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COMPARATIVE STUDY OF THE EFFICACY OF NEBULISED KETAMINE VERSUS MAGNESIUM SULPHATE IN REDUCING INCIDENCE AND SEVERITY OF POST-OPERATIVE SORE-THROAT, HOARSENESS AND COUGH'

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Abstract

Introduction: Post-operative sore-throat (POST) is a common issue caused by trauma, nerve damage, and pathological changes. Non-pharmacological measures and pharmacological methods help reduce incidence. **Methodology:** The study examined the difference in post-operative sore throat, hoarseness, and cough frequency between magnesium sulphate and ketamine nebulization in patients undergoing elective surgery at Burdwan Medical College and Hospital. **Results:** A study at Burdwan Medical College and Hospital compared the effectiveness of nebulised ketamine versus magnesium sulphate in reducing post-operative symptoms. 90 patients were divided into two groups: those receiving ketamine and those receiving magnesium sulphate. Postoperative symptoms were recorded at various times, and data was analyzed using SPSS, t test, and Pearson Chi-Square test. **Conclusion:** The study compares the effectiveness of ketamine and magnesium sulphate aerosolised in patients undergoing general anaesthesia, finding that ketamine reduces POST, hoarseness, and cough more effectively than magnesium sulphate.

Keywords: Ketamine, magnesium sulphate, Nebulisation, NMDA, POST

Introduction

Modern anaesthesia prioritizes quality assurance to improve post-operative outcomes, but post-operative sore-throat (POST), a common complaint with an incidence of 21%-65%, remains unresolved.[1,2]

Postoperative throat symptoms may be caused by trauma, nerve damage, and pathological changes after laryngoscopy and intubation, necessitating prophylactic measures and varying success rates in adversity.

Non-pharmacological measures, such as smaller tracheal tubes, fewer laryngoscopy attempts, careful suctioning, minimizing intra-cuff pressure, intubation after larynx relaxation, and extubation after cuff deflation, reduce POST incidence.[3]

The pharmacological methods used included inhalation of beclomethasone and fluticasone, gargling with azulene sulfonate, aspirin, ketamine, magnesium, benzydamine hydrochloride, local spray, and intracuff administration of alkalised lignocaine.[4,5]

N-methyl D-Aspartate (NMDA) is involved in nociception and inflammation, with peripheral nerves also containing NMDA receptors. Ketamine and Magnesium Sulphate, NMDA-receptor antagonists, reduce POST incidence.[6,7]

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Ketamine, an NMDA-receptor antagonist, is used for its anti-nociceptive and anti-inflammatory properties, both as a gargle and in nebulized form, to reduce POST.[4,5]

This study compares Magnesium and other NMDA-receptor antagonists to determine the best agent for reducing POST, using gargle and nebulisation methods.[8]

Aims & Objective

The study aims to compare the effects of ketamine and magnesium sulphate nebulisation on post-operative sore-throat, hoarseness, and cough. It will measure the incidence and severity of these symptoms at different time points, including post-operative extubation, post-nebulisation, post-intubation, and 24 hours after extubation. The study will also assess the drug's effect on hemodynamic parameters and oxygen saturation, as well as its effect on the patient's breathing and speech quality.

METHODOLOGY

The study, conducted at Burdwan Medical College and Hospital in Eastern India, aimed to determine if there was a difference in post-operative sore throat, hoarseness, or cough frequency between magnesium sulphate and ketamine nebulization, based on the null hypothesis.

Patients admitted to the Department of General Surgery/Orthopaedic Surgery/Gynaecology and Obstetrics, BMCH, for elective surgery in supine position under general anesthesia.

INCLUSION CRITERIA: Patients undergoing elective surgical/gynaecological/orthopaedic procedures under general anesthesia with endotracheal intubation, aged 18-60, male/female, 50-75 kg, Grade I/II ASA Physical Status, I/II Mallampati grading.

EXCLUSION CRITERIA: Patients with a history of sore-throat, URTI, COPD, pregnancy, undergoing oral, nasal, head-and-neck surgeries, or needing nasogastric tube insertion are excluded.

STUDY PROCEDURE: This study was a prospective, interventional, comparative study on adult patients for a 1.5-year period. Patients were enrolled and recorded their pre-anaesthetic check-up, including body weight, gender, history, physical examination, airway assessment, and haematological parameters. Patients were informed about the procedure, risks, benefits, and their right to opt out at any time. They were given Ranitidine 50mg IM and Metoclopramide 10mg 30 minutes before the procedure.

Patients were nebulized with a study drug, Ketamine 50mg and Magnesium Sulphate 500mg, 15 minutes before anesthesia. Hemodynamic parameters were then measured after nebulisation.

The patient was pre-medicated with Midazolam, Glycopyrrolate, and Fentanyl before induction, followed by Propofol for pre-oxygenation, and Atracurium as a muscle relaxant after losing response to verbal commands.

An experienced anesthesiologist performed intubation using a soft-seal cuffed endotracheal tube. The cuff pressure was checked after intubation and twice during surgery, maintaining 20-25 cm of H2O4. Correct ET tube placement was confirmed through auscultation and end

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tidal capnography. Patients requiring multiple laryngoscopy attempts were excluded. A third set of hemodynamic parameters was taken before any surgical stimulus.

The patient underwent surgery using nitrous oxide, oxygen, Isoflurane, and intermittent positive pressure ventilation, with additional skeletal muscle relaxation provided by Inj. Atracurium and paracetamol infusion.

After surgery, Ondansetron was administered i.v., and muscle relaxation was reversed with Neostigmine and Glycopyrrolate. Extubation was done after gentle suctioning. POST, cough, and hoarseness monitoring and grading were done, with responses noted at 0, 2, 4, 12, and 24 hours. **'0 hours' was defined as 15 minutes post-extubation.**

- **STUDY PARAMETERS:**

The study analyzed the incidence and severity of post-operative sore-throat, hoarseness of voice, cough, and hemodynamic parameters at different times post-extubation, including pre-nebulisation, post-nebulisation, post-intubation, and at 0, 2, 4, 12, and 24 hours post-extubation, using a scale of 0-3. The results were analyzed using a 0-3 scale.

GRADING SEVERITY OF POST, HOARSENESS AND COUGH[8]

TABLE-1:

Post-operative sore-throat	
GRADE	**SEVERITY**
0	**No sore-throat at any time since the operation.**
1	**Minimal - Patient complained of sore-throat only on asking.**
2	**Moderate -Patient complained of sore-throat on his/her own.**
3	**Severe - Change of voice or hoarseness, associated with throat pain.**

TABLE-2:

Post-operative hoarseness	
GRADE	**SEVERITY**
0	**No complaint of hoarseness at any time since the operation.**
1	**Minimal change in quality of speech. Patient complains only on asking.**

2	**Moderate change in quality of speech. Patient complains on his/her own.**
3	**Severe- Gross changes in quality of speech perceived by observer.**

TABLE-3:

Post-operative cough	
GRADE	**SEVERITY**
0	**No cough at any time since the operation**
1	**Minimal**
2	**Moderate**
3	**Severe**

RESULT AND ANALYSIS

A study was conducted at Burdwan Medical College and Hospital to compare the efficacy of nebulised ketamine versus magnesium sulphate in reducing post-operative sore-throat, hoarseness, and cough. The study involved 90 patients admitted for elective surgery in supine position under general anaesthesia. Patients were divided into two groups of 45 patients each. Patients who received nebulisation with ketamine (50mg diluted to 5ml with normal saline) were assigned to Group K (ketamine), while those who received nebulisation with magnesium sulphate (500mg diluted to 5ml with normal saline) were assigned to Group M ($MgSO_4$). Postoperative symptoms were noted at 0, 2, 4, 12, and 24 hours. Data were collected and analyzed using SPSS for statistical comparison.

For normally distributed data, the Independent samples t test was used to compare each demographic and clinical variable between the two groups; for categorical variables, the Pearson Chi-Square test was employed. A significant threshold of $p < 0.05$ was established.

TABLE 4. DEMOGRAPHIC DATA

Characteristics	Group-K (n=45)	Group-M (n=45)	p-Value
Sex (Male/Female)*	**24 (53.3%)/21 (46.7%)**	**23 (51.1%)/22 (48.9%)**	**0.833**
Age (years)	**41.38 ± 10.26**	**44.02 ± 10.08**	**0.221**
Weight (Kg)	**59.73 ± 8.36**	**62.29 ± 6.02**	**0.100**

Height (meter)	**1.65 ± 0.07**	**1.68 ± 0.06**	**0.093**
BMI (kg/m^2)	**21.76 ± 1.88**	**22.16 ± 1.52**	**0.279**
MPG (I/II)*	**21 (46.7%)/24 (53.3%)**	**26 (57.8%)/ 19 (42.2%)**	**0.291**
ASA-PS (I/II)*	**38 (84.4%)/7 (15.6%)**	**40 (88.9%)/5 (11.1%)**	**0.535**

All data, with the exception of those indicated with an asterisk (*), are given as mean ± standard deviation. * Pearson Chi-square test; * Independent samples t test were conducted. p < 0.05 is regarded as significant.

Patients in Group K were nebulized with 50 mg of ketamine, while patients in Group M were nebulized with 500 mg of magnesium sulphate before being put under anaesthesia.

Table 4 compares patient demographics between two groups, showing no significant differences in age, weight, height, BMI, ASA-PS, MPG, and sex distribution, indicating comparable demographic parameters.

Table 5. Table showing baseline Mean Arterial Pressure and Heart Rates in the two groups.

Baseline parameters	Group-K (n=45)	Group-M(n=45)	p-Value
MAP (mmHg)	**89.62 ± 7.98**	**87.13 ± 7.40**	**0.129**
HR (beats/min)	**82.16 ± 11.36**	**84.51 ± 9.95**	**0.298**

Data expressed in Mean ± SD. Test done – Independent samples t test (p < 0.05 considered significant).

Group K – Patients receiving Ketamine (50 mg) nebulisation; Group M – Patients receiving Magnesium Sulphate (500 mg) nebulisation prior to induction of anesthesia.

According to Table 5, there was no significant difference between the two groups' baseline Heart Rate (HR) and Mean Arterial Pressure (MAP) (p=0.129 and 0.298, respectively).

Table 6: Comparison of Mean Arterial Pressure (MAP) of the 2 groups:

MAP (mmHg)	Group-K (n=45)	Group-M (n=45)	p-Value
Pre-nebulisation	**89.62 ± 7.98**	**87.13 ± 7.40**	**0.129**
Post-nebulisation	**91.40 ± 7.70**	**90.09 ± 7.30**	**0.409**
Post-intubation	**99.07 ± 8.07**	**96.36 ± 6.71**	**0.086**

Post-extubation at 0 hr	**95.31 ± 7.77**	**92.73 ± 7.05**	**0.103**
Post-extubation at 2 hr	**77.87 ± 8.02**	**74.89 ± 7.40**	**0.070**
Post-extubation at 4 hr	**81.09 ± 7.99**	**78.51 ± 7.57**	**0.120**
Post-extubation at 12 hr	**82.96 ± 8.00**	**80.09 ± 7.44**	**0.082**
Post-extubation at 24 hr	**85.91 ± 7.97**	**84.27 ± 7.12**	**0.305**

Data expressed in Mean ± SD. Test done – Independent samples t test (p < 0.05 considered significant). Group K – Patients receiving Ketamine (50 mg) nebulisation; Group M – Patients receiving Magnesium Sulphate (500 mg) nebulisation prior to induction of anaesthesia.

Table 6 shows that the Mean Arterial Pressure (MAP), which was measured at baseline (i.e., pre-nebulisation), post-nebulisation, post-intubation, post- extubation at 0 hr, 2 hr, 4 hr, 12hr and 24 hr has remained comparable between Group K and Group M, throughout. No significant variation in MAP was observed.

Table 7: Comparison of Heart Rate of the 2 groups:

HR (beats/min)	Group-K (n=45)	Group-M (n=45)	p-Value
Pre-nebulisation	**82.16 ± 11.35**	**84.51 ± 9.95**	**0.298**
Post-nebulisation	**84.87 ± 11.40**	**87.22 ± 10.10**	**0.302**
Post-intubation	**94.22 ± 11.10**	**96.07 ± 8.02**	**0.369**
Post-extubation at 0 hr	**90.40 ± 10.79**	**91.64 ± 8.68**	**0.548**
Post-extubation at 2 hr	**87.78 ± 11.00**	**87.49 ± 8.90**	**0.891**
Post-extubation at 4 hr	**85.93 ± 9.89**	**84.89 ± 9.43**	**0.610**
Post-extubation at 12 hr	**88.13 ± 11.40**	**90.11 ± 10.24**	**0.389**
Post-extubation at 24 hr	**84.64 ± 11.51**	**86.60 ± 10.10**	**0.394**

Data expressed in Mean ± SD. Test done – Independent samples t test (p < 0.05 considered significant).

Group K – Patients receiving Ketamine (50 mg) nebulisation; Group M – Patients receiving Magnesium Sulphate (500 mg) nebulisation prior to induction of anesthesia.

Table 7 reveals consistent Heart Rate measurements at baseline, post-nebulisation, intubation, and extubation for Group K and Group M, with no significant variation observed.

COMPARISON OF INCIDENCE OF POST-OPERATIVE SORE-THROAT

Table 8: Comparison of incidence of post-operative sore-throat at 0 hour

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Time (h)	Severity	Group-K (n=45)	Group-M (n=45)	p-Value
0	**Grade 0**	**33 (73.3%)**	**16 (35.6%)**	**0.003**
	Grade 1	**11 (24.4%)**	**27 (60.6%)**	
	Grade 2	**1 (2.2%)**	**1 (2.2%)**	
	Grade 3	**0 (0%)**	**1 (2.2%)**	

Data expressed in numbers and percentages. Test done – Pearson Chi-square test. ($p < 0.05$ considered significant).

Group K – Patients receiving Ketamine (50 mg) nebulisation; Group M – Patients receiving Magnesium Sulphate (500 mg) nebulisation prior to induction of anesthesia.

After extubation, the research evaluated the frequency of sore throat in 45 individuals. At one hour after extubation, of the 45 patients, 24.4% had mild sore throats and 2.2% had moderate sore throats. No patient complained of excruciating sore throat. At 0 hours after extubation, 60.6% of Group M (MgSO4) patients had mild painful throat, 2.2% had moderate sore throat, and 2.2% had severe sore throat. At 0 hours, Group K experienced a noticeably decreased incidence of sore throat.

Table 9: Comparison of incidence of post-operative sore-throat at 2 hours

Time (h)	Severity	Group-K (n=45)	Group-M (n=45)	p-Value
2	**Grade 0**	**43 (95.6%)**	**23 (51.1%)**	**0.000**
	Grade 1	**2 (4.4%)**	**21 (46.7%)**	
	Grade 2	**0 (0%)**	**1 (2.2%)**	
	Grade 3	**0 (0%)**	**0 (0%)**	

Information presented as percentages and figures. The Pearson Chi-square test was completed. $p < 0.05$ is regarded as significant.
Patients in Group K were nebulized with 50 mg of ketamine, while patients in Group M were nebulized with 500 mg of magnesium sulphate before being put under anaesthesia.

The study found that in group K, 4.4% of patients experienced Grade 1 sore-throat, while 95.6% did not, and no patients experienced moderate or severe sore-throat. In group M, 46.7% experienced Grade 1 sore-throat, 2.2% experienced Grade 2, and no patient experienced Grade 3.

Table 10: Comparison of incidence of post-operative sore-throat at 4 hours

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Time (h)	Severity	Group-K (n=45)	Group-M (n=45)	p-Value
4	**Grade 0**	**44 (97.8%)**	**33 (73.3%)**	**0.001**
	Grade 1	**1 (2.2%)**	**12 (26.7%)**	
	Grade 2	**0 (0%)**	**0 (0%)**	
	Grade 3	**0 (0%)**	**0 (0%)**	

Data expressed in numbers and percentages. Test done – Pearson Chi-square test. ($p < 0.05$ considered significant).

Group K – Patients receiving Ketamine (50 mg) nebulisation; Group M – Patients receiving Magnesium Sulphate (500 mg) nebulisation prior to induction of anesthesia.

After extubation, 2.2% of patients in Group K and 26.7% in Group M experienced Grade 1 sore-throat, while 97.8% and 73.3% of patients in Group K and M had no sore-throat incidence.

Table 11: Comparison of incidence of post-operative sore-throat at 12 and 24 hours

Time (h)	Severity	Group-K (n=45)	Group-M (n=45)	p-Value
12	**Grade 0**	**45 (100%)**	**44 (97.8%)**	**0.315**
	Grade 1	**0 (0%)**	**1 (2.2%)**	
	Grade 2	**0 (0%)**	**0 (0%)**	
	Grade 3	**0 (0%)**	**0 (0%)**	
24	**Grade 0**	**45 (100%)**	**45 (100%)**	**1**
	Grade 1	**0 (0%)**	**0 (0%)**	
	Grade 2	**0 (0%)**	**0 (0%)**	
	Grade 3	**0 (0%)**	**0 (0%)**	

The study compared patients receiving Ketamine (50 mg) nebulisation and Magnesium Sulphate (500 mg) nebulisation before anesthesia in two groups, using a Pearson Chi-square test.

The study found that only 2.2% of patients from Group M experienced Grade 1 sore throat at 12 hours post-extubation, while no sore throat was reported in Group K at 24 hours post-extubation.

COMPARISON OF INCIDENCE OF POST-OPERATIVE HOARSENESS OF VOICE.

Table 12: Comparison of incidence of post-operative hoarseness of voice at 0 hour.

Time (h)	Severity	Group-K (n=45)	Group-M (n=45)	p-Value
0	**Grade 0**	**39 (86.7%)**	**29 (64.4%)**	**0.042**
	Grade 1	**6 (13.3%)**	**15 (33.3%)**	
	Grade 2	**0 (0%)**	**1 (2.2%)**	
	Grade 3	**0 (0%)**	**0 (0%)**	

The study compared patients receiving Ketamine (50 mg) nebulisation and Magnesium Sulphate (500 mg) nebulisation before anesthesia in two groups, using a Pearson Chi-square test.

The study assessed the incidence of hoarseness of voice at 0, 2, 4, 12, and 24 hours after extubation. Out of 45 patients, 13.3% experienced mild hoarseness at 0 hour post-extubation,

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while no patient experienced moderate or severe hoarseness. In Group M (MgSO4), 33.3% experienced mild hoarseness, and no patient experienced Grade 3 hoarseness at 0 hour post-extubation. Group K had a significantly lower incidence of hoarseness at 0 hour.

Table 13: Comparison of incidence of post-operative hoarseness of voice at 2 hours.

Time (h)	Severity	Group-K (n=45)	Group-M (n=45)
2	**Grade 0**	**44 (97.8%)**	**38 (84.4%)**
	Grade 1	**1 (2.2%)**	**7 (15.6%)**
	Grade 2	**0 (0%)**	**0 (0%)**
	Grade 3	**0 (0%)**	**0 (0%)**

The study compared patients receiving Ketamine (50 mg) nebulisation and Magnesium Sulphate (500 mg) nebulisation before anesthesia in two groups, using a Pearson Chi-square test.

The study found that at 2 hours post-extubation, 2.2% of patients in group K experienced Grade 1 hoarseness, while 97.8% of patients did not experience it. In group M, 15.6% experienced Grade 1 hoarseness, and 84.4% did not. Group K had a significantly lower incidence of hoarseness.

Table 14: Comparison of incidence of post-operative hoarseness of voice at 4, 12 and 24 hours.

Time (h)	Severity	Group-K (n=45)	Group-M (n=45)	p-Value
4	**Grade 0**	**45 (100%)**	**44 (97.8%)**	**0.315**
	Grade 1	**0 (0%)**	**1 (2.2%)**	
	Grade 2	**0 (0%)**	**0 (0%)**	
	Grade 3	**0 (0%)**	**0 (0%)**	
12	**Grade 0**	**45 (100%)**	**44 (97.8%)**	**0.315**
	Grade 1	**0 (0%)**	**1 (2.2%)**	
	Grade 2	**0 (0%)**	**0 (0%)**	
	Grade 3	**0 (0%)**	**0 (0%)**	
24	**Grade0**	**45 (100%)**	**45 (100%)**	**1**
	Grade 1	**0 (0%)**	**0 (0%)**	
	Grade 2	**0 (0%)**	**0 (0%)**	
	Grade 3	**0 (0%)**	**0 (0%)**	

The study compared patients receiving Ketamine (50 mg) nebulisation and Magnesium Sulphate (500 mg) nebulisation before anesthesia in two groups, using a Pearson Chi-square test.

The study found that only 2.2% of patients in Group M experienced Grade 1 hoarseness at 4 and 12 hours post-extubation, while no hoarseness was observed in Group K.

Table 15: Comparison of incidence of post-operative cough.

Time (h)	Severity	Group-K (n=45)	Group-M (n=45)	p-Value

0	**Nil**	**44 (97.8%)**	**42 (93.3%)**	**0.306**
	Mild	**1 (2.2%)**	**3 (6.7%)**	
	Moderate	**0 (0%)**	**0 (0%)**	
	Severe	**0 (0%)**	**0 (0%)**	
2	**Nil**	**45 (100%)**	**44 (97.8%)**	**0.315**
	Mild	**0 (0%)**	**1 (2.2%)**	
	Moderate	**0 (0%)**	**0 (0%)**	
	Severe	**0 (0%)**	**0 (0%)**	
4	**Nil**	**45 (100%)**	**45 (100%)**	**1**
	Mild	**0 (0%)**	**0 (0%)**	
	Moderate	**0 (0%)**	**0 (0%)**	
	Severe	**0 (0%)**	**0 (0%)**	
12	**Nil**	**45 (100%)**	**45 (100%)**	**1**
	Mild	**0 (0%)**	**0 (0%)**	
	Moderate	**0 (0%)**	**0 (0%)**	
	Severe	**0 (0%)**	**0 (0%)**	
24	**Nil**	**45 (100%)**	**45 (100%)**	**1**
	Mild	**0 (0%)**	**0 (0%)**	
	Moderate	**0 (0%)**	**0 (0%)**	
	Severe	**0 (0%)**	**0 (0%)**	

The study compared patients receiving Ketamine (50 mg) nebulisation and Magnesium Sulphate (500 mg) nebulisation before anesthesia in two groups, using a Pearson Chi-square test.

Post-operative cough incidence was assessed at 0, 2, 4, 12, and 24 hours after extubation. Out of 45 patients, 2.2% experienced mild cough at 0 hour post-extubation, while no patient experienced moderate or severe cough. No cough was observed in 97.8% of patients. In Group M, 6.7% experienced mild cough, but no cough was observed in Group K.

At 4, 12 and 24 hours post-extubation, there was no incidence of cough in either of the 2 groups.

DISCUSSION

Many surgeries require general anesthesia with endotracheal intubation, leading to a common problem of post-operative sore-throat (POST), with an incidence of 21-65% overall. [1,2]

POST development is influenced by factors like age, sex, tube size, cuff type, and pressures. Studies have shown that NMDA receptor antagonists like ketamine and magnesium sulphate can reduce POST incidence.[4]

Ketamine, through its NMDAR antagonism, acts as an anti-nociception agent, providing analgesia for peri-operative and post-operative pain, preventing neuropathic pain, and preventing opioid-induced hyperalgesia. [9]

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Ketamine inhibits inflammation by suppressing NF-kappa B and TNF-alpha activation, reducing LPS-induced iNOS release, and attenuating serum levels of cyclo-oxygenase-2, C-reactive protein, IL-6, and IL-10. [10,11,12]
Magnesium blocks NMDA receptors, preventing pain signal transmission, enhancing opioid analgesic effects, and preventing opioid-induced hyperalgesia. [13]

Ahuja et al [14].'s 2015 study found a significant reduction in POST incidence in ketamine patients post-operatively. Thomas et al.'s 2018 trial also found a significant reduction in POST incidence in ketamine patients compared to saline patients. However, saline patients experienced higher severity of sore throat post-extubation. Both studies support our findings.

Borazan et al. [5] found oral magnesium lozenges to reduce POST incidence and severity. Gupta et al. found MgSO4 nebulisation to reduce POST severity at rest and post-operatively. Yadav et al. found MgSO4 nebulisation significantly decreased POST incidence at 4 and 24 hours in GA patients.

The study compares the effectiveness of ketamine and magnesium sulphate nebulisations in reducing post-operative sore-throat in general anesthesia patients. Nebulisations are preferred due to their uniform distribution over the pharynx and vocal cord, compared to gargles, which have shortcomings like bitter taste and risk of aspiration. Nebulisations offer safety, ease of administration, and better compatibility among study subjects. [15]

The study, conducted at Burdwan Medical College, analyzed the effects of ketamine and magnesium sulphate nebulisation on post-operative sore throat, hoarseness, and cough. The study found that ketamine significantly reduced sore-throat incidence in 73.3% of patients in Group K (Ketamine) and M (MgSO4) at 0, 2, and 4 hours post-extubation. This finding is consistent with previous studies comparing ketamine and MgSO4 nebulisations. The incidence of post-operative cough was also reduced in Group K but not significant at any time post-extubation. The endotracheal tube was placed at optimal position, and intracuff pressures were monitored throughout surgery. Anaesthesia was administered according to protocol, and serum levels of ketamine and magnesium could not be measured. The study suggests that aerosolised nebulisation should have exerted a greater effect and more chance of systemic absorption through the airway surfaces. Future studies could explore the effectiveness of nebulised drugs in reducing stress response following intubation. The study highlights the importance of careful nebulisation and monitoring of serum ketamine levels to ensure safety and efficacy. [16]

SUMMARY

Post-operative sore-throat (POST) is a common issue in general anaesthesia patients, ranking as the eighth most undesirable outcome in clinical anaesthesiology. It causes symptoms like laryngitis, tracheitis, hoarseness, cough, or dysphagia. Factors include trauma to the pharyngeal mucosa, nerve damage, and pathological changes. Non-pharmacological measures include smaller tracheal tubes, laryngoscopy attempts, and cautious suctioning. Pharmacological measures include beclomethasone and fluticasone inhalation.
A study was conducted at Burdwan Medical College and Hospital to compare the efficacy of nebulised ketamine versus magnesium sulphate in reducing post-operative sore-throat,

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hoarseness, and cough. The study involved 90 patients admitted for elective surgery in supine position under general anaesthesia. Patients were divided into two groups: those receiving ketamine (Group K) and those receiving magnesium sulphate (Group M). The study aimed to determine the effectiveness of ketamine and magnesium sulphate in reducing post-operative symptoms. The results were recorded at 0, 2, 4, 12, and 24 hours.

The study found a significant reduction in post-operative pain post-extubation (POST) incidence in the ketamine group compared to the magnesium group. However, the reduction was not statistically significant at 12 and 24 hours post-extubation. The ketamine group also had a reduced incidence of post-operative hoarseness of voice and cough up to 24 hours. The study's limitation was the inability to measure serum ketamine and magnesium levels.

CONCLUSION

The study compares the effectiveness of ketamine and magnesium sulphate aerosolised in patients undergoing general anaesthesia, finding that ketamine reduces POST, hoarseness, and cough more effectively than magnesium sulphate.

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