ORIGINAL RESEARCH

4% lidocaine with 3% ephedrine used on nasal packs or as a nasal spray- A comparative study

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ABSTRACT

Background: In otolaryngology, a nasal endoscopy is a crucial and frequent diagnostic procedure that examines the nasal cavity and nasopharynx.The present study was conducted to compare 4% lidocaine with 3% ephedrine used on nasal packs or as a nasal spray. **Materials & Methods:** 80 patients with nasal, paranasal sinus or nasopharyngeal diseases who needed to be examined by rigid nasal endoscopy were divided into 2 groups of 40 each. In group I, nasal cavity was packed by cotton sized 1x1 cm which was soaked with mixed solution of 4% lidocaine and 3% ephedrine (1:1). In group II, the other nasal cavity was sprayed at the upper and lower parts with a solution of 4% lidocaine and 3% ephedrine (1:1) via an atomizer (three puffs per each surface). After 10 minutes, nasal endoscopy was done. Parameters such as pain, discomfort, clarify of nasal anatomy during nasal endoscopic procedures were recorded. **Results:** The mean patient pain score was 3.8 in group I and 2.4 in group II. The difference was significant (P< 0.05). The mean discomfort score was 2.9 in group I and 2.7 in group II. The difference was non- significant (P> 0.05). Clarify of view during nasal endoscopy in middle meatus was 60.4% in group I and 39.6% in group II, in superior meatus was 51.2% in group I and 49.8% in group II, sphenoethmoidal recess was 55.8% in group I and 44.2% in group II and in nasopharynx was 57% in group I and 43% in group II. The difference was non- significant (P> 0.05). **Conclusion:** In contrast to nasal spray with an atomizer, nasal packing with cotton soaked in topical anesthetic and decongestant should be done before to endoscopy.

Keywords: nasal endoscopy, ephedrine, lidocaine

INTRODUCTION

In otolaryngology, a nasal endoscopy is a crucial and frequent diagnostic procedure that examines the nasal cavity and nasopharynx.[1] There are now two ways to administer topical anesthetics and decongestants to conscious patients before a nasal endoscopy. These are nasal sprays and packings. Nasal spray is more convenient, easier to use, and takes less time than the other way.[2] However, due to the uncertainty around the length of time the nasal mucosa will be in touch with the solution, it may not provide sufficient pain relief. Additionally, the spray jet may cause discomfort for patients, and nasal packing may be a preferable way to reduce pain and congestion. On the other hand, nasal packing takes longer, requires more tools, and may be uncomfortable.[3]

Lidocaine is a local anesthetic that works by blocking sodium channels in nerve cells, which prevents pain signals from being sent to the brain.[4]When used on nasal packs, lidocaine numbs the nasal mucosa, providing pain relief during the procedure and afterward.Ephedrine (3%)is a sympathomimetic amine that acts on adrenergic receptors, causing vasoconstriction (narrowing of blood vessels) and reducing blood flow.[5]In the nasal cavity, ephedrine reduces bleeding by shrinking the blood vessels, which is particularly helpful in controlling nasal bleeding and creating a clearer surgical field during nasal procedures.Numerous studies have compared various local anesthetic medications with or without topical decongestants.[6]The present study was conducted to compare 4% lidocaine with 3% ephedrine used on nasal packs or as a nasal spray.

MATERIALS & METHODS

The study was carried out on 80 patients with nasal, paranasal sinus or nasopharyngeal diseases who needed to be examined by rigid nasal endoscopy All gave their written consent to participate in the study.
Data such as name, age, gender etc. was recorded. Patients were divided into 2 groups of 40 each. In group I, nasal cavity was packed by cotton sized 1x1 cm which was soaked with mixed solution of 4% lidocaine and 3% ephedrine (1:1). In group II, the other nasal cavity was sprayed at the upper and lower parts with a solution of 4% lidocaine and 3% ephedrine (1:1) via an atomizer (three puffs per each surface). After 10 minutes, nasal endoscopy was done. Parameters such as pain, discomfort, clarify of nasal anatomy during nasal endoscopic procedures were recorded. Results thus obtained were subjected to statistical analysis. P value < 0.05 was considered significant.

RESULTS

Table I Comparison of patient pain score

Groups	Mean	P value
Group I	3.8	0.01
Group II	2.4	

Table I shows that the mean patient pain score was 3.8 in group I and 2.4 in group II. The difference was significant (P< 0.05).

Table II Comparison of discomfort score

Groups	Mean	P value
Group I	2.9	0.71
Group II	2.7	

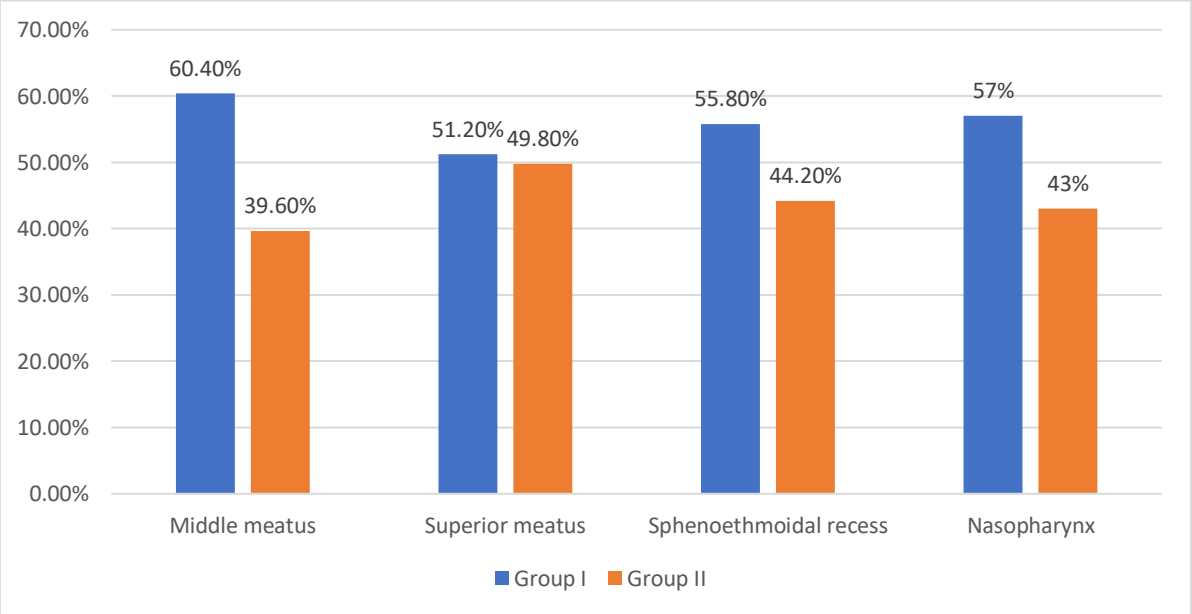
Table II shows that the mean discomfort scorewas 2.9 in group I and 2.7 in group II. The difference was non-significant (P> 0.05).

Table III Comparison of clarify of view during nasal endoscopy

Area of nasal cavity	Group I	Group II	P value
Middle meatus	60.4%	39.6%	0.01
Superior meatus	51.2%	49.8%	0.92
Sphenoethmoidalrecess	55.8%	44.2%	0.05
Nasopharynx	57%	43%	0.84

Table III, graph I shows that clarify of view during nasal endoscopy in middle meatus was 60.4% in group I and 39.6% in group II, in superior meatus was 51.2%in group I and 49.8%in group II, sphenoethmoidal recess was 55.8%in group I and 44.2%in group II and in nasopharynx was 57%in group I and 43%in group II. The difference was non-significant (P> 0.05).

Graph I Comparison of clarify of view during nasal endoscopy



DISCUSSION

Cocaine and lidocaine are commonly used drugs in the area.

Cocaine is rarely used because it is a recreational substance.[7,8] Nowadays, physicians typically employ nasal packing or nasal spray to apply topical nasal anesthetic and decongestant. The three most often utilized decongestants are ephedrine, adrenaline, and phenylephrine.[9,10] Ephedrine helps to improve inspiratory flow through the nasal cavity and considerably decongest the nasal mucosa. Doctors typically employ 4% and 5% concentrations of lidocaine, a frequently utilized local anesthetic.[11]The present study was conducted to compare 4% lidocaine with 3% ephedrine used on nasal packs or as a nasal spray.

We found that the mean patient pain score was 3.8 in group I and 2.4 in group II. ThanaviratananichS et al[12]compared the efficacy of nasal packing vs. nasal spray with 4% lidocaine and 3% ephedrine in patients undergoing rigid nasal endoscopy in terms of pain, discomfort, clarity of view of lateral nasal anatomy and overall patient and examiner preference. There were statistically and clinically significant differences between the nasal spray groups and nasal packing groups during drug administration in the number of patients who had less pain, 46 (56.1%) vs. 17 (20.7%), patients' pain score 2.36 vs. 3.20 and patient preference, 63.4% vs. 30.5%, respectively. During nasal endoscopic procedure, there were no clinically and statistically significant difference in the number of patients who had less pain, less discomfort, pain score and discomfort score. There was also no statistically and clinically significant difference for the choice of method of drug administrations for nasal endoscopic examination in the future. During nasal endoscopy, the endoscopist could see the middle meatus and superior meatus more clearly when nasal packing group had been performed and the endoscopist expressed a clear preference for nasal packing.

We found that the mean discomfort score was 2.9 in group I and 2.7 in group II. We found that clarify of view during nasal endoscopy in middle meatus was 60.4% in group I and 39.6% in group II, in superior meatus was 51.2% in group I and 49.8% in group II, sphenoethmoidal recess was 55.8% in group I and 44.2% in group II and in nasopharynx was 57% in group I and 43% in group II. Saif et al[13]identified nasal preparations used in diagnostic and therapeutic nasal procedures and to examine their safety and efficacy.A total of 53 articles were retrieved: 13 articles on nasal preparation for operative procedures, six on functional endoscopic sinus surgery and 22 on nasendoscopy as well as six case reports. Cocaine was the most widely used topical preparation for operative procedures but was associated with more side-effects; thus, topical tetracaine and levobupivacaine infiltration are alternatives with equivalent efficacy but reduced adverse effects. All articles reviewed for functional endoscopic sinus surgery used a mixture containing lidocaine, adrenaline or both. Flexible nasendoscopy causes minimal patient discomfort and preparation is only recommended in selected patients, in contrast to rigid nasendoscopy which requires preparation.

The shortcoming of the study is small sample size.

CONCLUSION

Authors found that in contrast to nasal spray with an atomizer, nasal packing with cotton soaked in topical anesthetic and decongestant should be done before to endoscopy.

REFERENCES

1. Cain AJ, Murray DP, McClymont LG. The use of topical nasal anaesthesia before flexible nasendoscopy: a double-blind, randomized controlled trial comparing cophenylcaine with placebo. Clin Otolaryngol Allied Sci. 2002; 27:485-8.
2. Temmel AF, Quint C, Toth J, Herneth A, Hummel T. Topical ephedrine administration and nasal chemosensory function in healthy human subjects. Arch Otolaryngol Head Neck Surg. 1999; 125:1012-4.
3. Frosh AC, Jayaraj S, Porter G, Almeyda J. Is local anaesthesia actually beneficial in flexible fibreoptic nasendoscopy? Clin Otolaryngol Allied Sci. 1998; 23: 259-62.
4. Singh V, Brockbank MJ, Todd GB. Flexible transnasal endoscopy: is local anaesthetic necessary? J Laryngol Otol. 1997; 111:616-8.
5. Kasemsuwan L, Griffiths MV. Lignocaine with adrenaline: is it as effective as cocaine in rhinological practice? Clin Otolaryngol Allied Sci. 1996; 21:127-9.
6. Jonathan DA, Violaris NS. Comparison of cocaine and lignocaine as intranasal local anaesthetics. J Laryngol Otol. 1988; 102:628-9.
7. Scianna JM, Chow JM, Hotaling A. Analysis of possible cross-contamination with the Venturi system atomizer. Am J Rhinol .2005; 19:503-7.
8. Dubin MG, White DR, Melroy CT, Gergan MT, Rutala WA, Senior BA. Multi-use Venturi nasal atomizer contamination in a clinical rhinologic practice. Am J Rhinol. 2004; 18:151-6.
9. Wolfe TR, Hillman TA, Bossart PJ. The comparative risks of bacterial contamination between a venturi atomizer and a positive displacement atomizer. Am J Rhinol. 2002; 16:181-6.
10. Spraggs PD, Hanekom WH, Mochloulis G, Joseph T, Kelsey MC. The assessment of the risk of crossinfection with a multi-use nasal atomizer. J Hosp Infect. 1994; 28:315-21.
11. Coakley JF, Arthurs GJ, Wilsher TK. The need for and development of a single use disposable nasal spray. J Laryngol Otol. 1993; 107:20-3.
12. Thanaviratananich S, Kaen PK, Suetrong S, Thanaviratananich S. The efficacy of 4% lidocaine with 3% ephedrine used on nasal packs or as a nasal spray for pain relief in nasal endoscopy. Asian Biomedicine. 2011 Dec 1;5(6):849-54.
13. Saif AM, Farboud A, Delfosse E, Pope L, Adke M. Assessing the safety and efficacy of drugs used in preparing the nose for diagnostic and therapeutic procedures: a systematic review. Clinical Otolaryngology. 2016 Oct;41(5):546-63.