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Office Address : Room No.: 306-309, Department of Anaesthesia,3rd Floor, BL Taneja Block, MAMC and LN Hospital, New Delhi
Mobile No.: 09646121503, 09868399699 E-mail : aaarjournal@gmail.com
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Correspond : Asian Archives of Anaesthesiology and Resuscitation, Office Address : Room No. 306- 309, Department of Anaesthesia,3rd Floor, BL Taneja Block, MAMC and LN Hospital, New Delhi
E-mail: aaarjournal@gmail.com

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Office Address:
306- 309,DEPARTMENT OF ANAESTHESIA 3RD FLOOR, BL TANEJA BLOCK MAMC and LN HOSPITAL, NEW DELHI,INDIA
naccm2007@gmail.com
www.aaarnaccm.com

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EFFECTIVENESS OF A SINGLE DOSE INTRAVENOUS DEXMEDETOMIDINE ON HAEMODYNAMICS AND PERI-OPERATIVE ANAESTHETIC REQUIREMENTS IN PATIENTS UNDERGOING ELECTIVE HEAD AND NECK CANCER SURGERY.

Rekha Solanki[1], Damini Makwana[2], B.C. Shah[3], B.M. Patel[4], Nerren Parmar[5], Surabhi Goyal[6]

ABSTRACT

Dexmedetomidine is a potent alpha-2 agonist and aim of the present study is to observe the effectiveness of a single dose intravenous Dexmedetomidine on haemodynamic response during tracheal intubation and haemodynamic stability, requirement of isoflurane and opioid during surgery. In a randomized study, 100 adult patients of ASA Grade 1 & 2 for head and neck cancer surgery were divided into two groups.**Group D -** Inj. Dexmedetomidine 1 µg/kg IV before induction + inj. Fentanyl 1 µg/kg IV. **Group F -** Inj. Fentanyl 2 µg/kg intravenously during induction.Anaesthesia was maintained with O_2+N_2O+Isoflurane + inj. Vecuronium bromide. Sedation score, stress response to tracheal intubation and haemodynamic changes were observed intra-operatively. Requirement of isoflurane and fentanyl during surgery was studied. Post-operative requirement of analgesic and sedative drugs were studied.After tracheal intubation increase in heart rate was 3%, systolic blood pressure was 3% and diastolic blood pressure was 5% in group D in comparison to 20%, 12.5% and 12.5% respectively in group F. Patients were haemodynamically stable in group D. Fentanyl requirement decreased by 50% and isoflurane by 46% in group D. Requirements of sedation and analgesic was less in post-operative period in group D. We concluded that dexmedetomidine produced a significant reduction in anxiety and stress response to intubation. It reduces volatile anaesthetic and fentanyl requirement with less changes in haemodynamics throughout the operation. It also reduces requirement of sedative and analgesic drugs post-operatively.

KEY WORDS

Dexmedetomidine, Fentanyl, Haemodynamic changes, Isoflurane, Post-operative analgesic and sedative requirement.

INTRODUCTION

Dexmedetomidine, the active d isomer of meditomidine, is a short acting alpha-2 adrenorecptor agonist with many benefits that encourage its use in the peri-operative period.[1]

Dexmedetomidine is used in aneasthesia due to its haemodynamic, sedative, anxiolytic, analgesic, neuroprotective and anaesthetic sparing effects. α-1 to α-2 selectivity ratio of 1:1600 makes it selective α-2 agonist compared to clonidine.[2]

Department of Anaesthesia,
Gujarat Cancer and Research Institute, Civil Hospital, Ahmedabad -380016.
(1)Assistant Professor (D.A.,M.D) (2) Associate Professor (M.D) (3) Professor(M.D)
(4) Professor and HOD(M.D) (5,6) 2nd year resident.

The stress response to surgery and intubation is characterized by increases in catecholamine & steroid hormones.[3]

The present study was designed to assess the effects of intravenous Dexmedetomidine in attenuating the stress response, intraoperative isoflurane and fentanyl requirement and haemodynamic stability. Post-operative analgesic and sedative requirement were studied.

MATERIAL AND METHODS

After obtaining the ethical committee approval, 100 ASA Grade I & II patients, planned for head & neck cancer surgery were selected for present prospective randomized study. Patient with cardiovascular disease, neurovascular disease, COPD, liver disease, renal disease were excluded from the study. Patients taking any antipsychotic medications were also excluded.

Patients were divided into two groups of 50 each i.e. **Group D** and **Group F**.

All the patients were premedicated with Tab Diazepam 5mg a night before and 3 hours before on the morning of surgery with a sip of water. In the pre-operative room patient's baseline parameters- Heart rate, blood pressure, oxygen saturation and respiratory rate were recorded. After access of IV line patients of Group D received inj. Dexmedetomidine 1 µg/kg in 100 ml of normal saline over 10 minutes pre-operatively & 1 µg/kg Fentanyl 5 minutes before induction. Group F received 100 of normal saline over 10 minutes pre-operatively & 2 µg/kg Fentanyl citrate 5 minutes before induction. All the patients received inj. Ranitidine (50 mg) + inj. Ondensetron (4 mg) IV before induction. All the patients were observed during the infusion for heart rate, blood pressure, SpO_2, respiratory rate, & sedation score (according to Ramsay Sedation Score) at 5 minutes interval till the induction of anesthesia.

All the patients were induced with inj. Thiopentone Sodium 5 mg/kg & neuromuscular blockade was done with 0.1 mg/kg of Vecuronium Bromide. After mask ventilation with 100% O_2, patients' trachea were intubated with appropriate nasal endotracheal tube. Anaesthesia was maintained with O_2 + N_2O (33:66), Isoflurane & Vecuronium. Inj. Fentanyl in the dose of 0.5 µg/kg was repeated when inspiratory concentration of Isoflurane exceeded by 1.2 % to keep the haemodynamic parameters within 20% (↑ or ↓) of baseline values. Continuous monitoring of HR, ECG, SBP, DBP, SpO_2 & $ETCO_2$ was done but recorded at induction, intubation & at 1st, 5th & 10th minutes after intubation. Thereafter all the parameters were continuously observed but recorded at 15 minutes interval till the end of surgery & 30 minutes & 1 hour interval post-operatively for 24 hours.

At the end of surgery, residual neuromuscular block was reversed with inj. Glycopyrrolate + inj. Neostigmine. Nasal ET tube was kept in situ till next morning to maintain and protect airway. At the end of surgery inj. Tramadol 2 mg/kg IV was given for tolerance of ET tube when required.

STATISTICAL ANALYSIS

Statistical analysis was conducted with Epi Info software (verson 3.5.3, 2011) for widows' statistical package using unpaired test for continuous variable with normal distribution. The non parametric Kruskal-Wallis test was used for variables not normally distributed. For categorical variables Chi square test was used. The results are expressed as Mean±SD. A p value of < 0.05 is considered as statistically significant.

RESULTS

The two groups were comparable in patient characteristics. (**Table-1)**

After infusion of Dexmedetomidine majority of patient had sedation score of 1 (10 patients) and 2 (38 patients), only 2 patients had sedation score of 3. There was slight decrease in heart rate and blood pressure and no significant change in SpO_2 was found.

Immediately after laryngoscopy & intubation maximal average increases were 3% in pulse rate, 3% in systolic blood pressure & 5% in diastolic blood pressure in Group D, whereas this was 20% in pulse rate, 12.5% in systolic blood pressure & 12.5% in diastolic blood pressure in Group F. (P<0.001)

Haemodynamic stability was more with Group D as compare to Group F during peri-operative period (Figure1, 2, 3). No patient had severe bradycardia or hypotension.

The average inspiratory concentration of isoflurane required during maintenance was 0.54% in Group D and 1.17% in Group F. Thus almost 46% decrease was observed in Group D compared to Group F. (P=0.00) The average requirement of the fentanyl was 1.2 µg/kg in Group D and 2.4 µg/kg in Group F. So, Group D patients required 50% less fentanyl compared to Group F. (p=0.00) (Table 2)

After completion of surgery, all patients were reversed but kept intubated. At the time of shifting of the patients to the postoperative ward only 4 patients required sedation and analgesia in form of inj. Tramadol 2 mg/kg IV in group D, while in Group F all patients required inj. Tramadol 2 mg/kg IV. (P= 0.00) (Table 3)

Table-1

Patient characteristics [mean+/- SD] in both group		
Patient characteristics	**Group D**	**Group F**
Age(years)	44.64±8.59	46.20±8.45
Sex(M/F)	36/14	40/10
Weight(Kg)	55.98±5.21	51.90±8.53
Total Duration of Surgery(Min)	155.90±24.21	161.00±18.85

Table-2

Anaesthesia Characteristics [mean+/-SD]			
Characteristics	**Group D**	**Group F**	**P value**
Inj. Fentanyl (µg/kg)	1.2±0.21	2.4±0.52	0.00
Average Isoflurane Concentration (%)	0.54±0.16	1.17±0.2	0.00

Table-3

Post-operative sedative & analgesic requirement			
	Group D	**Group F**	**P value**
Drugs	No. of Patients	No. of Patients	
Inj.Tramadol 2 mg/kg IV	4	50	0.00

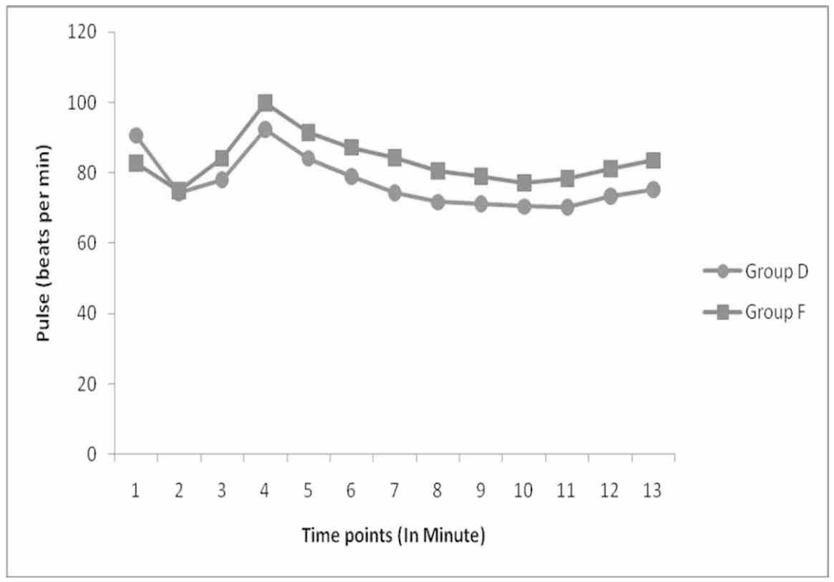

Figure-1: Pulse (beat per minute): Peri-operative heamodynamic response in Group D (Group D) and Group F (Group F). Time points: 1=baseline; 2= after completion of infusion, 3= induction, 4= intubation, 5= 1 min after intubation, 6= 5 min after intubation, 7= 15 min after intubation, 8= 30 min after intubation, 9= 60 min after intubation, 10= 90 min after intubation, 11= 120 min after intubation, 12= 150 min after intubation, 13=180 min after intubation

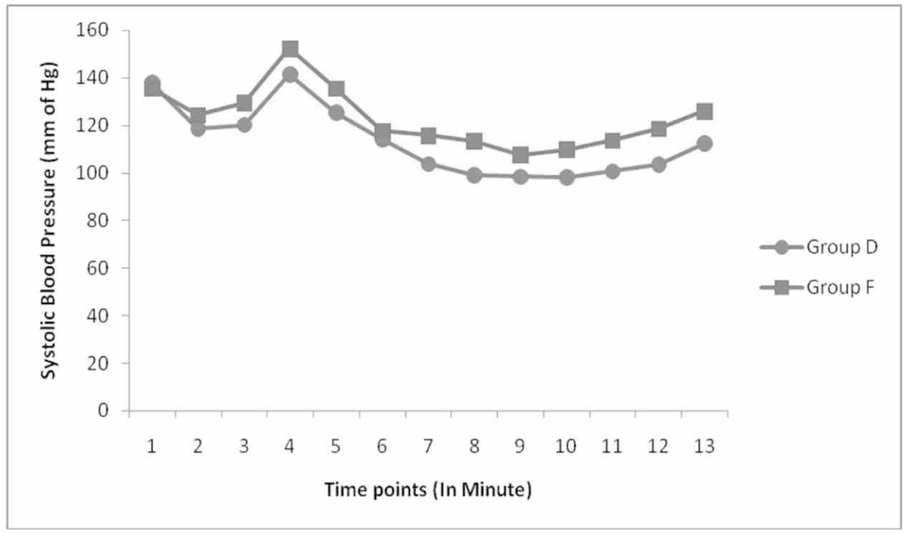

Figure-2: Systolic Blood Pressure (mm of Hg): Peri-operative heamodynamic response in Group D (Group D) and Group F (Group F). Time points: 1=baseline; 2= after completion of infusion, 3= induction, 4= intubation, 5= 1 min after intubation, 6= 5 min after intubation, 7= 15 min after intubation, 8= 30 min after intubation, 9= 60 min after intubation, 10= 90 min after intubation, 11= 120 min after intubation, 12= 150 min after intubation, 13= 180 min after intubation

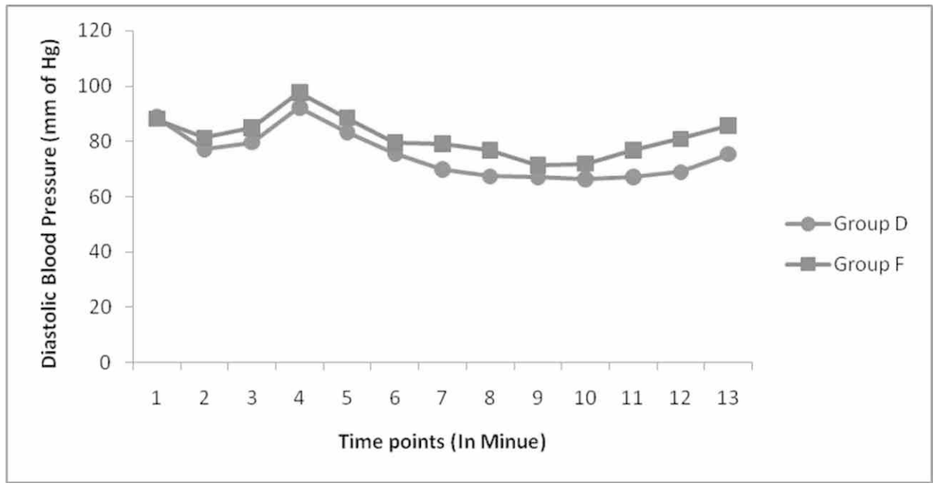

Figure-3: Diastolic Blood Pressure (mm of Hg): Peri-operative heamodynamic response in Group D (Group D) and Group F (Group F). Time points: 1=baseline; 2= after completion of infusion, 3= induction, 4= intubation, 5= 1 min after intubation, 6= 5 min after intubation, 7= 15 min after intubation, 8= 30 min after intubation, 9= 60 min after intubation, 10= 90 min after intubation, 11= 120 min after intubation, 12= 150 min after intubation, 13= 180 min after intubation

DISCUSSION

Dexmedetomidine provides sedation in the peri-operative period. In addition to anaesthesia-sparing effect, it provides stable haemodynamics during intubation, surgery and emergence from anaesthesia. It also provides sedation in the recovery room without significant respiratory impairment and with low analgesic requirements.[1] According to Bajwa et al, the dose of 1 µg/kg attenuated but did not completely obtund the haemodynamic response to laryngoscopy and tracheal intubation. Although with 2 µg/kg dose of Fentanyl in control group, there was 15-25% increase in HR and B.P.[4]

In our study, in Group D increase in HR, Systolic B.P., Diastolic B.P., was 3%, 3% and 5% while in Group F, it was 20%, 12.5% and 12.5% respectively. There is a study showing increase in HR, Systolic B.P. and Diastolic B.P. about 7%, 8% and 11% in Dexmedetomidine Group while increase in HR, Systolic B.P. and Diastolic B.P. was 21%, 40% and 25% in control group.[5]

B. Scheinin and Co-workers reported attenuation of haemodynamic response to laryngoscopy and tracheal intubation with Dexmedetomidine in the dose of 0.6 µg/kg & reported decrease need for thiopentone and fentanyl. There was smaller concentration of noradrenaline in mixed venous plasma in Dexmedetomidine group.[6]

In our study haemodynamic stability was more in Group D compared to Group F during peri-operative period.P.F.Tanskanen and others studied that Dexmedetomidine increased perioperative haemodynamic stability in patients undergoing brain tumor surgery. They also observed that tracheal intubation was faster without respiratory depression.[7]Lawrence CJ and others observed bradycardia and hypotension in their study when they used Dexmedetomidine in the dose of 2 µg/kg IV preoperatively.[8] But in our study none of the patient had such an incidence. This is probably due to the lower dose of Dexmedetomidine.

The perioperative haemodynamic stability is very important in surgeries. Increase or decrease in blood pressure may cause bleeding or oedema or cerebral ischemia. The haemodynamic response to emergence from anaesthesia and extubation are blunted with Dexmedetomidine and the centrally mediated sympatholytic effect is continued well in the postoperative period.[5]

In our study sedation score was 2 at the end of infusion in majority of patients. Dexmedetomidine provided good quality of sedation and patients could be aroused with gentle stimulation. This finding is in accordance with the study done by B.Scheinine & others. [6]

Dexmedetomidine preserves a natural sleep pattern and induces co-operative sedation in which patients are easily arousable, leads to less impairment in cognitive function and has an opioid sparing effect.[9]

We also studied per-operative isoflurane and fentanyl requirement. Fentanyl requirement was 1.2±0.21 µg/kg and 2.4±0.52 µg/kg and average isoflurane concentration was 0.54±0.16 and 1.17±0.2 respectively in Group D and Group F. (P=0.00)

Bajwa SJ and others reported that the mean dose of fentanyl and isoflurane were decreased significantly (>50%) by administration of Dexmedetomidine.[4] Lawrence CJ and others noted that isoflurane concentration was lower in Dexmedetomidine treated patients than control group patients.[8]

Aho M. et al observed that the need for thiopentone and isoflurane was decreased by 30% and 32% respectively in the Dexmedetomidine group compared to control group.[5] The mean end tidal isoflurane concentration was significantly less in the women receiving Dexmedetomidine.[10]

According to B. Scheinin & others no difference was observed in isoflurane requirement between two groups but amount of fentanyl requirement was more in control group and smaller dose of oxycodone was needed by Dexmedetomidine patients in recovery room.[6] In our study, postoperative analgesic and sedative requirement was significantly less in dexmedetomidine group.

Ahmed G. Yacout and others found that Dexmedetomidine decreases proinflamatory cytokines, interlukin-6 level postoperatively. It has direct relation with tissue injury and severity of inflammation. He also found arousable sedation with no delay in recovery from anaesthesia and postoperative ketoroloc requirement was less with the use of Dexmedetomidine in major surgery.[3]

Bispectral index monitoring would have been more conclusive in determining the depth of anaesthesia and anaesthetic agent requirement. We used subjective criteria for deciding dose of isoflurane and fentanyl.

For indicating depth and quantifying reduction in requirement of isoflurane, measurement of the end tidal isoflurane concentration would have been better than the inspired dial concentration, which we measured in our study. To determine haemodynamic response, measurement of QT interval and plasma catecholamine levels would have been more objective.

CONCLUSION

Dexmedetomidine is an excellent drug as it significantly decreases the pressure response to intubation and it offers intraoperative haemodynamic stability. It also reduces the requirement of isoflurane and opioids for anaesthesia and analgesia respectively. There is also smooth recovery from anaesthesia with the use of Dexmedetomidine with fewer requirements of sedation and analgesic in post-operative period. So we find that Dexmedetomidine can be used as a safe & effective adjuvant to GA in head & neck cancer surgery.

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NEW GENERATION SUPRAGLOTTIC AIRWAYS - AIR Q AMBU AURA I

Divya Jain[1], Manpreet Singh[2]

In 1997 Dr Archie Brain, the father of Laryngeal mask Airways modified his originally designed Laryngeal Mask Airway (LMA) for the purpose of endotracheal intubation, to give it a new form which came to be known as, the intubating Laryngeal Mask Airway (ILMA). This device served not only as a conduit for entotracheal intubation but also maintained ventilation and oxygenation throughout intubation attempts.[1] The Large internal diameter could accommodate an endotracheal tube upto size 8 mm ID. Since then ILMA has occupied an important position in the Difficult Airway Algorithm. However the major limitation is that ILMA is available in only 3 sizes meant for small, normal and large adults.

In the last few years we have witnessed the development of newer supraglottic airway devices that can be used both for ventilation and intubation. Air -Q™ Intubating Laryngeal Airway (ILA™, Cookgas LLC, Mercury Medical, Clearwater, FL, USA) is one such device which was commercially introduced into clinical practice in 2005.[2] It has an advantage of a wide bore airway channel to allow passage of appropriate size endotracheal tube.[3] The elevation ramp and the ridges present in the mask heal guide the tube through the airway channel to the glottis aperture. The mask heal improves the airway seal. Air Q ILA has a reusable and a disposable variant. The reusable Air Q comes in 4 sizes while the disposable one, made of polyvinylchloride is available is 6 sizes (Table I). Availabilty of AirQ in smaller sizes makes it an important tool to be

Table I- Air Q ILA

SIZE	1	1.5	2	2.5	3.5	4.5
Weight(kg)	>7	7-17	17-30	30-50	50-70	<70
Max Cuff Vol.	3	5	8	12	18	25
Max. ETT	4.5	5	5.5	6.5	7.5	8.5

Author 1- Assistant Professor
Department of Anaesthesia PGIMER, Chandigarh,India
Email: jaindivya77@rediffmail.com

Author 2- Assistant Professor
Department of Anaesthesia and Intensive Care, GMCH-32, Chandigarh, India
Address for correspondence

used in pediatric difficult airway .[4] In Comparison to the Laryngeal mask airway, Air Q has a shorter and a more curved shaft. The airway adapter is easily removable. The lack of grills on the ventilating orifice allows easy passage of the endotracheal tube from the airway channel of the device. Endotracheal intubation through AirQ can be accomplished blindly or through fiberscope.

The Ambu® Aura-iTM (Aura-i) (Ambu® USA, Glen Burnie ,MD, USA) , is a newer prototype of Ambu Aura Once with a larger diameter airway shaft to allow insertion of a proper sized endotracheal tube.[5] Ambu Aura I has an inbuild curve to follow the human anatomy during insetion of the device. The depth marks present, help in proper positioning of the device.The navigation marks guide the fiberscope during endotracheal intubation through the device. The indicator for the proper size endotracheal tube meant for the particular size of Ambu aura I is provided on the connector of the device. Ambu Aura I is available in 8 sizes for clinical use (Table 2). In comparison to the ILMA, which requires a specialized wire reinforced silicon tip tube, standard endotracheal tubes can be used for Ambu AuraI. The preuse tests and the insertion technique of ambu aura I are similar to the Classical LMA. However it requires the use of fiberscope or optic scope for endotracheal intubation.

Table II- Ambu aura I

SIZE	1	1.5	2	2.5	3	4	5	6
Weight(kg)	>5	5-10	10-20	20-30	30-50	50-70	70-100	>100
Max Cuff Vol.	3	7	10	14	20	30	40	60
Max. ETT	4.5	4	5	5.5	6.5	7.5	8	8

Figure I- Air Q ILA

Figure II- Ambu Aura I

Whether these new generation devices: Air Q and Ambu Aura I can form a suitable alternative to it's earlier counterpart ILMA, is yet to be seen. But these devices undoubtedly would increase the options for pediatric difficult airway management.

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BRACHIAL PLEXUS INJURY FOLLOWING ARM ABDUCTION AT 90˚ IN SUPINE POSITION: AN UNUSUAL CASE REPORT

Breethaa Janani Selvamani[1], Qazi Ehsan Ali [2], Syed Hussain Amir [3], Sabarish Narayanasamy [4]

ABSTRACT

Perioperative peripheral nerve injury is one of the leading causes of postoperative morbidity and professional liability. Of the peripheral nerve injuries, ulnar neuropathy is the most common (28%) followed by brachial plexus injury (20%). It has been known that injury to the brachial plexus occurs when the arm is kept abducted to greater than 90˚ during surgery. American Society of Anaesthesiologists (ASA) guidelines also recommend that upper limit of arm abduction should be 90˚. We discuss a case of brachial plexus injury in a patient even when the arm was kept abducted at 90˚ for the entire duration of surgery.

Keywords: Brachial plexus, peripheral nerve injury, arm abduction, neuropraxia.

INTRODUCTION

Perioperative peripheral neuropathy has long been a major cause of concern for anaesthesiologists. These injuries not only contribute to significant postoperative morbidity, but they are also a source of liability for anaesthesiologists. Of the peripheral nerve injuries, ulnar neuropathy is the most common (28%) followed by brachial plexus (20%).[1] Brachial plexus injury commonly occur due to abduction of upper limb for more than 90˚ in the perioperative period owing to the stretching of the plexus.[2] However in our case, brachial plexus injury occurred at an arm abduction of 90˚. To the best of our knowledge there is no report of brachial plexus injury occurring at this position.

1) Breethaa Janani Selvamani Senior Resident, Dept of Anaesthesiology, Jawaharlal Nehru Medical College, A.M.U., Aligarh, U.P., India.
2) Qazi Ehsan Ali MD, Professor, Dept of Anaesthesiology, Jawaharlal Nehru Medical College, A.M.U., Aligarh.,U.P., India.
3) Syed Hussain Amir MD, Assistant Professor, Dept of Anesthesiology, Jawahar lal Nehru Medical College, A.M.U., Aligarh.,U.P., India.
4) Sabarish Narayanasamy Resident, Dept of Radiology, Jawaharlal Nehru Medical College, A.M.U., Aligarh.,U.P., India.

Institution : Jawahaharlal Nehru Medical College, A.M.U., Aligarh.,U.P., India.
Corresponding Author:
Qazi Ehsan Ali
Dept of Anethesiology, Jawahar lal Nehru Medical College, A.M.U., Aligarh.,U.P., India.
Mobile No: +91 7417701769
Email nishat_ehsaan@yahoo.com, qaziehsanali@gmail.com

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CASE REPORT

A 40-year-old male with carcinoma urinary bladder, who had no metabolic or neurologic disease was scheduled for radical cystectomy with hartmann's pouch orthotopic neobladder on elective basis. The procedure was done under combined general and epidural anesthesia. After induction of anesthesia, right subclavian vein was catheterised using a triple lumen central venous catheter in first attempt. The duration of the surgical procedure was 10 hours and 30 minutes. The patient was in lithotomy position for the first 30 minutes followed by supine position with both arms abducted to 90˚ and neutral forearm position for the next 10 hours. Intra-operative parameters were normal. The patient was extubated on the operating table at the end of the surgical procedure and shifted to recovery room. On the post-operative day (POD) 1, patient complained of inability to move the right upper limb with no associated pain or numbness. Ultrasonographic examination of the brachial plexus was within normal limits. Neurological examination of the patient revealed lower motor neuron type of weakness with preserved biceps reflex in the right upper limb. The tone was reduced with a power of 2/5 in shoulder and elbow, and wrist power of 1 to 2/5. Small muscles of the hand were weak with the extensors weaker than flexors. Triceps and brachioradialis reflexes were lost with preserved biceps reflex. The sensation was normal to pinprick. Limb physiotherapy was started immediately and the weakness improved over a week period. On POD 6, the upper limb power was 5/5 with the patient still complaining of paraesthesia in the ulnar distribution which improved in another 3 days. The nerve conduction study done on POD 10 revealed normal conduction study in bilateral median, ulnar, radial, axillary and musculocutaneus nerves.

Discussion

Anaesthesia related nerve injuries remain the second important cause of malpractice claims next to death and brain damage.[3] Also, the incidence of these nerve injuries remain the same over many years. This calls into question our understanding of the mechanism of nerve injuries and the preventive strategies recommended to prevent them. Even though most of the injuries occur either due to direct trauma or improper positioning and padding in the operating table (resulting in stretching, compression or even avulsion of the nerves), some have occurred even in the presence of appropriate positioning and padding. Thus even the best of the positioning and padding strategies may not guarantee the prevention of nerve injuries during anaesthesia.

ASA practice advisory for the prevention of perioperative peripheral neuropathies updated in 2011 recommends specific positioning strategies for the prevention of peripheral nerve injuries.[4] For the prevention of brachial plexus neuropathy, they recommend that the upper limit of arm abduction should be 90˚. This is based on the review of literature of 17 articles which reported brachial plexus injuries. The task force considered two of the reports of brachial plexus injuries occurred due to arm abduction at 90˚. But the detailed review of these two reports showed that the causes implicated for both the nerve injuries were different. In one report, the authors Ellul and colleagues[5] believed that the towel support kept behind the shoulder could have exerted too much pressure resulting in the injury. In the other report, Tomlinson and colleagues[6] believed that the plexus injuries occurred due to sternal retraction during median sternotomy. These authors believed that the hands-up position during median sternotomy could result in decreased incidence of brachial plexus injuries.

In our case, the surgery lasted for more than 10 hours duration and both the arms were abducted at 90˚ for the entire duration of the procedure. The occurrence of symptoms of brachial plexus injury in the immediate postoperative period with the

complete resolution of symptoms in a week period suggest that the mechanism involved is neuropraxia. Neuropraxia could have occurred because of the stretching of plexus at 90˚ arm abduction. Also prolonged duration of the surgery with the arms in the same position for the entire duration of the surgery seems an important factor that could have added to the insult. Even though perioperative peripheral neuropathies have been documented in the literature for more than a century, very little is known about the relationship between duration of the particular position and the occurrence of nerve injury. Recently Somatosensory Evoked Potentials (SSEP) are being evaluated as a means of monitoring for nerve injuries during intraoperative period [7-9], and may prove a valuable tool for prevention of perioperative peripheral neuropathies.

In conclusion, our case emphasizes the need for careful preoperative assessment, meticulous positioning and padding during anaesthesia and avoidance of certain arm positions for prolonged duration. Also monitoring for nerve injuries during intra-operative period in selected patients may decrease the incidence of peripheral neuropathies. Lastly, early diagnosis of nerve injuries and immediate institution of physiotherapy is key for prevention of permanent nerve damage.

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CUTANEOUS MUCORMYCOSIS IN AN IMMUNOCOMPETENT PERSON – A CHALLENGE INDEED!!

Munish K Chauhan[1], Dr Sanchit Ahuja[1], Dr Sudha Kansal[2]

INTRODUCTION

Mucormycosis refers to infections caused by fungi of the order Mucorales, namely Mucor, Rhizopus, Rhizomucor, Absidia, Apophysomyces, Cunninghamella, and Saksenaea[1]. Primary cutaneous mucormycosis is a rare manifestation occurring mostly in immunocompromised patients[2]. We herein present a case of primary necrotising cutaneous mucormycosis with no apparent obvious initiating event caused by Rhizopus spp. in an immunocompetent patient.

CASE REPORT

Our case was a 29 yrs young healthy married female with no comorbid illness, presented to us with alleged history of hanging. There was no history of Diabetes mellitus or any medication. She was initially admitted (day 01) in a private hospital where she was intubated and reportedly regained consciousness and extubated after about 48 hrs. Subsequently, she developed fever and her consciousness level deteriorated. She required to be reintubated and was brought to us on Day 6 of the event. She had recieved inj. tobramycin /phenytoin /fluconazole and mannitol.
On the day of admission to our centre, she was intubated, drowsy (not any sedation), and had fever 101˚ F with flexor response to painful stimuli. She was hemodynamically stable and maintaining satisfactory oxygenation at FiO2 0.5. Systemic examination was insignificant. Local Examination revealed an abrasion on left side of neck, grade 2 pressure sores over bilateral scapula 10*8 cm with black centre and surrounding skin was inflamed; multiple left gluteal sores – largest being 6*6 cm and a pressure sore on heel 6*6 cm. There was also a bruise on right arm without blackish centre. Cultures as per protocol were sent from triage itself and she was started on Inj. Meropenem.

Day 8 - (within 48 hrs of presentation to us), a Dermatologist and a Plastic surgery consult were initiated and was advised to apply fusidic acid cream locally along with other protocolised bed sore care measures. The images alongside were taken on day 8 of the event.

Day 9 – In view of persistent fever and no other obvious source, bed sore swab C/S was sent. At this time she was on inj. Meropenem which was upgraded with addition of Polymixin B and inj Linezolid with a possibility of hospital acquired infection. Blood cultures were reported as growing Staph. aureus resistant to ciprofloxacin and cloxacillin); ET cultures were growing Klebseilla and E.coli – both sensitive to meropenem; Urine C/S grew E. coli sensitive only to Cotrimoxazole and polymixin B (25000CFU). In view of blood Cultures growing MRSA, Trans-thoracic Echo was done which did not show any vegetations.

In view of persistent high fever, repeat blood C/S were sent on day 11 which were reported as growing Enterococci. Bed sore swab C/S had a

(1) Registrar, Gastro Liver Medical ICU, Indraprastha Apollo Hospitals, Sarita Vihar New Delhi
(2) Senior Consultant Critical Care ,Respiratory and Sleep Medicine, Indraprastha Apollo Hospitals, Sarita Vihar New Delhi

growth of Proteus mirabilis sensitive to meropenem and Klebseilla sensitive to polymixin B only. Empirical Inj. Caspofungin was added for ongoing fever despite appropriate antibiotics.

Meanwhile, patient started showing hemodynamic instability; required vasopressors and a microbiologist consult was initiated. Trans-Esophageal Echo was done which did not show any vegetation. Dermatology and plastic surgery opinions were reviewed and a wedge biopsy was taken from the largest skin lesion. As her condition continued to worsen, inj. Linezolid was changed to inj. Daptomycin to strengthen the gram positive coverage and inj Caspofungin was changed to inj. Amphotericin B (liposomal). Spiking fever continued, hence - CECT chest and CECT abdomen were done to look for any collection. It showed presence of gas in tissue planes suggestive of a necrotising fasciitis. She was planned to be taken up for urgent debridement but patient continued to deteriorate rapidly and succumbed to her illness the same day. Her skin biopsy HPE report later was reported as Invasive Mucormycosis Spp.

DISCUSSION

The above case is unique in that she was diagnosed as a case of necrotising fasciitis due to cutaneous mucormycosis with apparently no known risk factors for immunocompromised state and no history of local trauma which are generally associated with development of invasive Mucor infection.

In the primary form, systemic risk factors such as diabetes are seen in 50% of cases. Other predisposing factors are - malignant haematological disease with or without stem cell transplantation, prolonged and severe neutropenia, poorly controlled diabetes mellitus with or without diabetic ketoacidosis, iron over load, history of major or sometimes even minor trauma, renal failure, prolonged use of corticosteroids, medication patches, illicit intravenous drug use, neonatal prematurity and malnourishment etc.[3,4]. The case presented above had none of the above risk factors which have been mentioned in various studies.

In a review[10], which included all zygomycosis cases (n=929) (mostly malignancies and diabetes) published from 1940 to 2004, cutaneous zygomycosis was the third most common presentation with 176 cases (19%). In this series, penetrating trauma was reported in 60 (34%) of these patients, contaminated dressings were reported in 26 (15%) patients. Deep extension to bone, tendon or muscle occurred in 42 of 176 cases. Hematogenous dissemination from other organs to skin occurred in only 6 cases (3%).

In a series of 75 cases of zygomycosis reported earlier from one of the tertiary care hospitals with a registry of zygomycosis cases[9] - Cutanaeous mucormycosis accounted for 11% of the cases and breach of skin (88%) was the predominant underlying cause in cases of cutaneous zygomycosis. Uncontrolled type 2 diabetes (58%) and diabetic ketoacidosis (38%) in the rhino-orbito-cerebral type, renal failure (69%) in the pulmonary type, prematurity (70%) in the gastrointestinal type, and breach of skin (88%) in cutaneous zygomycosis, were the significant ($p<0.05$) underlying illnesses.

Mucor infection is noted to be uncommon in developed countries and is mostly seen in patients with diabetes mellitus, haematological malignancies undergoing chemotherapy and patients receiving allogeneic stem cell transplants[3]. But in developing countries like India, Mucor cases have been reported mainly in patients with uncontrolled diabetes or trauma [5,6].

Cutaneous mucormycosis can present in myriad ways - as pustules, bullae, nodules, ulcers, necrotizing cellulitis, or rarely zosteriform lesions, granulomatous pyoderma, and bulls-eye cutaneous infarcts.

Contaminated dressings [7,8] have been reported to cause hospital outbreaks of cutaneous mucormycosis especially by Rhizopus oryzae and Rhizopus rhizopodiformis. One possible source in our patient could have been hypothesized to be use of contaminated dressing but the patient did not have any dressing whatsoever on any of the 'pressure sores' at the time of presentation.

Differential diagnoses that need to be considered are infections such as Acute necrotizing cellulitis, Pressure sores with secondary infection, osteomyelitis etc. The distribution of lesions was consistent with sites of pressure sores. The only worrying thing was the appearance of these lesions which at the outset itself had a blackish centre but as there was no risk factor for Mucor in our patient – the diagnosis was made late. Moreover, the isolation of Proteus mirabilis and XDR Klebsiella spp. from the pressure sore swab further strengthened the presumptive diagnosis of bed sore with secondary bacterial infection. But since high fever continued and the skin lesions continued to worsen with appearance of new lesions, it was thought that we were missing some infection and further investigations were carried out including skin biopsy.

Unfortunately patient deteriorated rapidly even while urgent debridement was being planned. The report of HPE was available only after we had lost our patient but confirmed our initial suspicion of this being a case of more than being a secondary bacterial infection of a pressure sore.

CONCLUSION

The diagnosis of zygomycosis in general and primary cutaneous mucor in particular, requires a high index of suspicion especially in an immunocompetent person with no apparent risk factors. Further, the management of such cases requires early tissue diagnosis with aggressive debridement and appropriate antibiotic therapy. This case re-emphasizes the importance of early source control.

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A COMPARATIVE STUDY OF INCIDENCE OF POST EXTUBATOIN SORE THROAT AND HOARSENESS OF VOICE WITH AND WITHOUT LIGNOCAINE JELLY 2% APPLICATION ON THE ENDOTRACHEAL TUBE CUFF

Rekha Solanki[1], Nita Gosai[2], Geeta Joshi[3], B.M Patel[4], Puja Kumari[5], Sameer Parmar[6]

ABSTRACT

The study was conducted to know the effectiveness of lignocaine jelly 2% on minimizing the incidence of sore throat and hoarseness of voice. This study was done in 400 surgical patients to evaluate the incidence and severity of postoperative sore throat and hoarseness of voice after oral endotracheal intubation with disposible polyvinyl chloride tracheal tube. They were divided into two groups. In Group L, endotracheal tube cuff was lubricated with lignocaine jelly 2% and in control group C, Jelly was not applied. All patients were questioned for sore throat and hoarseness in 1hr , 6hrs, 12hrs and 24hrs after operation. In the first 24 hrs after surgery , there was statistically significant difference in the incidence of sore throat. It was 45% in lignocaine jelly group and 20% in control group ($P<0.05$). The incidence of hoarseness of voice was 21% and 18% in lignocaine jelly and control group respectively, with no statistical significance. Thus, the incidence of postoperative sore throat was significantly higher in the lignocaine jelly group in comparison with control group.Lubrication of endotracheal tube with lignocaine jelly 2% does not reduce the postoperative sore throat.

Key words - Lignocaine jelly, oral endotracheal intubation, postoperative period, sorethroat, hoarseness of voice.

INTRODUCTION

Postoperative sore throat is the most common complication of general anaesthesia leading to dissatisfaction and discomfort after surgery.[1,2]

Many studies have been done to determine the incidence of postoperative sore throat and to find out its preventive measures. [3,4] The incidence of sore throat is 14.4% - 50% after tracheal intubation and it varies with method of airway management.[3]

Sore throat may be because of irritation & inflammation of airway.[5] Role of lignocaine jelly in prevention of Post operative sore throat is inconclusive because it has not got any intrinsic antiinflammatory action.[1,3,6] However, lignocaine jelly because of its lubricating properties help by limiting the tracheal mucosa damage by suppressing bucking on the tracheal tubes.

Several studies are showing role of

Department of Anaesthesia, Gujarat Cancer and Research Institute, Civil Hospital, Ahmedabad -380016.
(1) Assistant Professor (2) Associate Professor (3) Professor (4) Professor and HOD (5),(6) 2nd year residents.

Corresponding Author
Dr. Rekha Solanki,
44, Devshrushti -2 Bunglows, B/h Kena Bunglows, Motera Stadium Road, Motera, Sabarmati,
Ahmedabad-380005. (M) 9825769907, Email-rnsbaps@gmail.com

betamethasone jel application on tracheal tube in reducing incidence of postoperative sore throat, cough and hoarseness of voice. This is due to antiinflammatory action.[2,6]

METHOD

After approval from institutional review board, written, informed consent was obtained from all patients. Evaluation for postoperative sore throat was done in 400 ASA patients.ASA physical status 1 & 2 patients with age ranging between 20- 50 yrs and posted for gynecological, breast, orthopedic or general surgical conditions are under inclusion criteria.Exclusion criteria were ASA physical status 3 & 4 patients,head & neck surgery, repeated attempts for intubation , obvious difficult airway & presence of ryle's tube. Patients were randomized in to the following two groups , each group containing 200 patients.
GROUP (L) Endotracheal tube cuff lubricated with lignocaine jelly 2% .

GROUP (C) jelly was not used.

All patients were premedicated with tablet diazepam 5 mg orally before 3hrs of operation . Induction was done with inj. Thiopentone sodium 5mg /kg I.V. and fentanyl citrate 2mcg/kg I.V. Neuromuscular block was produced with inj Vecuronium bromide 0.1 mg/kg I.V. . Orotracheal intubation was done using endotracheal portex tube no . 7 in females and portex tube no. 8 in males . In group L , lubrication of tracheal tubes was done with lignocaine jelly 2%-2 ml and in control (C) group jelly was not used . The cuffs were filled with room air until no leak was heard.Anesthesia was maintained with isoflurane and nitrous oxide 60% in oxygen. Vecuronium bromide was used when needed for surgical procedures.At the end of surgery ,100% oxygen was given & patients were reversed with Inj neostigmine 50mcg/kg and Inj glycopyrrolate 40mcg/kg I.V.. Trachea was extubated after deflating the cuff when patients were fully awake .Total duration of operation was noted and all patients were interviewed at 1, 6, 12, 24 hrs after operation for sore throat & hoarseness of voice (Table-1). Standardized direct questions were used to note the incidence & severity of sorethroat & hoarseness of voice.

TABLE- 1

Scoring system for sorethroat and hoarseness of voice

GRADE	Scoring system for Sore throat	Scoring system for Hoarseness of voice
0	No sore throat at anytime since your operation	No evidence of hoarseness at any time since operation.
1	Minimal sore throat, less severe than with a cold, occuring at anytime since your operation.	No evidence of hoarseness at the time of interview.
2	Moderate sore throat, similar to that noted with a cold, occuring at anytime since your operation	Hoarseness at the time interview noted by pts only.
3	Severe sore throat, more severe than noted with a cold, occuring at anytime since your operation.	Hoarseness that is easily noted at the time of interview.

Statistical analysis was done using info software 3.5.3.2011.For categorial data chisquare test was used.

RESULTS

In both the groups age ,weight, sex distribution and duration of operation were comparable in table -2.

Our study results show that the incidence of sore throat was significantly greater in group L than in group C [Table -3, Figure 3] ($p < 0.05$).There was no significant difference in hoarseness of voice . In group L it was found in 21% of patients & in control group in 18% patients($p > 0.05$).

Table-4 and Figure -4 show that severity of postoperative sore throat was significantly greater in group L than Group C.

TABLE -2

Patients characteristics .Data are mean (SD)

	GROUP L	GROUP C
AGE (YRS)	45±8	42±10
SEX (M/F)	70/130	70/130
WEIGHT (Kg)	54±7 kgs	57±6 kgs
DURATION OF SERGERY	130± 56 min	134± 50 min

TABLE-3

The incidence of post operative sore throat & hoarseness of voice

	GROUP L	GROUP C	P VALUE
INCIDENCE OF SORE THROAT	45%	20%	0.000001
INCIDENCE OF HOARSENESS OF VOICE	21%	18%	0.52

P value <0.05 is significant and p value <o.oo1 is highly significant.

FIGURE 3

INCIDENCE OF SORE THROAT AND HOARSNESS OF VOICE

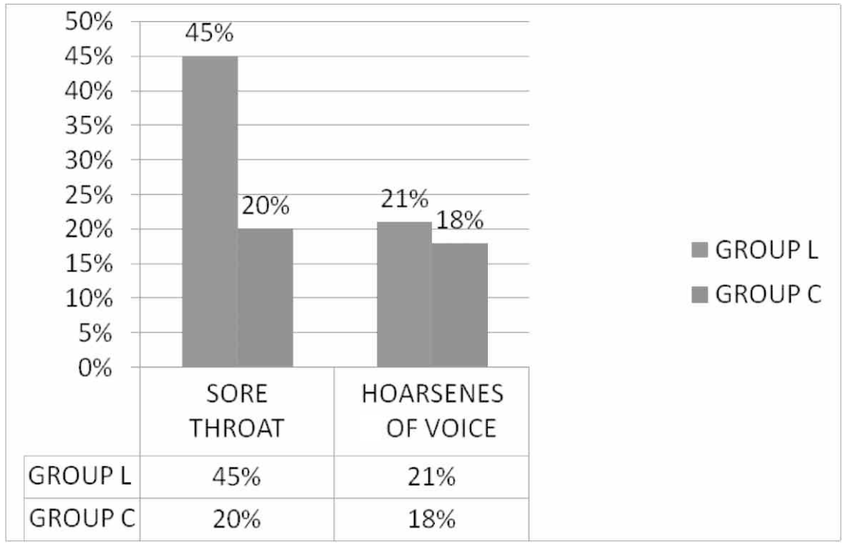


TABLE-4

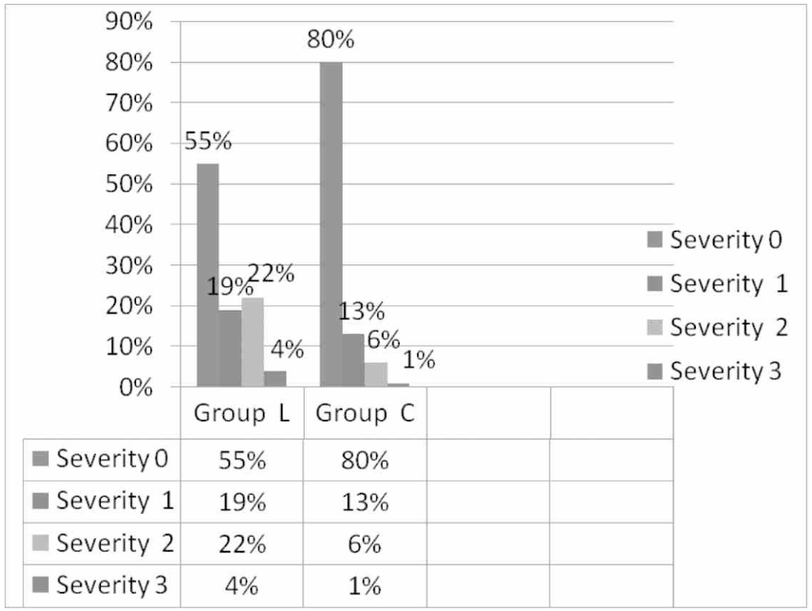
The severity of post operative sore throat.

SEVERITY	GROUP L	GROUP C	p VALUE
0	55%	80%	0.00
1	19%	13%	0.00
2	22%	6%	0.025
3	4%	1%	0.1

P value <0.05 is significant and p value <o.oo1 is highly significant

FIGURE 4

SEVERITY OF POST OPERATIVE SORE THROAT



DISCUSSION

The result of our study indicate that tracheal intubation with disposable cuffed poly vinylchloride tube lubricated with 2% lignocaine jelly does not help in reducing sore throat. When disposable cuffed poly vinylchloride tubes were used without jelly, incidence of sore throat was less in comparision with jelly group.

Edward A. Loser & others in their study found significantly greater incidence and severity of postoperative sore throat when patients intubated with uncuffed portex tubes lubricated with 4% lignocaine jelly and lower incidence and severity of post operative of sore throat using unlubricated , cuffed , low residual volume portex tubes. Finally they concluded that uncuffed tube has no advantge over cuffed tube in postoperative sore throat . Incidence of sore throat is very high when tubes lubricated with 4% lignocaine jelly.[7]

In a study , there is an observation that lignocaine jelly (2%) lubrication to the endotracheal tube reinforces the severity of sore throat and lignocaine sprayed to the trachea does not reduce post operative sore throat when compared with no intervention group.[8]

A study done by F.E.Mchardy and collegue concluded in their study that 2% lignocaine jelly is thought to be an unsuitable lubricant . It may increase incidence of sore throat.[3]

M.C.Stock et al. found similar incidence of post-op sore throat in presence or absence of lubricant[9]. Incidence of sore throat after tracheal intubation in female was significantly higher than male (38.4% vs 21.4%) . It is in accordance with many previous studies.[1,4,10,11]

We found no significant difference in incidence of hoarseness of voice in presence or absence of lignocaine jelly . Incidence being 21% and 18% in L and C group respectively. P.A.Sumathi [5] and others observed in their study reduced incidence of sore throat with the use of lignocaine jelly that is in contrast to our study. However, they found no significant difference in incidence of hoarseness of voice in lignocaine jelly group and control group.

In our study after orotracheal intubation incidence of sore throat 32.5% irrespective of presence or absence of lignocaine jelly which was less compared to other studies.[4,5]This may be because of the use of small size portex tube for intubation.Trachea of females and males were intubated with 7 & 8 number tubes respectively.

Edward A Loser et al. demonstrated that post operative sore throat after tracheal intubation can be decreased by using endotracheal tube with narrow cuff and so it decreases the area of cuff tracheal contact.[12]

The size of the tube has been shown to be related to the incidence of sore throat.[3] High volume low pressure tube when over inflated can increase the incidence of sore throat. Cuff pressure limitation can reduce incidence of sore throat.[13]

Role of lignocaine jelly in prevention of postoperative sore throat is inconclusive because it has not got any intrinsic anti inflammatory action.

CONCLUSION

Postoperative throat complications such as sore throat, hoarseness of voice , dysphagia are common after tracheal intubation due to trauma to larynx and pharynx . The use of smaller tracheal tubes with cuff that have minimal contact with tracheal mucosa should be used.Lubricant in the form of 2% lignocaine jelly is not found to be beneficial in the form of reducing the incidence of sore throat.

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b) Name of each author typed in capitals across the title page immediately beneath the title of the article. A line should be drawn across the title page below the name(s) of author(s) in capitals. Each author's a) highest academic qualification, institutional affiliation; b) name of department (s) and institution(s) to which the work should be attributed ; (c) name, address No. and email ID of author responsible for correspondence should be indicated.

Authorship

All persons designated as authors should qualify for authorship. The order of authorship should be a joint decision of the co-authors. Each author should have participated sufficiently in the work to take public responsibility for the content. Authorship credit should be based only on substantial contributions to
(a) conception and design or analysis and interpretation of data; and to
(b) drafting the article or revising it critically for important intellectual content; and on
(c) final approval of the version to be published. Conditions (a), (b) and (c) must all be met.

Any part of an article critical to its main conclusions must be the responsibility of at least one author.
Editor may ask the authors to justify the assignment of authorship.

Summary and Key words

The second page should carry the summary (abstract) preferably of not more than 350 words,

summarizing the work systematically by disclosing context, objectives, design, setting, participants, interventions, main outcome measures, results and conclusions .The abstract should reflect the paper and describe the message succinctly and accurately. The format of the abstract may be based on the standard IMRAD structure (Introduction, Methods, Results And Discussion) of the paper below the summary, provide and identify as such, 3 to 5 key words that will assist indexers in cross indexing. Use terms from the medical subject headings (MeSH) list of Medline.

Text

The text of observational and experimental articles is usually but not necessarily divided into sections with headings viz., Introduction, Methods, Results and Discussion (IMRAD). Other types of articles such as case reports, reviews, editorials are likely to need other formats. Nevertheless, a fundamental structure is the basis of all scientific papers.

Introduction

Start on a new page stating clearly the question being answered in the study. To lead the reader to this point it is essential to review the relevant literature briefly. Do not include data or conclusions from the work being reported.

Material and methods

Over all the Material and Methods should answer three fundamental questions viz:How the study was designed? How the study was carried out? How the data were analysed? Though brevity is desirable, describe the selection of the observational or experimental subjects (patients of laboratory animals, including controls) clearly justify/ explain the sample size. Identify the methods, apparatus (manufacturer's name and address in parenthesis) and procedures in sufficient detail to enable other workers to reproduce the results. Give references to established methods, including statistical methods; provide references and brief descriptions for methods that have been published but are not well-known; describe new or substantially modified methods, give reasons for using them and evaluate their limitations. Identify precisely all drugs or chemicals used, including generic name(s), dose(s), and route(s) of administration.

Ethics

When reporting experiments on human subjects, indicate whether the procedures followed were in accordance with ethical standards of the responsible committee on human experimentation (institutional or regional) and with the Helsinki Declaration of 1975, as revised in 2002. Indicate whether institutions or the Indian Council of Medical Research's guidelines were followed. No manuscript can be sent for publication in two journals at same time and it will be considered as ethical misconduct .The copyrights will be provided only to that journal where it is published first.

Legal Considerations

Authors should avoid the use of names, initials and hospital numbers which might lead to recognition of a patient. A patient must not be recognizable in photographs unless written consent of the subject has been obtained. A table or illustration that has been published elsewhere should be accompanied by a statement that permission for reproduction has been obtained from the publishers.

Statistics

Input from a statistician should be sought at the planning stage of the study. The statistical methods with enough details to enable a knowledgeable reader with access to the original data to verify the reported results, should be incorporated. Give a brief note of how you arrived at the chosen sample size of your study. Give the exact tests used to analyse the data statistically and include an appropriate reference if the test is not well known. If computer software was used, give the type and version of the software. When possible, quantify findings and present them with appropriate indicators or easurement error or uncertainty (such as 95% Confidence Intervals). Avoid sole reliance on statistical hypothesis testing such as the use of p values, which fails to convey important quantitative information.

Results

This section has to have two essential features: there should be an overall description of the major findings of the study; and the data should be presented clearly and concisely. Present your results in logical sequence in the text, tables and illustrations. Do not repeat in the text all the data in the table or illustrations; emphasise or summarise only important observations. It is worthwhile stating briefly what you did not find, as this may stop other workers in the area undertaking unnecessary studies.

Discussion

It is difficult not to write a long and detailed analysis of the literature that you know so well. A rough guide to the length of 'Discussion', however is that it should not be more than one third of the total length of the manuscript (IMRAD) Emphasise and summarise the new and important findings of the study and the inferences that follow from them. Discuss possible problems with the methods used. Compare your results with previous work or relate your observations to other relevant studies. Discuss the scientific and clinical implications of your findings. Do not repeat in detail data or other material given in the 'introduction' or the 'Results' section. Discuss and analyse the limitations of your study, including suggestion for future work.

Conclusions

Link the conclusions with the goals of the study but avoid unqualified statements and conclusions not completely supported by your data.

Acknowledgements

They should be brief and should include reference to the source of technical help, material support and financial assistance. Individuals named must approve their inclusion in the acknowledgements, before the paper is submitted.

References

The references of the article are the foundation on which the work of the study is built. They provide the scientific background that justifies your study, including the methods used. AAAR follows 'Vancouver style' of quoting the references as superscripts in which references are numbered consecutively in the order in which they are first mentioned in the text. Identify references in text, tables, and legends by Arabic numerals in parentheses. References cited only in tables or in legends to figure should be numbered in accordance with a sequence established by the first identification in the text of the particular table or figure. Use the style of the examples below, which are based with slight modifications on the formats used by the U S National Library of Medicine in Medline database. The titles of journals should be abbreviated according to the style used in Medline. The references must be verified by the authors(s) against the original documents. Restrict references to those that have a direct bearing on the work described, preferably less than 25 for general articles and 6 for short communications.
Examples of correct forms of references are given below.

A. Journals:

1. Standard journal article List all authors, but if number exceeds six, list only first three and add et al. Fery AM, Haynes AR, Owen KJ, Farrall M, Jack LA, Lai LY, et al. Predisposing locus for Alzheimer's disease on chromosome 21, Lancet 1989; 1: 352-5.

2. Organisation as author : The Royal Marsden Hospital Bonemarrow Transplantation Team. Failure of syngeneic bonemarrow graft without preconditioning in post- hepatitis marrow aplasia. Lancet 1977; 2: 742 4.

3. No author given : Coffee drinking and cancer of the pancreas (editorial). BMJ 1981; 283:628.

B. Books and other Monographs

1. Personal author(s): Colson JH, Armour WJ. Sports injuries and their treatment, 2nd rev. ed. London: S. Paul, 1986.

2. Editor(s), compiler as authors : Diener HC, Wilkinson M, editors. Drug-induced headache. New York: Springer Verlag, 1988.

3. Chapters in a book: Weinstein L, Swartz MN. Pathologic properties of invading microorganisms. In:Sodeman WA Jr, Sodeman WA, editors. Pathologic physiology: mechanisms of disease. Philadelphia: Saunders, 1974: 457-72.

C. Other published Material

Newspaper article: Rensberger B, Specter B, CFCs may be destroyed by natural process. The Washington Post 1989 Aug. 7; Sect. A:2 (Col.5).

D. Unpublished Material

Lillywhite HD, Donald JA. Pulmonary blood flow regulation in an aquatic snake. Science. In press or Personal Communication

E. Internet References

Complete Website address and the location to be mentioned.

Tables

Do not include tables in the text.
Type each table, double-spaced on a separate sheet.
Number tables consecutively in the order of their first citation in the text and put a brief title for each. Give each table a short abbreviated heading, Mention explanatory matter as well as explanations of all non-standard abbreviations used in the table, in footnotes and not in the heading. Identify statistical measures of variations such as standard deviation and standard error of the mean. Indicate approximate position of each table in relation to the subject matter of the text right hand margin of the appropriate page of the manuscript. If you use data from another published or unpublished source, obtain permission and acknowledge fully. Maximum tables allowed in any manuscript is as follows:

Maximum tables allowance

General Article (excluding abstract)	6
Case Report	2
Brief Report	4
Technical Communication	5
Review Article	10
Medical Intelligence Article	6
Special Article	6
Editorial	1
Letter to the Editor	2

Illustrations (Figures)

Submit Figures Letters, numbers, and symbols should be clear and even throughout and of sufficient size that when reduced for publication each item will still be legible. Each figure should have a label pasted on its If a figure has been published, acknowledge the original source and submit written permission from the copyright holder to reproduce the material.

Units of measurement

All measurements length, height, weight and volume,etc. should be reported in metric units (metre, kilogram, or litre) or their decimal multiples. Temperatures should be given in degree Celsius. Blood pressure should be given in millimetres of mercury. All haematologic and clinical chemistry measurements should be reported in the metric system in terms of the International System of Units (SI).

Abbreviations and Symbols

Use only standard abbreviations. Avoid abbreviations in the title and abstract. The full term for which an abbreviation stands, for should precede its first use in the text unless it is a standard unit of measurement.

Correspondence

A. Letters to the editor include brief constructive comments concerning previously published articles
or brief notations of general interest. The manuscripts must be double-spaced, and a title and two copies must be provided. Letters may be submitted at **aaarjournal@gmail.com .**

B. The editor may change, delete or modify in any way all items of correspondence.Maximum Word Allowance: When submitting your manuscript, please observe the maximum word count allowed for each type of submission; and the maximum allowance for figures, tables, and references (word count should reflect text only and must be listed in the cover letter):

Maximum word allowance

General Article (excluding abstract) 3000 words

Case Report	800 words
Brief Report	1000 words
Technical Communication	1500 words
Review Article	4000 words
Medical Intelligence Article	3000 words
Special Article	2000 words
Editorial	1500 words
Book Review	750 words
Letter to the Editor	200 words
Abstract	350 words
Implications	50 words

Non-textual Material Maximum Allowance

Figure and Tables No more than 3 each or a combination of 6 total. Do not duplicate data in tables and figures. References No more than 25 references per article, up to 40 references are acceptable.

Submission of manuscripts

Manuscripts (including tables, figures, photographs,etc). accompanied by a covering letter should be signed by all the authors. The covering letter must provide an undertaking to the effect that (a) the article has not been published or submitted to or accepted for publication in any form in any other journal,(b) the authors vouch safe that the authorship of this article will not be contested by any one whose name (s) is/are not listed, (c) on acceptance the article will become copyright of AAAR (d) the sequence of the names of co-authors (e) the manuscript has been read and approved by all the authors,(f) name, address and the email ID of the corresponding author (responsible for communication).On final preparation, A letter of acceptance or otherwise, will normally be sent to the author within 3 (three) months. Articles which are not accepted cannot be sent to the author unless accompanied by adequate postage stamps.

A Completed checklist must accompany each manuscript submitted to Asian Archives of Anaesthesiology and Resuscitation.

Checklist for submitting the manuscript

General

1. Two complete sets of the manuscripts (including tables) are submitted.

2. A floppy disk or CD is submitted with two files : the complete manuscript and a separate file containing only the title page, abstract, and references.

3. Manuscript is typed double-spaced, with ample, left ,justified, margins.

4. Pages are numbered consecutively, starting with the title page.

Title Page

1. On the first page are typed the title, author name(s) and major degree(s), and affiliation(s).

2. The name, address, telephone and FAX numbers, and E-mail address of the corresponding author are to be given.

3. The manuscript title is no longer than 100 characters (letters and spaces) and does not contain any abbreviations.

4. A short title (no more than 30 characters) is provided at the bottom of the page for use as a running foot.

Summary

* An abstract is provided. For all kind of articles, this abstract is limited to 200-250 words.

References

1. References correspond to the specifications of the Uniform Requirements for Manuscripts Submitted to Biomedical Journals" promulgated by the International Committee of Medical Journal Editors.

2. References are identified in the text by superscript figures, eg., Miller.

3. Each reference is cited in the text. Those appearing in tables and figures should be cited in the text where the table or figure is mentioned.

4. References are numbered consecutively in the order in which they appear in the text. (Vancouver Style)

5. Unpublished data, personal communications, submitted manuscripts, statistical programs, papers presented at meetings, and nonpeer review publications are not listed in the bibliography.

6. The bibliography is typed doublespaced.

7. Abbreviations of Journal titles conform to those used in Index Medicus, National Library of Medicine.

Tables

1. Each table is typed on a separate sheet of paper with its title.

2. Tables are numbered with Arabic numerals.

3. Each table contains all necessary information in order that it may stand alone, independent of the text.

4. No table contains data that could be included in the text in several sentences.

5. Vertical lines are not used.

6. Irrelevant and extra tables must not be included

Figures

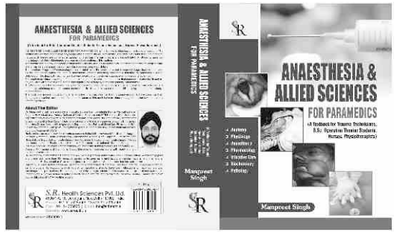
1. Each figure is cited in the text.

2. Figures have been prepared with the journal column size in mind.

3. Letters and identifying marks are clear and sharp, and the critical areas of radiographs and photomicrographs are identified.

4. Legends and explanatory material appear in the accompanying caption and not no the figure itself.

5. Legends are typed together on one page. Legends for photomicrographs include information regarding stain and magnification.



BOOK REVIEW

ANAESTHESIA AND ALLIED SCIENCES FOR PARAMEDICS,2013,first edition

Editor-Dr Manpreet Singh, MD, FCCP, FIMSA, FACEE,MAMS

Publisher : Mr Rahul Jain - SR health Sciences, (CBS Publishers,India)

Darya Ganj, Delhi, India

Phone of publisher: 09810825524

E-mail-rahul@srhealth.in,rahuljain09@gmail.com

The editor of this book, Dr Manpreet Singh is involved in teaching the students of BSc Medical Technology and Operation Theatre, Trauma Technician courses, MBBS and MD (Anaesthesiology and Intensive care) at Government Medical College, Chandigarh ,India.

'ANAESTHESIA AND ALLIED SCIENCES FOR PARAMEDICS' is first book of its kind and comprises of six sections. All sections are colour coded for easy identification.

Section one consists of anatomy, physiology and clinical biochemistry for paramedics. Details of all muscles, bones and joints along with their actions, nerves and vessels are compiled in a tabular form so that it can be easily learnt and recapitulated by students. Essential physiology and clinical biochemistry are concised subsections of this section.

Second section provides every detail about anaesthesia and its various sub-specialities. This section has 40 chapters i.e from history of anaesthesia till modular operation theatre suit details. Apart from basics of anaesthesia and sub-specialities of anaesthesia, it highlights operation theatre suit, air-conditioning of Operation theatre and ICU, sterilization, pain management, dialysis room management and transportation of patients and anaesthesiologists.

Third section, 'Pharmacology in Anaesthesia' describes intricacies of all anaesthetic drugs and emergency drugs. These drugs are described in tabular forms in easy language. This section will help the students to explain the drugs that are asked in table viva during examination.

Section four covers all the anaesthesia instruments. These includes anaesthesia machine , automated external defibrillator, sutures, vaporizers and all airway management equipments. The details of instruments will be very beneficial for the students during training periods, examination, table viva and day-to-day practice.

Fifth section provides knowledge of 32 unique topics of modern anaesthetic practices that requires utmost attention. It highlights brief knowledge about clinical audit, hospital waste management, ECG, EMG, cardiopulmonary resuscitation 2010 guidelines, intensive care topics and physics in anaesthesia.

The final section 6, highlights all the scoring systems, algorithms and grading in anaesthesia. The students will be elated to read this section as they will feel comfortable to find all gradings at one place.

This book will be extremely useful to all residents of anaesthesiology and paramedics i.e MSc. Operation Theatre, BSc Medical Technology students, operation theatre technicians nurses, physiotherapists and trauma technicians. I assure that the student will not move away from this comprehensive book that will be useful in all types of examinations, skill development and knowledge augmentation.

The book is a sincere tribute to my father who had this dream for me. I am fortunate enough to have blessings from Almighty, my teachers and parents. All the contributors of this book have provided me a great support and deserve my heartfelt gratitude.

Dr Manpreet Singh (Editor)
India
Ph:09646121503
manpreetdawar@gmail.com,manpreetdawar@hotmail.com