISCUSSION:**

Pain associated with flexible cystoscopy is three times less as compared to rigid cystoscopy.<sup>14</sup> Due to its larger caliber of rigid cystoscopy can result in pain.<sup>15</sup> So for reducing pain intensity patient may require either local anesthetic drug or sometime intravenous analgesia. It has observed that cooled

**Table I: Comparison of Age and Pain Scores**

Variable	Group	Minimum	Maximum	Mean	t- value P-value
Age (Year)	A	19	55	34.44 +9.52	t= 0.25
	B	20	55	34 + 8.95	P=0.79
Pain score (VAS score)	A	2	6	3.95 + 1.41	t= 7.87
	B	4	9	6.31 + 1.82	P=0.001*

\*Significant

**Table II: Effect of Age On Mean Pain Score**

Age group	Group	Mean	Confidence Interval	t- value P-value
18-35 years	A	4.06 + 1.43	3.56 to 4.56	t=6.54
	B	6.10 + 1.92	5.42 to 6.78	P= 0.001*
36-55 years	A	3.81 + 1.41	3.98 to 4.34	t=9.46
	B	6.54 + 1.71	5.91 to 7.71	P=0.001*

\*Significant

lignocaine gel provide more pain relief due to nociceptor receptor response to low temperature.<sup>16</sup>

In present study patient in group A (cooled lignocaine gel) mean pain score was less than that of group B and was statistically significant. In a study researchers evaluated the use of lignocaine gel at different temperature in three groups, 4°C, 22°C and 40°C respectively. They found that patients who received cooled lignocaine gel at 4°C had decreased mean pain score than those who were given gel at higher temperature during cystoscopy.<sup>17</sup> In another study the mean pain score with cooled lignocaine gel was 4.32+ 1.70 as compared to 5.28 +1.99 with lignocaine at room temperature and difference was not statistically significant.<sup>18</sup>

Current study has some limitations having small sample size and single center data. Despite of the above limitations, this study has highlighted the importance of usage cooled lignocaine gel before rigid cystoscopy in relieving pain during the procedure.

**CONCLUSIONS:**

Cooling of lignocaine gel to 4°C resulted in significantly decreased mean pain score, its severity and discomfort during rigid cystoscopy.

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Received for publication: 20-04-2020

Accepted after revision: 30-05-2020

Author's Contributions:

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Mumtaz Ali: Data collection.

Arif Ali: Literature search.

Saeed Ahmed Khan: Data collection and data analysis.

Conflict of Interest:

The authors declare that they have no conflict of interest.

Source of Funding:

None

How to cite this article:

Tareen N, Mansoor M, Ali M, Ali A, Khan SA. Cooled lignocaine gel for relieving pain during rigid cystoscopy. *J Surg Pakistan.* 2020;25 (1):31-34. Doi:10.21699/jsp.25.1.8.