Nasotracheal Intubation With Sevoflurane / Vecuronium Anesthesia In Elderly Patients

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Citation

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Abstract

Two patients in whom naso-tracheal intubation was required were scheduled for oral surgery. One had a cancer at the angle of mouth and the other had a cancer of the cheek involving the side of the tongue and oral cavity. They were of 75 and 80 years old. In both the cases anaesthesia was induced rapidly and smoothly by inhalation of Sevoflurane followed by conventional naso-tracheal intubation facilitated by N-M relaxant, vecuronium bromide.

INTRODUCTION

Sevoflurane induction is smooth and pleasant for inhalation. The blood co-efficient of 0.6 causes rapid induction of anaesthesia. Geriatric patients tolerate 4-5 MAC of sevoflurane induction in 100% O_2 and difficult airway management can easily be done, after direct laryngoscopy followed by easy intubation.

CASE REPORTS

PATIENT NO.1

A 75 year old man presented with carcinoma of the left angle of the mouth and oral cavity for excision, radical neck dissection and reconstructive surgery. He was mild hypertensive, under control on treatment and had no other systemic disease. Surgery demanded nasotracheal intubation.

The patient had a normal mouth opening and refused awake FOI. Both nostrils were patent and were prepared for nasotracheal intubation with xylometazolin; 0.05% 1ml and 1ml of 4% lidocaine. All the investigations were within normal limits. Mallampati score was grade-II.

After premedication with alprazolam 0.5mg orally on the night before the operation a 18 gauge I. V. cannula was inserted and crystalloid infusion was started and intravenous ranitidine 50mg and ondrasterone 4mg was added in the IV bottle half an hour before the operation.

On the O.T. table I/V glycopyronium 0.2 mg and fentanyl 1 g/kg^{-1} were given. Standard monitoring included pulse, BP, SPO_2, ECG and $ETCO_2$. Oxygen was given for 5 min via Mapelson'D circuit with close fitting mask followed by 4% Sevoflurane in 100% O_2 with minute ventilation of 6 liter/min. Eye lash reflex, finger tapping and arm falling were noted. Induction time taken was 122 sec. Patient was put on O_2 / Nitrous oxide (50:50) and seroflurane was decreased to 2 MAC followed by vecuronium bromide 0.l mg/Kg^{-1}. The lungs were ventilated for 3 min and $ETCO_2$ was kept at 35±3 with IPPV,' naso-tracheal intubation was facilitated with flexometallic armoured tube (cuffed) 7 mm size. BP, pulse and ECG were totally stable. SPO_2 was maintained at 99%. Thereafter, anaesthesia was maintained on O_2 / Nitrous oxide (33%:66%) with isoflurane using close circuit and ventilator, along with increments of vecuronium 0.2mg/kg and fentanyl. Both surgery and anesthesia were uneventful. The patient was transferred to the ICU for one day for observation and was extubated on the next day.

PATIENT NO.2

The patient was a 80 year old lady thin built and was scheduled for left cancer cheek excision and reconstruction. She was mallampati grade-I, had a normal mouth opening and was identaculous.

This patient also required naso-tracheal intubation for oral surgery and needed an ICU bed postoperatively, as a pack in the oral cavity was supposed to be kept for 48 hrs. The patient's nose was prepared with xylometazoline (0.05%) and lidocaine (4%). The patient was premedicated with alprazolam O.5mg H.S. day before operation. IV 18 gauge cannula was inserted and ringer lactate was started and IV ranitidine 25mg and ondrasterone 2mg was given half an hour before operation.

All the monitors were attached. She had a pulse rate of 70/min, BP of 110/70mmHg and R.R. of 12/min. Injection Glycoprromium 0.2mg was given along with fentanyl 1 g/kg[-1] After preoxgenation for 5 min. Sevoflurane was added slowly one MAC after every three breath up to 5% and ETC02 was maintained at 35±3, induction time were noted after observing loss of eye lash reflex and finger tapping test which was found to be 90 sec. SPO_2 was maintained at 99% throughout induction. An oral airway was inserted and after assisted ventilation with sevoflurane Oxygen /nitrous oxide (50:50) and MAC was kept at 1 %. Vecuronium 2.5mg I/V was given and after 3 min of IPPV with Bain's circuit, naso-tracheal intubation was performed with flexometallic armoured cuffed tube of 6.5mm size. Intubation was smooth and there was no fall in BP or SPO_2. Anaesthesia was maintained on O_2 /N_2O (33%: 66%) with Isofturane on close circuit and ventilated. Top-up doses of vecuronium and fentanyl were given. Urine output and CVP were monitored throughout the surgery. I/M pethidine 25mg was given at end of operation and patient was shifted to ICU for assisted ventilation with sedation. After 48 hrs the pack was removed and the trachea was extubated.

DISCUSSION

Induction of anaesthesia in both the patients was smooth and fast. At no time SPO_2 decreased to less than 98%. Oxygenation and ventilation were satisfactory. Naso-tracheal intubation performed by the Consultant was easy and rapid.

It is concluded that sevoflurane induction followed by relaxant is safe and useful in patients with geriatric age group and sevoflurane at 4-5 MAC with minute ventilation of 6 liter/min is well tolerated with 100% O_2, after I/V fentanyl. There was no postoperative shivering or sore throat in both the patients. Both patients liked the technique of induction.

Sevoflurane provides additional advantage over I/V induction such as good C.V. stability, smooth transition between induction and maintenance and rapid onset of non-depolarizing muscle relaxant.[1]

Inhalation induction with sevoflurane in elderly patients scheduled for coronary artery bypass graft surgery, offered a rapid and smooth induction with hemodynamic stability.[2]

MAC required to prevent movement in response to surgical incision in 50% of patients decreases with age. There is approximately 6% change per decade of age.[3] MAC was found to be 1.48% for sevoflurane at mean age of 71.4 years.[4]

Result of the study by Yamaguchi et al showed vital capacity inhalational induction of anaesthesia with sevoflurane/ nitrous oxide accelerates onset and prolongs duration of vecuronium N-M block compared with propofol - fentanyl anaesthesia.[5] Fentanyl premedication 5 minutes before intubation blunts hemodynamic response to intubation at its best.[6]

Fast induction is seen with sevoflurane i.e. 40 sec using 8% sevoflurane with oxygen/nitrous oxide (25:75%), in vital capacity induction method.[7]

In comparison to halothane induction for adult patients sevoflurane maintains greater minute volumes and patients are more stable with sevoflurane group. [8]

MAC expiratory markedly decreases with fentanyl premedication and with addition of N_2O than oxygen/sevoflurane alone. The mean time in the sevoflurane /O_2 100% group was found to be longer than sevoflurane/ N_2O group.[9]

Lewis et al study showed that with sevoflurane/nitrous oxide induction, onset time increases with age in adult patients.[10]

It is reported that maximum onset time produced by vecuronium was not shortened by an increase of sevoflurane exposure time under 2% sevoflurane induction.[11]

In conclusion, sevoflurane induction and intubation after neuromuscular block with vecuronium bromide in both elderly patients was found to be very stable haemodynamically. There was minimum tachycardia or nasotracheal intubation and mean B.P., HR came back to baseline level within 2 minutes. There was no fall in SPO_2 and there was no postoperative complication.

Throughout the operation both the patients were stable and anaesthesia was uneventful. Postoperatively both the patients gave god view of inhaling sevoflurane in 100% oxygen.

Figure 1

Table 1

PATIENT CHARACTERISTICS		
	Patient 1	Patient 2
	M	F
ASA Group I /II	II	I
Mallampati Score	1	1
Age (yr)	75 yr	80 yr
Weight (Kg)	60	25
Height (cm)	176	145
T.M. distance (cm)	7.13	7cm
Inter - incision gap (cm)	4cm	Edenticulous 3 Finger mouth opening.

Figure 2

Table 2a

HAEMODYNAMIC PARAMETERS - Patient No.1							
					Post-intubation		
					1min	2min	3min
Heart Rate (min)	90	90	86	96	94	86	86
Systolic B.P. (mmHg)	140	140	139	140	131	129	129
Diastolic B.P. (mmHg)	81	81	88	91	85	84	84
MAP (mmHg)	102	102	105	107	100	99	99
INTUBATING SCORE = 3/12							

Figure 3

Table 2b

HAEMODYNAMIC PARAMETERS - Patient No.2							
					Post-intubation		
					1min	2min	3min
Heart Rate (min)	90	96	73	96	95	90	90
Systolic B.P. (mmHg)	130	132	130	142	131	123	112
Diastolic B.P. (mmHg)	79	67	79	79	86	72	73
MAP (mmHg)	92	88	92	100	101	88	87
INTUBATING SCORE = 3/12							

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References

1. Yamaguchi S, Ikedan T, Wakek et al: A Sevoflurane induction of anaesthesia with gradual reduction of concentration is well tolerated in elderly patients. Canadian Journal of Anaesthesia 2003;50: 26-31.
2. Djaiani GN, Hall J, Pugh S, et al: Vital capacity inhalation induction with sevoflurane: an alternative to standard I/V induction for patients undergoing cardiac surgery. J Cardiother Vasc Anesth 2001;15: 169 -74.
3. Mapleson WW. Effect of age on MAC in humans: a meta analysis. Br J Anaesth 1996;76: 179-85.
4. Nakajip1a R. Nakajima Y. Ikeda K. Minimum alveolar concentration of sevoflurane in elderly patients. British journal of Anaesthesia .1993; 70(3): 2.73-275.
5. Yamaguchi S, Egawa H et al: High concentration induction of anaesthesia accelerates onset of vecuronium N-M blockage. Canadian Journal of Anemia 2001;48: 34-37.
6. Kosh, Kim DC, Hany et al: Small dose fentanyl optimal time of injection for blunting the circulatory responses to tracheal intubation. Anesth Analg 1998;86: 658-61.
7. Bevenly K, Lisa L Edward R et al: Comparison of vital capacity induction with sevoflurane to IN induction with propofol for adult ambulatory anaesthesia. Anaesth Analg 1999;89: 623.
8. Hall J.E. Oldham T.A. et al: Comparison between halothane and sevoflurane for adult vital capacity induction. British Journal of Aanaesthesia Vo1.7; Issue 3: 285-288.
9. Woods A W, Allam S. Tracheal intubation without the use of neuromuscblar blocking agents. Br J Anaesth 2005;94: 150-158.
10. Lewis et al: Onset time for sevoflurane/oxygen induction in adults is prolonged with increasing age. Anaes Analg 2006; 1 026: 1699-1702.
11. Ahmeq AAK, Kumagai M et al: Sevoflurane exposure time and the N-M blocking effect ofvecuronium. Can J Anesth 1999;46: 429;32.

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