

Letter To The Editor: Lma As Life Saving Device

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Citation

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Abstract

Dear Sir,

I am reporting a case regarding a patient who suffered a severe incident during PCNL (Percutaneous Nephrolithotomy).

A thirty five year old male patient, grossly obese (124 kg body weight), was scheduled for PCNL under GA (general anesthesia). He had twice (in June and December 1997) uneventful GA for stunting and respectively stunt removal for right pyelolithiasis, by intravenous induction, LMA (laryngeal mask airway) insertion, IPPV and inhalation anesthesia maintenance. Trials for extracorporeal stone crush were unsuccessful. From the history: grossly obese, shortnecked man with history of bronchial asthma not on regular treatment. Since 8 years on treatment for HTN (hypertension). Before the procedure he was on Zestril tablets of 10 mg OD. From the CBC, biochemistry and CXR nothing remarkable. Non-smoker. Premedicated with Pethidine 75 mg and Phenergan 25 mg together as an i.m. injection 60 min prior to the procedure.

On arrival in OR: obese, conscious, cooperative, a bit frightened man. Two peripheral iv cannulas g18 and g17 were fixed on the dorsum of his left hand. Patient was preoxygenated for 5 min and iv induction was started by Xylocaine 50 mg iv, Midazolam 1 mg iv, Alfentanil 1 mg iv, Propofol 250 mg iv. Endotracheal intubation was facilitated by Succinylcholine (Miadarine) 100 mg iv. Endotracheal intubation although performed from the first attempt was not easy. Patient was obese, with short neck and mouth opening of around 3 - 3.5 cm. During DL (direct laryngoscopy) only the epiglottis was visible and after outside pressure from an assistant the posterior commissure was seen. DL view was assessed as grade III. A 8.5 mm internal diameter coiled endotracheal tube with stylet guidewire was introduced and fixed at mark 23 cm at the level of the mouth opening. An orogastric tube was inserted.

The patient received 50 mg Atracurium iv and maintenance by Isoflurane 1% - 1.5% in 50% oxygen-air was continued, supplemented by regular boluses of Alfentanil and Atracurium -every 30 to 40 min. IPPV by means of Ohmeda Modulus CD anesthesia workstation was maintained. The patient had a cystoscopy, stunt fixation in lithotomy position and was then turned to prone position. During his turning one of the peripheral line went out and was replaced by another g18 on the same hand. Monitoring of : NIBP, HR, ECG, PR, SpO₂, EtCO₂, Vt, Ve, PIP, RR, FiO₂, Fi and Et of the Isoflurane was continuously carried out. He was receiving 10 ml/kg/h iv fluids: crystalloid and 1 pint of Hemaccel. After 2 hours and 45 min of uneventful anesthesia around 40 min after his last dose of Atracurium the patient suddenly started to move his head and coughed. Immediately 30 mg Atracurium iv was given but he moved again. Leak of air around ETT (endotracheal tube) started and ventilation became inadequate. Check up of the tube's pilot balloon revealed inefficiency of the cuff - most probably it was ruptured. Checking up of the cuff at the end of the accident proved that it was ruptured. Packing of the mouth didn't help and patient was turned to supine position when readjustment of his ETT and two more trials for reintubation were unsuccessful. Patient's oxygen saturation dropped below 70%, he developed bradycardia - HR 45-50/min, treated by Atropin 1 mg iv and manual IPPB by 100% oxygen through face mask. All that activities had taken 2 to 3 min. Then LMA #4 was introduced and ventilation of the patients lung became adequate, his saturation fast increased to 100%. He developed polytopic PVC (premature ventricular contractions) treated by Lidocaine 200 mg + 100 mg iv. Surgery was stopped by fixing a temporary nephrostomy, patient was under Isoflurane in 100% oxygen and was given Alfentanil 1 mg iv and Atracurium 30 mg iv. Patient developed high frequency AF - 130 to 150 b/min not responding to sedation, analgesia and 5 mg Isoptin iv. ABG done showed: ph 7.34,

PaCO₂ 4.5 kpa, PaO₂ 55.5 kpa, SBE -6.4 mmol, Saturation 99.9%. Around 75 to 90 min after the accident and 10 to 15 min after the Isoflurane discontinuation patient started to regain his consciousness and spontaneous breathing without giving any drugs to reverse the muscle relaxants' effect. LMA was uneventfully removed and patient was transferred to ICU. In ICU he was put on 40% - 50% oxygen via ventimask and monitoring of NIBP, HR, SPO₂, PR, RR, temperature, urine output was started. CXR was done - showed mild lung congestion. Lasix 20 mg iv was given. ECG was done - AF, HR 114 - 125 b/min, suspicious incomplete RBBB. ABG done on spontaneously breathing 40% oxygen patient showed: pH 7.302, PaCO₂ 5.5 kpa, PaO₂ 10.2 kpa SBE - 4.2 mmol Saturation 94%. NIBP was 140/70, SPO₂ 97%-98%. Patient didn't complain of pain or any other inconveniences. He had Hydrocortisone 300 mg iv and Dexamethasone 10 mg iv in OR for some wheezing found soon after the LMA insertion and to prevent any laryngeal or hypopharyngeal swelling after the multiple laryngoscopies. His repeated CBC and blood biochemistry showed : Hb 14.1, Hct 0.41, Wbc 14.5 x 10⁹/l, serum creatinine 103mcg/l, serum urea 5.4 mmol/l.

He was seen by physician on call in the evening, around 19.30 p.m. who gave 1 mg Inderal iv and put the patient on regular tablets Inderal orally. HR slowed down to 95 - 100 beats/min and in the morning the patient regained his sinus rhythm. His Inderal treatment was discontinued and he was uneventfully discharged to the surgical ward.

DISCUSSION

The reason for this accident was vigorous movement and coughing of the patient leading most probably to a ruptured tube's cuff. It happened due to wared off effect of Tracrium. Although 30 mg Tracrium were given iv immediately there was no fast enough effect and the patient was hypoventilated.

The followed trials for reintubation were unsuccessful due to improper positioning, bad relaxation and nervous tension of the anesthesiologist due to patient's fast deteriorating condition.

LMA could have been used earlier and maybe even when the patient was in semiprone or prone position, but was not available in OR and it took time to be brought from another OR.

The continuous draining of the stomach by the orogastric tube possibly saved the patient from eventual aspiration. PCNL is long procedure in prone position. In order to have fast recovery, short or medium acting muscle relaxants and opioids are being used. To avoid fluctuating of the level of a muscle relaxant with medium length of action like Atracurium continuous observation of the patient, continuous capnography, use of stop watches and NM transmission monitors are being used. In our case we didn't use NM transmission monitor because of the situation in the theatre: lack of habit to use such a device in all cases; and because the device available is not reliable according to the experience in our department. The batteries become very easy exhausted most probably due to big consumption from the LCD screen. The device is not equipped with and still it is difficult to arrange rechargeable batteries supply.

Ventilation with air -oxygen instead of nitrous oxide - oxygen was chosen for two reasons. Patient was grossly obese and in prone position.

This accident could have been prevented by more careful monitoring of the patient and maybe faster response from the anesthetist.

LMA could be a life saving tool in situations where for some reason endotracheal intubation fails and patients condition needs efficient ventilation and oxygenation.

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References

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