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Case Report

Aspiration Pneumonitis in an Obese Patient under General Anaesthesia for Fracture Humerus: A Case Report

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ABSTRACT

Aspiration under general anaesthesia is a dreaded complication which can significantly affects the morbidity and mortility in the postoperative period. Factors such as delayed gastric emptying seen in obesity, pregnancy, paralytic ileus, altered consciousness as under general anaesthesia, head injury can predispose the patient to pulmonary aspiration. The two entities aspiration pneumonia and aspiration pneumonitis although difficult to differentiate in the early course of event but it is of crucial importance to know the pulmonary pathology for effective management of the patient. A morbidly obese patient was posted for fracture humerus surgery under GA who landed in cannot ventilate situation, had pulmonary aspiration which was managed efficiently in ICU.

Introduction

Aspiration is defined as entry of liquid or solid material into the lungs through larynx [1]. Depending upon the nature of the aspirate, it can lead to the inflammation and damage to the lung parenchyma defined as aspiration pneumonitis or super added bacterial infection leading to aspiration pneumonia. Lots of factors predispose to aspiration under anaesthesia like decreased consciousness, blunted airway reflexes, patients with delayed gastric emptying as seen in pregnancy, obesity, diabetes mellitus and inadequate fasting.

We report a case of a 25 years old male patient with BMI of 39.1 kg/m2 done under general anaesthesia for fracture humerus who landed up in a “Cannot Ventilate Cannot Intubate situation” with subsequent pulmonary sequelae at the time of extubation.

Case Report

An informed and written consent for anaesthesia and surgery was taken. After properly positioning the patient on the operation theatre table, all routine vital monitors were attached. His preinduction vitals were- BP 134/93mm hg, HR: 96b/min and Spo2 was 98% on room air. 18G iv cannula was secured and RL started.

Patient was positioned in RAMP position along with 25 degree backup. Preoxygenation was done with 100% oxygen for 3 minutes. Patient was induced with injection fentanyl 150mcg iv, inj. Propofol 180+40mg iv + inj. Succinyl choline 100mg iv. Two person were required for bag and mask ventilation.

Direct laryngoscopy was done, CL grade was 2a, intubation was done with ETT of ID 8.0 mm. Chest auscultation revealed normal air entry on right side and on left side decreased air entry and wheeze. The tube was drawn outside by one marking and immediately inj hydrocortisone 100mg and inj dexamethasone 8mg iv, inj propofol 40mg were given in addition to 6 puffs of Salbutamol inhaler through the tube. Chest again auscultated after some time. It was clear with bilateral

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equal air entry. Patient put on volume control mode with tv :580ml, RR: 14 to 16 b/min, PEEP :6cm H2O, peak airway pressures were up to 22-24cm H2O. Anaesthesia was maintained with sevoflurane+N2O+40%O2 with inj. vecuronium. Intraoperative patient was stable.

After completion of surgery, reversal was done with inj. Glycopyrrolate 600mcg iv + inj neostigmine 3.5 mg iv. Patient spontaneously opening eyes, regularly breathing but muscle power in limbs was not adequate. Inj glycopyrrolate 200mcg + inj neostigmine 1mg repeated and patient was gradually able to follow verbal commands. Post extubation, respiratory movements were not felt in the bag. Oropharangeal airway inserted and position for bag and mask optimised. Chest on auscultation revealed b/l wheeze. Multiple positive pressure breaths were given along with medications inj hydrocortisone 100mg iv and salbutamol puffs but saturation was not improved and spo2 fall till 42% so the patient was reintubated with inj Propofol 70 mg and inj succinyl choline 75mg iv, under Direct Laryngoscopy over bougie with ETT of ID 6.5mm and cuff inflated. severe airway edema was present. B/L coarse creptitations were present throughout the chest. Patient ventilated with 100% fio2 and saturation started improving and reached upto 96-97%.

Patient was shifted to ICU for mechanical ventilation. Put on PCV mode with PEEP of 12cm H2O. B/L creptitations present throughout the chest. Patient was started with inj ceftriaxone + salbactum 1.5 gm BD, inj Amikacin 500mg BD, inj pcm 1gm TDS/SOS, Tab calcium +vit D3 OD + Tab Multivitamin OD +Tab vitC OD + Tab pantoprazole 40mg OD. In morning sedation was stopped and patient was conscious and regularly breathing and again extubated.

Post extubation patient was conscious, oriented and following verbal commands. Bp 136/90 mmHg, PR 118/min, and so2 97% on o2 @5 lit/min. After 2 hours patient experienced respiratory difficulty and tachypnea and spo2 starts falling and again reintubated and put on VCV mode (fio2: 1, PEEP: 7, RR: 14), His Chest Xray was done on post op day 1 (as shown in Figure 1) following which his treatment was revised– Inj piperacillin 4.5gm tds, inj metronidazole 100ml tds, inj dexamethasone 8 mg tds, inj magnesium 1gm over 20 minutes single dose, inj deltaparin 5000iu OD. Nebulisation was continued 4 hourly.

Cardiology opinion was done on Day 2 post operatively and advised 2-D ECHO, D-DIMER, NT ProBNP and TROP I and was started on inj enoxaparin 0.8mlS/C BD and CVP guided fluid therapy. 2-D ECHO was done which ruled out moderate and severe pulmonary embolism, but mild could not be ruled out. LVEF was 40%. Pulmonary CT- angiography was done which was negative for pulmonary embolism.

Patient extubated after 48hrs, fully conscious, oriented, vitals were stable. Spo2 99% on Simple face mask @ 5 lit/min. In the evening patient taken on HFOT- flow 30lit/min and fio2 60% and maintained saturation of 98%.

Fio2 was titrated and again patient taken on SFM. Patient stayed in ICU for 6 days and was later discharged home.

Figure 1- Showing chest xray of patient preoperative followed by on postop day 1 and day 3 (S/O aspiration pneumonitis)

Discussion

Although general anaesthesia is safe but aspiration under anaesthesia can be a fatal event with significant morbidity and mortality. It occurs 1 in 2000-3000 cases incidence being higher in emergency surgeries [2]. Mendelson in 1946 reported that pulmonary aspiration can have mortality rate of 3.0%, but later studies showed much increased mortality rates even upto6.6% [3-5]. Pulmonary symptoms in mild cases can go unnoticed in some patients while in others can manifest as mild hypoxia. Many patients depending upon the severity of aspirate can develop respiratory failure, ARDS and even sudden death1. The composition and amount of aspirate is important in determining the pulmonary complications. Gastric contents with low pH even in small amounts can be more fatal than large volume aspirate with relatively higher pH. So depending upon the above, the spectrum of symptoms can range from aspiration pneumonitis, aspiration pneumonia and particle associated aspiration [6].

In aspiration pneumonitis, the low pH of gastric contents leads to the chemical damage to the lung paraenchyma and in aspiration pneumonia, the

superadded bacterial infection leads to inflammatory damage to the lung tissues [7].

Decreased consciousness under anaesthesia itself can predispose the patient to aspiration due to blunted laryngeal reflexes secondary to the effect of anaesthetic drugs but presence of certain associated factors increases the incidence. Obese patient due to delayed gastric emptying are at the higher risk for the aspiration. Our patient had bronchospasm at the time of extubation and landed up into cannot ventilate situation. He might have aspirated while ventilating with higher pressures and subsequent gastric insufflation.

Assess the patients for risk factors for aspiration specially in emergency surgeries and plan out airway management strategies accordingly. Rapid sequence intubation and application of cricoid pressure along with antacid prophylaxis should be practiced in all high risk cases planned under general anaesthesia [8-9].

Immediate recognition of gastric contents in the oropharynx and airway and their prompt suction and head down position is important. However if aspiration has occurred, differentiating between pneumonitis and aspiration pneumonia is of critical importance as the two entities require different management approach which in turn can significantly affect the mortality and morbidity associated with the condition. Although it might be difficult to diagnose in early course of disease but a chest x-ray can give some idea about the pulmonary pathology6. Treatment is mainly symptomatic and is to maintain adequate oxygenation using non invasive oxygen therapy or invasive mechanical ventilation depending upon the severity of respiratory symptoms.

During acute phase, as the insult to lungs is mainly chemical, routine use of antibiotics is not recommended. Antimicrobial therapy directed against specific pathogen should be encouraged as empirical antibiotic therapy leads to increased incidence of ventilator associated pneumonia in later course of disease [10]. In acute phase, use of corticosteroids should be avoided. Pentoxifylline and thymoquinon have shown beneficial effects in rat studies, however human trails still to prove their efficacy [11-12].

Bronchodilators and positive end expiratory pressure are the mainstay of treatment but therapy need to be individualized according to patient and clinical condition.

Conclusion

Anaesthesiologist should be mindful for the factors which can predispose to aspiration and prepared well for the various measures to be taken to optimise patient outcomes if aspiration occurs.

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