

pharmacokinetics and pharmacodynamics. *Anaesth Pharm Rev* 1993;1:238-45.

21. Miller RD. *Miller's Anesthesia*, 7th ed. Philadelphia: Elsevier; 2010.

22. Kallio A, Scheinin M, Koulu M, Ponkilainen R, Ruskoaho H, Viinamäki O, et al. Effects of dexmedetomidine, a selective alpha 2-adrenoceptor agonist, on hemodynamic control mechanisms. *Clin Pharmacol Ther* 1989;46(1):33-42.

23. Haselman MA. Dexmedetomidine: a useful adjunct to consider in some high-risk situations. *AANA J* 2008;76(5):335-9.

24. Ickeringill M, Shehabi Y, Adamson H, Ruettimann U. Dexmedetomidine infusion without loading dose in surgical patients requiring mechanical ventilation: haemodynamic effects and efficacy. *Anaesth Intensive Care* 2004;32(6):741-5.

25. Guo TZ, Jiang JY, Buttermann AE, Maze M. Dexmedetomidine injection into the locus ceruleus produces antinociception. *Anesthesiology* 1996;84(4):873-81.

26. Venn RM, Bradshaw CJ, Spencer R, Brealey D, Caudwell E, Naughton C, et al. Preliminary UK experience of dexmedetomidine, a novel agent for postoperative sedation in the intensive care unit. *Anaesthesia* 1999;54(12):1136-42.

27. Ramsay MA, Luteran DL. Dexmedetomidine as a total intravenous anesthetic agent. *Anesthesiology* 2004;101(3):787-90.

28. Nelson LE, Lu J, Guo T, Saper CB, Franks NP, Maze M. The alpha2-adrenoceptor agonist dexmedetomidine converges on an endogenous sleep-promoting pathway to exert its sedative effects. *Anesthesiology* 2003;98(2):428-36.

29. Ebert TJ, Hall JE, Barney JA, Uhrich TD, Colino MD. The effects of increasing plasma concentrations of dexmedetomidine in humans. *Anesthesiology* 2000;93(2):382-94.

30. Asano T, Dohi S, Ohta S, Shimonaka H, Iida H. Antinociception by epidural and systemic alpha(2)-adrenoceptor agonists and their binding affinity in rat spinal cord and brain. *Anesth Analg* 2000;90(2):400-7.

31. Eisenach JC, Shafer SL, Bucklin BA, Jackson C, Kallio A. Pharmacokinetics and pharmacodynamics of intraspinal dexmedetomidine in sheep. *Anesthesiology* 1994;80(6):1349-59.

32. Belleville JP, Ward DS, Bloor BC, Maze M. Effects of intravenous dexmedetomidine in humans. I. Sedation, ventilation, and metabolic rate. *Anesthesiology* 1992;77(6):1125-33.

33. Hsu YW, Cortinez LI, Robertson KM, Keifer JC, Sum-Ping ST, Moretti EW, et al. Dexmedetomidine pharmacodynamics: part I: crossover comparison of the respiratory effects of dexmedetomidine and remifentanyl in healthy volunteers. *Anesthesiology* 2004;101(5):1066-76.

34. Easley RB, Brady KM, Tobias JD. Dexmedetomidine for the treatment of postanesthesia shivering in children. *Paediatr Anesth* 2007;17:341-346.

35. Khan ZP, Ferguson CN, Jones RM. alpha-2 and imidazoline receptor agonists. Their pharmacology and therapeutic role. *Anaesthesia* 1999;54(2):146-65.

36. Roekaerts P, Prinzen F, Willigers H. The effect of dexmedetomidine on systemic hemodynamics, regional myocardial function and blood flow during coronary artery stenosis in acute anaesthetized dogs. *J Cardiothorac Anesth*

1994;8:58.

37. Willigers HM, Prinzen FW, Roekaerts PM, de Lange S, Durieux ME. Dexmedetomidine decreases perioperative myocardial lactate release in dogs. *Anesth Analg* 2003;96(3):657-64.

38. Nishina K, Mikawa K, Uesugi T, Obara H, Maekawa M, Kamae I, et al. Efficacy of clonidine for prevention of perioperative myocardial ischemia: a critical appraisal and meta-analysis of the literature. *Anesthesiology* 2002;96(2):323-9.

39. Talke P, Li J, Jain U, Leung J, Drasner K, Hollenberg M, et al. Effects of perioperative dexmedetomidine infusion in patients undergoing vascular surgery. The Study of Perioperative Ischemia Research Group. *Anesthesiology* 1995;82(3):620-33.

40. Ma D, Hossain M, Rajakumaraswamy N, Arshad M, Sanders RD, Franks NP, et al. Dexmedetomidine produces its neuroprotective effect via the alpha 2A-adrenoceptor subtype. *Eur J Pharmacol* 2004;502(1-2):87-97.

41. Ingersoll-Weng E, Manecke GR Jr, Thistlethwaite PA. Dexmedetomidine and cardiac arrest. *Anesthesiology* 2004;100(3):738-9.

42. Videira RL, Ferreira RM. Dexmedetomidine and asystole. *Anesthesiology* 2004;101(6):1479.

43. Aantaa R, Kanto J, Scheinin M, Kallio A, Scheinin H. Dexmedetomidine, an alpha 2-adrenoceptor agonist, reduces anesthetic requirements for patients undergoing minor gynecologic surgery. *Anesthesiology* 1990;73(2):230-5.

44. Antilla M, Penttilä J, Vuorilehto L, Scheinin H. Bioavailability of dexmedetomidine after extravascular doses in healthy subjects. *Br J Clin Pharm* 2003;56:691-3.

45. Sakurai Y, Obata T, Odaka A, Terui K, Tamura M, Miyao H. Buccal administration of dexmedetomidine as a preanesthetic in children. *J Anesth* 2010;24(1):49-53.

46. Yuen VM, Hui TW, Irwin MG, Yuen MK. A comparison of intranasal dexmedetomidine and oral midazolam for premedication in pediatric anesthesia: a double-blinded randomized controlled trial. *Anesth Analg* 2008;106(6):1715-21.

47. Yuen VM, Hui TW, Irwin MG, Yao TJ, Wong GL, Yuen MK. Optimal timing for the administration of intranasal dexmedetomidine for premedication in children. *Anaesthesia* 2010;65(9):922-9.

48. Yuen VM, Irwin MG, Hui TW, Yuen MK, Lee LH. A double-blind, crossover assessment of the sedative and analgesic effects of intranasal dexmedetomidine. *Anesth Analg* 2007;105(2):374-80.

49. Kamibayashi T, Maze M. Clinical uses of alpha-2-adrenergic agonists. *Anesthesiology* 2000;93:1345-9.

50. Aho M, Erkola O, Kallio A, Scheinin H, Korttila K. Dexmedetomidine infusion for maintenance of anesthesia in patients undergoing abdominal hysterectomy. *Anesth Analg* 1992;75:940-6.

51. Memis D, Turan A, Karamanlioglu B, Seker S, Pamukcu Z. Dexmedetomidine reduces rocuronium dose requirement in sevoflurane anaesthesia. *Curr Anaesth Crit Care* 2008;19:169-74.

52. Hofer RE, Sprung J, Sarr MG, Wedel DJ. Anesthesia for a patient with morbid obesity using dexmedetomidine without narcotics. *Can J Anaesth* 2005;52:176-80.

53. Ramsay MA. Tracheal resection in the

morbidly obese patient: The role of dexmedetomidine. *J Clin Anesth* 2006;18:452.

54. Talke P, Li J, Jain U, Leung J, Drasner K, Hollenberg M, et al. Effects of Perioperative dexmedetomidine infusion in patients undergoing vascular surgery. *Anesthesiology* 1995;82:620-33.

55. Maroof M, Khan RM, Jain D, Ashraf M. Dexmedetomidine is a useful adjunct for awake intubation. *Can J Anaesth* 2005;52:776-7.

56. Grant SA, Breslin DS, Macleod DB, Gleason D, Martin G. Dexmedetomidine infusion for sedation during fiberoptic intubation: A report of three cases. *J Clin Anesth* 2004;16:124-6.

57. Boyd BC, Sutter SJ. Dexmedetomidine sedation for awake fiberoptic intubation of patients with difficult airways due to severe odontogenic cervicofacial infections. *J Oral Maxillofac Surg* 2011;69:1608-12.

58. Farag E, Argalious M, Sessler DI, Kurz A, Ebrahim ZY, Schubert A. Use of α -2 agonists in neuroanesthesia: An overview. *Ochsner J* 2011;11:57-69.

59. Tanskanen PE, Kytta JV, Randell TT, Aantaa RE. Dexmedetomidine as an anaesthetic adjuvant in patients undergoing intracranial tumour surgery: A double-blind, randomized and placebo-controlled study. *Br J Anaesth* 2006;97:658-65.

60. Frost E, Boon L. Anesthesia in the patient for awake craniotomy. *Curr Opin Anaesthesiol* 2007;20:331-5.

61. Mack PF, Perrine K, Kobylarz E, Schwartz TH, Lien CA. Dexmedetomidine and neurocognitive testing in awake craniotomy. *J Neurosurg Anesthesiol* 2004;16:20-5.

62. Memis D, Turan A, Karamanlioglu B, Seker S, Pamukcu Z. Dexmedetomidine reduces rocuronium dose requirement in sevoflurane anaesthesia. *Curr Anaesth Crit Care* 2008;19:169-74.

63. Shehabi Y, Ruettimann U, Adamson H, Innes R, Ickeringill M. Dexmedetomidine infusion for more than 24 h in critically ill patients: sedative and cardiovascular effects. *Intensive Care Med* 2004;30:2188-96.

64. Guintar JR, Kristeller JL. Prolonged infusions of dexmedetomidine in critically ill patients. *Am J Health Syst Pharm* 2010;67:1246-53.

65. Gerlach AT, Murphy CV, Dasta JF. An updated focused review of dexmedetomidine in adults. *Ann Pharmacother* 2009;43:2064-74.

66. Venn RM, Grounds RM. Comparison between dexmedetomidine and propofol for sedation in the intensive care unit: patient and clinician perceptions. *Br J Anaesth* 2001;87(5):684-90.

67. Triltsch AE, Welte M, von Homeyer P, Grosse J, Genähr A, Moshirzadeh M, et al. Bispectral index-guided sedation with dexmedetomidine in intensive care: a prospective, randomized, double blind, placebo-controlled phase II study. *Crit Care Med* 2002;30(5):1007-14.

68. Pandharipande PP, Pun BT, Herr DL, Maze M, Girard TD, Miller RR, et al. Effect of sedation with dexmedetomidine vs lorazepam on acute brain dysfunction in mechanically ventilated patients: the MENDS randomized controlled trial. *JAMA* 2007;298(22):2644-53.

69. Maze M, Angst MS. Dexmedetomidine and opioid interactions: defining the role of dexmedetomidine for intensive care unit sedation. *Anesthesiology* 2004;101(5):1059-61.

70. Tobias JD, Berkenbosch JW. Sedation during

mechanical ventilation in infants and children: dexmedetomidine versus midazolam. *South Med J* 2004;97(5):451-5.

71. Chrysostomou C, Di Filippo S, Manrique AM, Schmitt CG, Orr RA, Casta A, et al. Use of dexmedetomidine in children after cardiac and thoracic surgery. *Pediatr Crit Care Med* 2006;7(2):126-31.

72. Shukry M, Miller JA. Update on dexmedetomidine: use in nonintubated patients requiring sedation for surgical procedures. *Ther Clin Risk Manag* 2010;6:111-21.

73. Candiotti KA, Bergese SD, Bokesch PM, Feldman MA, Wisemandle W, Bekker AY; MAC Study Group. Monitored anesthesia care with dexmedetomidine: a prospective, randomized, double-blind, multicenter trial. *Anesth Analg* 2010;110(1):47-56.

74. Taghinia AH, Shapiro FE, Slavin SA. Dexmedetomidine in aesthetic facial surgery: improving anesthetic safety and efficacy. *Plast Reconstr Surg* 2008;121(1):269-76.

75. Ustün Y, Gündüz M, Erdoğan O, Benlidayi ME. Dexmedetomidine versus midazolam in outpatient third molar surgery. *J Oral Maxillofac Surg* 2006;64(9):1353-8.

76. Siddappa R, Riggins J, Kariyanna S, Calkins P, Rotta AT. High-dose dexmedetomidine sedation for pediatric MRI. *Paediatr Anaesth* 2011;21(2):153-8.

77. Mason KP. Sedation trends in the 21st century: the transition to dexmedetomidine for radiological imaging studies. *Paediatr Anaesth* 2010;20(3):265-72.

78. Su F, Hammer GB. Dexmedetomidine: pediatric pharmacology, clinical uses and safety. *Expert Opin Drug Saf* 2011;10(1):55-66.

79. O'Mara K, Gal P, Ransommd JL, Wimmermd JE Jr, Carlosmd RQ, Dimaguilamd MA, et al. Successful use of dexmedetomidine for sedation in a 24-week gestational age neonate. *Ann Pharmacother* 2009;43(10):1707-13.

80. Baddigam K, Russo P, Russo J, Tobias JD. Dexmedetomidine in the treatment of withdrawal syndromes in cardiothoracic surgery patients. *J Intensive Care Med* 2005;20(2):118-23.

81. Grosu I, Lavand'homme P. Use of dexmedetomidine for pain control. *F1000 Med Rep* 2010;2:90.

82. Roberts SB, Wozencraft CP, Coyne PJ, Smith TJ. Dexmedetomidine as an adjuvant analgesic for intractable cancer pain. *J Palliat Med* 2011;14(3):371-3.

83. Ugur F, Gulcu N, Boyaci A. Intrathecal infusion therapy with dexmedetomidine-supplemented morphine in cancer pain. *Acta Anaesthesiol Scand* 2007;51(3):388.

84. Kaya FN, Yavascaoglu B, Turker G, Yildirim A, Gurbet A, Mogol EB, et al. Intravenous dexmedetomidine, but not midazolam, prolongs bupivacaine spinal anesthesia. *Can J Anaesth* 2010;57(1):39-45.

85. Rutkowska K, Knapik P, Misiolek H. The effect of dexmedetomidine sedation on brachial plexus block in patients with end-stage renal disease. *Eur J Anaesthesiol* 2009;26(10):851-5.

86. Kanazi GE, Aouad MT, Jabbour-Khoury SI, Al Jazzar MD, Alameddine MM, Al-Yaman R, et al. Effect of low-dose dexmedetomidine or clonidine on the characteristics of bupivacaine spinal block. *Acta Anaesthesiol Scand* 2006;50(2):222-7.

87. Al-Mustafa MM, Abu-Halaweh SA, Aloweidi AS, Murshidi MM, Ammari BA, Awwad ZM, et al. Effect of dexmedetomidine added to spinal

bupivacaine for urological procedures. Saudi Med J 2009;30(3):365-70.

88. Abu-Halaweh SA, Al Oweidi AK, Abu-Malooh H, Zabalawi M, Alkazaleh F, Abu-Ali H, et al. Intravenous dexmedetomidine infusion for labour analgesia in patient with preeclampsia. Eur J Anaesthesiol 2009;26(1):86-7.

89. Palanisamy A, Klickovich RJ, Ramsay M, Ouyang DW, Tsen LC. Intravenous dexmedetomidine as an adjunct for labor analgesia and cesarean delivery anesthesia in a parturient with a tethered spinal cord. Int J Obstet Anesth 2009;18(3):258-61.

90. Ramadhani U, Park JL, Carollo DS, Waterman RS, Nossaman BD. Dexmedetomidine: clinical application as an adjunct for intravenous regional anesthesia. Anesthesiol Clin 2010;28(4):709-22.

“AN UNUSUAL CASE OF HYPERCARBIA DUE TO INTRATRACHEAL RYLES TUBE INSERTION”

Obaid Ahmed Siddiqui¹, Shahna Ali², Muazzam Hasan³, Syed Moied Ahmed⁴, Manazir Athar⁵

Abstract

To err is human! 44,000 to 98,000 people die each year as a result of preventable medical errors. Mistakes and complications do occur in medical practices but timely detection of the errors and complications is a must to prevent morbidity and mortalities.

We report a unique case of gastric perforation operated under general anaesthesia with intraoperative carbon-dioxide (CO₂) retention due to inadvertent ryles tube insertion into the trachea. In this case report we intend to highlight the importance as well as the difficulties faced in confirmation of the position of ryles tube placement, especially in intubated patients. Ryles tube placement is so called a simple procedure but incidence of malpositioning and complications are very common however underreported.

Keywords: Intratracheal ryles tube, hypercarbia, Intubated patient.

Introduction : Ryles tube's position confirmation should not be ignored especially in intubated patients. If chest radiograph could not be done, direct laryngoscopy should be performed. Clinical judgment based on gastric auscultation and aspiration could be dubious at times.

Case report

A 55 year old male, case of gastric perforation was posted for emergency surgery. Preoperative blood gas showed a PCO₂=42mmHg, PO₂=56mmHg, pH=7.4, HCO₃⁻=26mmol/l. Patient was planned for general anaesthesia with rapid sequence intubation. After proper gastric aspiration ryles tube was withdrawn. Patient was then intubated maintaining cricoid pressure.

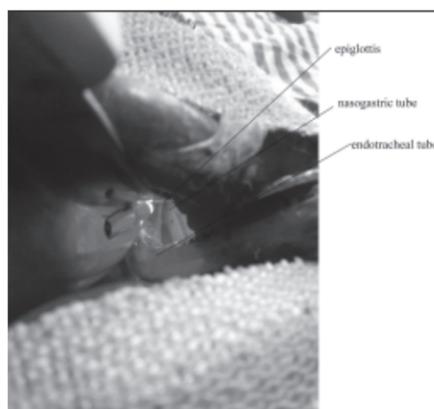
Patient was mechanically ventilated in pressure control mode. Ryles tube was reinserted intra-operatively. Confirmation of ryles tube position by auscultation was not possible since the patient was already draped.

When gastric content could not be aspirated following suction, oral cavity was examined to rule out any kinking of ryles tube in the oral cavity. We then requested the surgeon to confirm the placement of ryles tube by palpating the stomach. However, since the surgeons were busy operating, they probably did not paid much attention and forgot to palpate the stomach and confirm the placement.

During the intra-operative period the capnograph continuously showed rise in End Tidal CO₂ (ETCO₂) levels, despite all the possible effort of

Affiliation: Department of Anaesthesiology & Critical Care, JN Medical College, AMU, Aligarh.

Address for correspondence: Prof. Syed Moied Ahmed
Department of Anaesthesiology & Critical Care, JN Medical College, AMU, Aligarh.
Email Id: sma99@rediffmail.com



hyperventilation. When ETCO_2 levels reached around 80 mmHg, ABG was done which showed $\text{PCO}_2=109$ mmHg, $\text{PO}_2=370$ mmHg pH=6.98 and $\text{HCO}_3^-=25.7$ mmol/l. Patient was continuously hyperventilated and half an hour later ABG was repeated which showed $\text{PCO}_2=73$ mmHg, $\text{PO}_2=422$ mmHg pH=7.11 and $\text{HCO}_3^-=23.2$ mmol/l. The cause of persistent hypercarbia during the intraoperative period could not be evaluated. However, throughout the operative procedure the patient was haemodynamically stable.

After completion of the surgery, the patient was not extubated. The patient was shifted to ICU for further management. The ventilator showed a leak of 30%. Position of the tube, its size and cuff pressure was reassessed. As soon as laryngoscopy was done, to our surprise, ryles tube was found to be entering inside the trachea along the side of the ETT. Presence of mist inside the

gastric tube further confirmed our doubt. The ryles tube was then removed and the patient was intubated with 8.5mmID ETT.

After 4 hours of controlled ventilation the patient became conscious. He generated adequate tidal volume and the ABG findings were within normal limits. The patient was extubated and shifted to the ward with satisfactory condition.

Discussion

There are numerous indications for ryles tube placement. The most important among them are gastric emptying or decompression and enteral feeding in unconscious or intubated patients.

Although placement of ryles tube is a simple procedure but incidence of mal-position or traumatic ryles tube placement are very common but often not reported. Sorokin and Gottlieb^[2] reported 50 cases of ryles tube malposition into the right or left bronchus out of 2000 tube insertions over a period of 4 years, with two mortalities. Over 50% of malpositioned blindly inserted ryles tube occur in patients who were mechanically ventilated.^[2]

Mardestein et al.^[3] reported malpositioned feeding tubes in 2%, of which 67.8% occurred in mechanically ventilated patients and 66% developed serious thoracic complications. Rassias et al.^[4] found malpositioned ryles feeding tubes in tracheopulmonary system in 2%, of which 92% occurred in mechanically ventilated with serious complications in 35% patients.

During the intraoperative period when the patient is under general anaesthesia, insertion of gastric tube at times becomes difficult.^[5] Patient remains unconscious so one cannot be asked to deglutate for easy passage to the tube. Patient also cannot mention whether the tube has got encircled within the oral cavity. There are usually no signs and symptoms whether the tube has inadvertently

entered the trachea. In addition confirmation by auscultation is not always possible during surgery. It is also not necessary that gastric contents will always be aspirated during suction.

All these factors could be responsible for mal-position of the gastric tube in our patient. However, by performing direct laryngoscopy and by asking the surgeon to palpate the ryles tube in the stomach could have prevented the complication. This was again probably overlooked or missed both by us and the surgeons.

In our case the ryles tube went inside the trachea despite the presence of the ETT. The small size ETT and inadequate inflation of the ETT cuff could be responsible for this. This probably led to the development of substantial leak along the side of the cuff and through the ryles tube during mechanical. This ultimately resulted in inadequate ventilation and rise in $\text{PaCO}_2/\text{EtCO}_2$.

During the intraoperative period despite taking all measures there was a persistent rise in $\text{PaCO}_2/\text{EtCO}_2$. However, in the ICU, ventilator (Hamilton C2, Hamilton Medical Switzerland), detected the leak. In addition the presence of mist

in the gastric tube made us think that the tube probably could have been in the trachea. This was finally confirmed by performing direct laryngoscopy. Finally patient was managed accordingly.

References

1. Sorokin R, and Gottlieb J. Enhancing patient safety during feeding tube insertion: A review of more than 2000 insertions. *Journal of Parenteral and Enteral Nutrition* 2006;30:440-445.
2. Mardestein EI, Simmons RL and Ochoa JB. Patient safety: Effect of institutional protocols on adverse events related to feeding tube placement in the critically ill. *Journal of the American College of Surgeons* 2004;199:41-47.
3. Rassias AJ, Ball PA and Corwin HL. A prospective study of tracheopulmonary complications associated with the placement of narrow bore enteral feeding tubes. *Critical Care* 1998;2:25-28.
4. Ghatak T, Samanta S, Baronia AK. A newtechniqueto insert ryles tube in an unconscious intubated patient. *N Am J Med Sci.* 2013;5:68-70.

GUIDELINES TO CONTRIBUTORS

Also can be accessed from website: www.aaarnacm.com and you can send your manuscript on email: aaarjournal@gmail.com

Asian Archives of Anaesthesiology and Resuscitation (AAAR) was started in 1971 by initiative of late Prof. W.E. Spoeral of University of Western Ontario, London. He visited JIPMER, Pondicherry in 1970-71 and helped in starting this journal. Since then, AAAR was published under able guidance of (late) Prof. N.P. Singh continuously till date.

EDITORIAL POLICY

AAAR publishes original articles, review articles, special articles, medical intelligence articles, case reports, technical communications editorials, book reviews and letters to the editor. All papers, after editorial scrutiny are peer reviewed by at least two referees. Acceptance is based on significance, originality and validity of the material presented.

SUMMARY OF REQUIREMENTS

Type the manuscript double spaced, including title page, summary (abstract) and key words, text, acknowledgements, references, tables (each table complete with title and foot notes on a separate page) and legends for illustrations. Each of the above mentioned component of the manuscript should begin with a new page, maintaining the sequence. Illustrations must be of good quality, usually 1227 x 173 mm (5 x 7 in) but not larger than 203 x 254 mm (8 x 10 in). Manuscript should be submitted articles may kindly be sent only on such requests. Authors should keep out the manuscript on white bond paper preferably ISO A4 size with margins of at least 25 mm (1 in). Type or print on only one side of the paper using double spacing throughout. Number the pages consecutively in the upper right hand corner of each page beginning with the title page.

Format, Style and Grammar

The article is expected to be written in simple and small sentences. Due care need to be exercised by all the authors towards spelling, grammar and

style of writing. The article needs to be written in 'past-participle passive voice' format.

Title page

The title page should carry:

A) The Title of the article which must be concise, functional and informative. It must be accurate and not be misleading. Very short and cryptic titles are to be avoided as the words in the title may be used by electronic search engines to identify and categorise the paper.

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

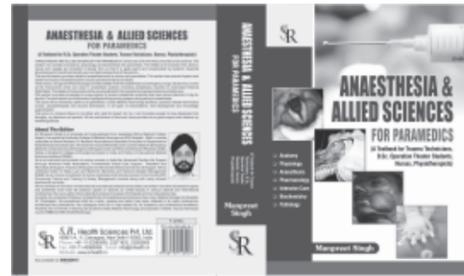
1. Each table is typed on a separate sheet of paper with its title.
2. Tables are numbered with Arabic numerals.
3. Each table contains all necessary information in order that it may stand alone, independent of the text.
4. No table contains data that could be included in the text in several sentences.

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 on 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

manpreetdawat@gmail.com, manpreetdawat@hotmail.com

