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Original article

The superiority of the analgesic effect of intraurethral Bupivacaine during outpatient flexible cystoscopy in male patients

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KEYWORDS
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Abstract
Objective: Flexible cystoscopy (FC) has become a frequently applied outpatient prosedure. Dysuria with an incidence of 30–54% is the main complaint of patients. As our hypothesis was, lower pain scores during and after cystoscopy would be achieved with bupivacaine application we aimed to compare the analgesic efficacy of intraurethral bupivacaine and lidocaine.
Subjects and methods: Files of 90 patients who underwent FC in our clinic, between August 2015 and November 2015 were retrospectively scanned. Patients were evaluated in 2 groups according to the local anesthetic they were applied intraurethrally. The first group consisted of 45 patients who received 10 mL of %2 lidocaine gel; the second group consisted of 45 patients who received 10 mL of 0.5% bupivacaine. A numerical visual analog scale (VAS) from 0 to 10 was used to assess pain scores during and after the procedure.
Results: During the procedure the mean VAS was 4.09 (±1.95) in the %2 lidocaine group and 4.3 (±1.58) in the 0.5% bupivacaine group (p = .5). Therefore, during the first micturition after the procedure the mean VAS was 3.4 (±1.86) in the %2 lidocaine group and 2.09 (±1.19) in the 0.5% bupivacaine group (<0.001).
Conclusions: With the reason that dyuria is the most annoying complication for the patients undergoing FC, it is worth trying to overcome this issue. By providing significantly decreased levels of dysuria, 0.5% bupivacaine was superior to %2 lidocaine gel for local analgesia especially during first micturiation after out-patient FC in males patients.

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Introduction

Flexible cystoscopy has become a frequently applied procedure mostly due to being performed on an outpatient basis and it's lack of need for general anesthesia. Dysuria with a high incidence of 30–54% is the main complaint of patients [1,2]. Various studies to improve the comfort of cystoscopy is available in the literature [3–5]. In the quest to find the optimal medication, several molecules including sodium citrate, sodium bicarbonate, tartaric acid, citric acid and saccharin sodium have been investigated [6,7]. However, data are limited regarding the applications after cystoscopy. In this study, we evaluated the pain and discomfort levels of patients who underwent flexible cystoscopy. The aim of our study is to compare the anesthetic efficacy of intraurethral bupivacaine and lidocaine on patients undergoing outpatient flexible cystoscopy.

Subjects and methods

Files of patients who underwent flexible cystoscopy in our clinic between January 2015 and December 2015 were scanned. Female patients, children and those with a history of prior cystoscopy and patients which required simultaneous urethral dilation, stent withdrawal, urethrotomy or biopsy procedures were excluded. Patients with insufficient file data were also excluded. The pain scores of the patients using intraurethral 2% lidocaine and %0.5 bupivacaine as local analgesics were compared.

Surgical technique

After confirming the presence of sterile urine of patients, 10 mL of an sterile local anesthetic agent (Either 0.5% bupivacaine (Marcaine 0.5%, Astra Zeneca) or 2% lidocaine gel (Aqua Touch ™, Ostim, Ankara, Turkey)) intraurethrally for analgesia within 10 s after disinfection of external genital area were injected from the urethral mea and 2% lidocaine gel on cystoscope as an lubricant. A 10-min waiting period after clamping of the penis, the patients underwent cystoscopy procedure with a 15.5f flexible cystoscope (CYF-4 Olympus Pty Ltd., Australia) by the same operator. A visual analog scale (VAS) questionnaire was filled by the patient with the help of the clinical nurse to evaluate patients' pain and discomfort during cystoscopy and after the first micturition following cystoscopy.

Data were analyzed by using standard statistical software, SPSS ver., 18.0 (SPSS Inc., Chicago, IL, USA). The results for continuous variables were expressed as mean ± standard deviation. The Mann–Whitney *U* test was applied to compare categorical variable. *p* Value <0.05 was considered statistically significant.

Results

90 patients with complete file data were included in the study. Hematuria for 35 patients, lower urinary tract symptoms for 20 patients, incontinence for 25 patients and recurrent urinary tract infection for 10 patients were the reasons the patients underwent cystoscopy.

All VAS scores and operation times for two groups are summarized in Table 1.

Patient age was similar among groups. In the evaluation between groups for VAS scores during cystoscopy, there was not a statistically significant difference ($p = 0.5$). When the first micturition VAS scores were compared, Group 2 had lower scores than Group 1 ($p < 0.001$), even though the comparison of the operation times, Group 2 had longer times than Group 1 ($p < 0.001$). None of the patients were given any analgesic medication after the procedure and again no adverse effects of the local anesthetic agents in any of the patients were seen.

Discussion

Flexible cystoscopy in urology practice is widely used both for diagnosis and treatment. Due to be done with local anesthesia in office conditions the procedure has gained ground rapidly in urology clinics. Local anesthetics are divided into 3 groups in accordance with the perpetuation of action. Short-acting (cocaine, procaine), medium-acting (lidocaine and prilocaine) and longacting drugs (bupivacaine, tetracaine). Lidocaine is the most commonly used agent during cystoscopy, therefore most studies evaluating the comfort of cystoscopy is performed by this agent. In contrast, to the best of our knowledge, there is no study in the literature investigating the anesthetic effect of bupivacaine in cystoscopy.

There is no clear consensus about the duration, the amount and the form of local anesthetic during flexible cystoscopy and most research is usually focused on these issues. In the literature, there are many methods of investigation about improving the comfort of the flexible cystoscopy. For the first time, Choong and his friends declared an eloquent pain reduction while performing flexible cystoscopy procedure with 20 mL of 2% lidocaine gel implementation for 15 min instead of 5 min [5].

Executing flexible cystoscopy immediately after or after a short period of lidocaine gel installation has not an advantage over placebo [8,9]. At the same time as the proposed use of lidocaine gel according to the package information form, is to make the process 3–5 min after administration to the urethra [10]. On the other hand, mucosal absorption of topical analgesics administered transurethrally is slow, incomplete and needs 15–60 min after application to reach the maximum levels [11,12]. Therefore, we used lidocaine gel in both groups in our study, it has lubricant effect rather than the analgesic effect in group 2 as it was applied on cystoscope.

It has been reported that if video flexible cystoscopy procedure is performed in sight of the patient, the perception of pain will be decreased [13], but Kesari et al. reported a similar effect when the process was described in detail to the patients [14]. Dysuria is believed to be the main complaint of patients after flexible cystoscopy. In this paper, we described dysuria as a painful urination. 48 h of dysuria after flexible cystoscopy, in general, may be caused by inflammation due to instrumentation, urethral distention due to lubricant gel or chemical irritation due to the gel itself [6].

Whereupon Spooner and his friends [15] reported a symptomatic relief with sodium citrate in women with cystitis-like symptoms without infection, Lih-Ming Wong and colleagues reported that 48 h after sodium citrate application causes no reduction in dysuria following flexible cystoscopy [6]. In our study implementation of intraurethral bupivacaine in Group 2 increased patient comfort and we believe that this effect lasts longer than Group 1 ($p < 0{,}001$).

When the procedure times were analyzed, we observed that Group 2 had longer operation time which was statistically significant

Table 1 Comparison of ages, operation times and VAS scores between groups.

	Aqua Touch™ group (n = 45)	Marcaine® group (n = 45)	p[a]
Age (mean ± sd)	60.5 ± 15.2	58.5 ± 13.5	ns
Time (mean ± sd) (second)	274.5 ± 27.5	367.8 ± 127.5	<0.001
VAS (during cystoscopy) (mean ± sd)	4.09 ± 1.95	4,3 ± 1,58	0.5
VAS (during micturiation after cystoscopy) (mean ± sd)	3.4 ± 1.86	2.09 ± 1.19	<0.001

p < 0.05, Mann–Whitney *U* test.
sd = standard deviation.
ns = non significant.
[a]Comparison between values of both groups.

(p < 0,001). We believe that the longer duration of operations in Group 2 was because of reduced pain and inconvenience ensuring more comfortable and detailed cystoscopic examinations.

This is the first study in the literature to investigate possible effects of intraurethral bupivacaine on comfort of out-patient flexible cystoscopy. However, the limited number of patients and the retrospective design without randomization and being dependent to hospital records were weak points in the reliability of our study. Our findings should therefore be confirmed by prospective randomized placebo control blinded studies.

Conclusion

Though flexible cystoscopy is the most frequently used procedure in urology today, use of local anesthetics for the male patients to provide comfort is of great importance. However, an ideal local anesthetic and duration of local anesthesia are not yet defined. In this study, intraurethral bupivacaine as an local anesthetic agent was not inferior to lidocain gel. As it is not associated with more pain sensation in comparison with lidocaine, in addition it is more cost effective than lidocaine gel, consequently cystoscopy was more comfortable and is thought to be more useful for diagnostic purposes.

Conflict of interests

No conflict of interest was declared by the authors.

Authors' contributions

Ass. Prof. Dr. Reha Girgin: Concept, Literature Search, Writing Manuscript.

MD. Engin Denizhan Demirkiran: Data Collection and/or Processing.

Prof. Dr. Bülent Akduman: Design-Supervision.

Consent from the patient

Written informed consent was obtained from patients who participated in this study.

Ethical committee approval

Authors declared that the research was conducted according to the principles of the World Medical Association Declaration of Helsinki "Ethical Principles for Medical Research Involving Human Subjects".

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