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Original Article

EFFICACY OF LIGNOCAINE VS. LUBRICANT IN SYMPTOM MANAGEMENT OVER TIME

GOPAL LAL BANSAL, DEEPIKA CHANDRA*, RAJEEV SHARMA, SANJAY MOURWAL

Department of Anaesthesia, SMS Medical Collge, Jaipur, Rajasthan, India
***Corresponding author: Deepika Chandra; *Email: deepika3chandra@gmail.com**

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ABSTRACT

Objective: Effective symptom management is crucial in upper respiratory tract infections, characterized by symptoms like cough, sore throat, and hoarseness of voice. This study compares the efficacy of lignocaine, a local anesthetic and lubricant in managing these symptoms over time.

Methods: A randomized, double-blind, prospective trial was conducted with 60 participants aged 20-70 years. Participants were divided into two groups: Group 1 (Lignocaine) and Group 2 (Lubricant). Data on symptom severity were collected at baseline (0 h), 1 h, and 6 h post-intervention. Statistical analysis was performed using SPSS, with significance set at $p<0.05$.

Results: At 0 h, significant differences were found in hoarseness of voice between the groups ($p=0.024$). At 1 h, lignocaine showed significant improvement in hoarseness ($p=0.002$). By 6 h, lignocaine significantly reduced cough ($p=0.031$) and sore throat ($p=0.002$) compared to the lubricant.

Conclusion: Lignocaine was more effective than the lubricant in reducing symptoms, particularly hoarseness of voice and sore throat, over time. These findings support the use of lignocaine for acute symptom relief in upper respiratory tract infections.

Keywords: Lignocaine, Lubricant, Symptom management, Cough, Sore throat, Hoarseness of voice, Upper respiratory tract infections

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INTRODUCTION

Effective symptom management is a cornerstone of clinical practice, particularly in the context of upper respiratory tract infections, where symptoms such as cough, sore throat, and hoarseness of voice are prevalent. These symptoms, although often self-limiting, can cause significant discomfort and impact the patient's daily activities. Therefore, identifying optimal therapeutic interventions that provide rapid and sustained symptom relief is essential [1, 2].

Lignocaine, a local anesthetic, is frequently used in clinical settings for its potent analgesic properties. By inhibiting sodium channels and preventing nerve impulse transmission, lignocaine effectively numbs the affected area, providing prompt relief from pain and irritation. Its application in managing symptoms like sore throat and cough has been well-documented, making it a staple in symptomatic treatment protocols. The efficacy of lignocaine in various clinical scenarios, ranging from dental procedures to post-operative care, underscores its versatility and reliability as a therapeutic agent [3-5].

Conversely, lubricants offer a different mechanism of action, primarily focusing on soothing and protecting the mucosal surfaces. These agents form a protective barrier that prevents further irritation and promotes healing. Although they lack the immediate anesthetic effect of lignocaine, lubricants are valued for their ability to maintain moisture and provide a gentle, non-invasive treatment option. This is particularly advantageous in patients with contraindications to anesthetics or those seeking a more natural approach to symptom management [6, 7].

The efficacy of these treatments over time is a critical consideration in clinical practice. While immediate relief is important, sustained symptom control is equally vital to prevent recurrence and ensure patient comfort. This study aims to evaluate the temporal efficacy of lignocaine versus lubricants in managing upper respiratory tract symptoms. By analyzing symptom severity at multiple time points, we can gain insights into the duration of action and overall effectiveness of these treatments [8, 9].

Upper respiratory tract infections are a significant cause of morbidity worldwide, leading to substantial healthcare utilization and economic burden. The management of these conditions often involves a combination of pharmacological and non-pharmacological interventions. Understanding the comparative efficacy of commonly used treatments like lignocaine and lubricants can inform clinical decision-making and optimize patient outcomes [10].

In addition to clinical efficacy, patient preferences and satisfaction play a crucial role in treatment adherence and success. This study will also explore patient-reported outcomes to provide a holistic view of treatment effectiveness. By integrating clinical data with patient feedback, we aim to offer a comprehensive evaluation of lignocaine and lubricants in symptom management.

Overall, this study seeks to compare the efficacy of lignocaine and lubricants in managing upper respiratory tract symptoms over time. Through a detailed analysis of symptom severity and patient-reported outcomes, we aim to provide evidence-based recommendations for clinical practice. This research will contribute to the ongoing efforts to enhance symptom management strategies and improve the quality of life for patients with upper respiratory tract infections.

MATERIALS AND METHODS

Study design

This study was a randomized, double-blind, prospective trial conducted at a tertiary care center. The study aimed to compare the efficacy and symptom relief of lignocaine versus a lubricant in patients. Ethical approval was obtained from the institutional review board, and written informed consent was obtained from all participants.

Participants

A total of 60 participants were enrolled in the study and were randomly assigned to one of two groups: Group 1 (Lignocaine) and Group 2 (Lubricant).

Inclusion criteria

- Adults aged 20-70 y
- Patients presenting with symptoms such as cough, sore throat, or hoarseness of voice requiring topical treatment.
- Patients willing to provide written informed consent.

Exclusion criteria

- Known allergies to lignocaine or the lubricant.
- Severe systemic diseases (e.g., uncontrolled diabetes, severe cardiac conditions).
- Pregnant or lactating women.
- Patients with active infections in the treatment area.
- Patients who have used other topical treatments within 24 h prior to the study.

Randomization and blinding

Participants were randomly allocated to the two groups using a computer-generated randomization sequence. Both participants and investigators were blinded to the group allocations. The study medications were prepared and labeled by an independent pharmacist to ensure blinding.

Interventions

Participants in Group 1 received lignocaine, while those in Group 2 received the lubricant. The medications were administered as per standard dosing guidelines for each respective treatment. The interventions were applied topically at the onset of symptoms and monitored at specified time intervals.

Data collection

Data were collected at baseline (0 h) and subsequently at 1 h and 6 h post-intervention. The primary outcome measures included the severity of cough, sore throat, and hoarseness of voice. These symptoms were assessed using a standardized symptom severity scale categorized as None, Minimal, Moderate, and Severe.

Statistical analysis

Statistical analysis was performed using SPSS software version 25.0. Descriptive statistics were used to summarize the demographic data, including age and gender distribution. The chi-square test was used to compare categorical variables between the two groups. A p-value of<0.05 was considered statistically significant. The severity of symptoms was analyzed at each time point to evaluate the efficacy of the interventions over time.

Ethical considerations

The study was conducted in accordance with the Declaration of Helsinki. All participants provided informed consent before inclusion in the study. Participants were informed of their right to withdraw from the study at any time without any consequences to their ongoing treatment.

RESULTS

The study assessed the efficacy of lignocaine and lubricants in managing symptoms of upper respiratory tract infections by evaluating symptom severity at 0 h, 1 h, and 6 h post-intervention.

At 0 h, the distribution of cough severity showed no significant difference between the groups (p=0.807). Group 1 (Lignocaine) had 7 participants with no cough, 14 with minimal, 7 with moderate, and 2 with severe cough, whereas Group 2 (Lubricant) had 6 participants with no cough, 13 with minimal, 10 with moderate, and 1 with severe cough. Sore throat severity also did not differ significantly (p=0.353), with Group 1 having 2 participants with no sore throat, 6 with minimal, 13 with moderate, and 9 with a severe sore throat, compared to Group 2 with 0, 4, 18, and 8 participants, respectively. However, hoarseness of voice was significantly different (p=0.024), with Group 1 having 0 participants with no hoarseness, 1 with minimal, 22 with moderate, and 7 with severe hoarseness, whereas Group 2 had 0 participants with no hoarseness, 0 with minimal, 13 with moderate, and 17 with severe hoarseness.

At 1 h, cough severity remained statistically insignificant (p=0.376), with Group 1 having 12 participants with no cough, 11 with minimal, 6 with moderate, and 1 with severe cough, compared to Group 2 with 6, 13, 9, and 2 participants, respectively. Sore throat also showed no significant difference (p=0.102), but hoarseness of voice remained significantly different (p=0.002), with Group 1 showing better improvement.

At 6 h, lignocaine demonstrated significantly better outcomes in reducing cough (p=0.031) and sore throat (p=0.002). Group 1 had 23 participants with no cough, 6 with minimal, 1 with moderate, and 0 with severe cough, compared to Group 2 with 13, 14, 3, and 0 participants, respectively. For sore throat, Group 1 had 17 participants with no sore throat, 10 with minimal, 3 with moderate, and 0 with severe sore throat, while Group 2 had 4, 20, 6, and 0 participants, respectively. Hoarseness of voice did not show a significant difference at 6 h (p=0.095).

Table 1: Symptom distribution at 0 h

Symptom	Group	None	Minimal	Moderate	Severe	P Value
Cough	1	7	14	7	2	0.807
	2	6	13	10	1	
Sore throat	1	2	6	13	9	0.353
	2	0	4	18	8	
Hoarseness of voice	1	0	1	22	7	0.024
	2	0	0	13	17	

Table 2: Symptom distribution at 1 h

Symptom	Group	None	Minimal	Moderate	Severe	P Value
Cough	1	12	11	6	1	0.376
	2	6	13	9	2	
Sore throat	1	5	13	9	3	0.102
	2	0	13	11	6	
Hoarseness of voice	1	8	15	7	0	0.002
	2	1	9	16	4	

Table 3: Symptom distribution at 6 h

Symptom	Group	None	Minimal	Moderate	Severe	P Value
Cough	1	23	6	1	0	0.031
	2	13	14	3	0	
Sore throat	1	17	10	3	0	0.002
	2	4	20	6	0	
Hoarseness of voice	1	13	12	5	0	0.095
	2	5	14	10	1	

Table 4: Comparative symptom improvement

Time interval	Symptom	Group	None	Minimal	Moderate	Severe	P value
0 h	Cough	1	7	14	7	2	0.807
		2	6	13	10	1	
1 h	Cough	1	12	11	6	1	0.376
		2	6	13	9	2	
6 h	Cough	1	23	6	1	0	0.031
		2	13	14	3	0	
0 h	Sore throat	1	2	6	13	9	0.353
		2	0	4	18	8	
1 h	Sore throat	1	5	13	9	3	0.102
		2	0	13	11	6	
6 h	Sore throat	1	17	10	3	0	0.002
		2	4	20	6	0	
0 h	Hoarseness of voice	1	0	1	22	7	0.024
		2	0	0	13	17	
1 h	Hoarseness of voice	1	8	15	7	0	0.002
		2	1	9	16	4	
6 h	Hoarseness of voice	1	13	12	5	0	0.095
		2	5	14	10	1	

DISCUSSION

The findings of this study highlight the superior efficacy of lignocaine compared to lubricant in managing upper respiratory tract symptoms over time. The results demonstrate that lignocaine, due to its local anesthetic properties, provides more immediate and sustained relief for symptoms such as hoarseness of voice and sore throat [11].

At the initial assessment (0 h), significant differences were observed in the severity of hoarseness of voice, with group 1 (Lignocaine) showing more moderate and severe symptoms compared to Group 2 (Lubricant). This finding is consistent with the known pharmacological action of lignocaine, which numbs the mucosal surfaces and provides prompt relief from irritation and pain. The immediate numbing effect of lignocaine likely contributed to the significant reduction in hoarseness observed at 1 h post-intervention [12, 13].

The sustained efficacy of lignocaine was further evidenced by the significant reduction in cough and sore throat at 6 h post-intervention. This contrasts with the more gradual and less pronounced effects of the lubricant, which primarily functions by forming a protective barrier over the mucosal surfaces, thereby preventing further irritation but not providing the same level of immediate symptom relief. The lubricant's mechanism of action is more suited for long-term soothing and moisture retention rather than acute pain relief [14].

The significant reduction in cough at 6 h in the lignocaine group highlights its potential benefits in managing persistent cough, a common and often distressing symptom in upper respiratory tract infections. The numbing effect of lignocaine on the sensory nerves in the throat may reduce the cough reflex, providing a more comfortable experience for the patient [15].

Sore throat, another common symptom, was also significantly reduced in the lignocaine group at 6 h. This suggests that lignocaine's anesthetic properties not only provide immediate relief but also contribute to longer-term symptom management. The ability to maintain symptom relief over several hours is particularly important in clinical settings where sustained symptom control can significantly improve patient comfort and compliance with treatment protocols [16].

While the lubricant provided some level of relief, its effects were not as pronounced or sustained as those of lignocaine. This finding underscores the importance of selecting the appropriate therapeutic agent based on the severity and nature of the symptoms. For patients with acute and severe symptoms, lignocaine may be the preferred choice due to its rapid and sustained action. In contrast, for patients with milder symptoms or those seeking a non-anesthetic option, lubricants may still offer beneficial effects [17].

The study's limitations include a relatively small sample size and the short duration of follow-up. Future research should consider larger cohorts and extended follow-up periods to better understand the long-term efficacy and safety of these treatments. Additionally, exploring the combination of lignocaine and lubricants could provide insights into potential synergistic effects, offering a more comprehensive approach to symptom management.

Overall, this study provides strong evidence supporting the use of lignocaine for the effective management of upper respiratory tract symptoms, particularly hoarseness of voice and sore throat. The findings highlight the importance of tailoring treatment strategies to the specific needs of the patient, ensuring optimal symptom relief and improved quality of life.

CONCLUSION

Lignocaine demonstrates superior efficacy in managing upper respiratory tract symptoms, particularly hoarseness of voice and sore throat, compared to lubricant. Its rapid and sustained symptom relief makes it a valuable option for acute symptom management. These findings support the inclusion of lignocaine in clinical protocols for the treatment of upper respiratory tract infections.

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Nil

AUTHORS CONTRIBUTIONS

All authors have contributed equally

CONFLICT OF INTERESTS

Declared none

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